INCUBATING COMMUNITY:
ARTS-BASED DEVELOPMENT, NETWORK STRUCTURE, AND THE EMBEDDING PROCESS

A Dissertation in
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by
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There is a need to better understand social embedding processes and network influences on community behaviors, particularly with regard to newer rural development strategies such as entrepreneurship and arts-based development. Through examination of the 16-month planning phase for a new arts business incubator used as a community and economic development platform, this case study draws on embeddedness theory and relational network/structural holes theory to analyze longitudinal change in community social structures. The quantification of network structure and embeddedness changes at both the whole network and dyadic levels of interaction—informed by qualitative analysis of context provided by key informant interviews, surveys, and community profiling—is intended to provide a well-rounded view of community impact and the embedding process resulting from the arts business incubator initiative. This work is intended to contribute to community embeddedness theory, social network theory, and practical evaluation of community change resulting from arts-based development. Frequency of interaction, duration of contact, and the strength of relational ties are often cited as important for building trust and maintaining relational embeddedness. However, these are not significant trust predictors in this study, where respondents place the most trust in experts who are reliable and demonstrate facilitator characteristics. Longitudinal co-development of the arts and music incubator subnetworks is examined using structural and relational embeddedness measures to compare embedding processes. An embedding process model is developed with complementary network tools used to optimize network change for increased embeddedness and improved information flow. These measures are also helpful for identifying resourceful actors who might otherwise remain hidden, as well as power brokers who may be restricting network development due to an overembeddedness condition.
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CHAPTER 1: INTRODUCTION AND PURPOSE

INTRODUCTION

This case study analyzes longitudinal change in community social structures and embedding processes resulting from the planning and implementation of a new arts business incubator used as a community and economic development platform. There is a need to better understand social interaction mechanisms and network influences on community behaviors, particularly with regard to non-traditional rural development strategies such as entrepreneurship and arts-based development. While arts-based development may be marketed to communities as a means to add economic value, build sense of community, promote cultural tourism, or create a more cohesive local identity, this is an oversimplification of its impact. Arts-based development is a platform to create both social and economic endogenous value through strategic coordination of soft—and often subliminal—innovation processes and knowledge-driven, active citizenship (Sacco et al., 2014).

There is also a gap in understanding the process of community embedding at the level of practice (Jack, 2002). Previous studies of embedding have primarily focused on structural embeddedness—the configuration and properties of a whole network, such as the presence or absence of ties between actors (e.g., Granovetter, 1985). An actor is an individual unit within a network of comparable units, such as a person, an organization, a government agency, a country, and so forth. Relational embeddedness describes the quality of relationships between pairs of actors (dyads), such as trust, power, reciprocity, and other behavioral norms (Simsek, Lubatkin, & Floyd, 2003; Granovetter, 1992; Coleman, 1990). Both levels of analysis are required for a fully informed understanding of the how and why of network change resulting from community initiatives, and studies using this type of multi-level analysis of embeddedness remain underdeveloped (Ozdemir, Moran, Zhong, & Bliemel, 2016; Payne, Moore, Griffis, &
Autry, 2011; Moran, 2005). Drawing on embeddedness theory and relational network theory, this study quantifies network structure and embeddedness changes at both the whole network and dyadic levels of interaction—informined by qualitative analysis of context provided by key informant interviews, surveys, and community profiling—to provide a well-rounded view of community impact and embedding as a result of the arts business incubator initiative. This work is intended to contribute to community embeddedness theory, social network theory, and practical evaluation of community change resulting from arts-based development.

Structural and Relational Embeddedness

Granovetter (1985) observed that the primary value of a structural embeddedness perspective is in using networks of relationships to understand action informed by the motives and interests of individual actors. Expanding on Granovetter, Baker (1990) also noted that the configuration and structures of a whole network of relationships provide a better understanding of social action, suggesting that a sole focus on "bilateral monopolies,” the relational tie between dyads, creates a problem of atomization (inappropriately shifting the unit of analysis), or not being able to see the forest for the trees. Granovetter’s basic insight related to the social nature of economic exchange, or that “most behavior is closely embedded in networks of interpersonal relations” (Granovetter, 1985, p.504). Moran (2005) states that this macro-level view of social network structure has received far more attention in scholarly studies of embeddedness and social capital than the nature of interpersonal relational embeddedness and how it modifies context, despite Granovetter’s (1992) later distinction between structural and relational embeddedness and the value of looking at both forms.

Much of the gap in understanding the interplay of the two types of embeddedness has resulted from social capital research branching off in a separate direction with less emphasis on the qualities of dyadic-level relationships and the environmental context of those relationships,
both of which could inform analytical interpretation (Moran, 2005; Rowley et al., 2005; Uzzi, 1997). Reciprocity, for example, can either be viewed as a community attribute at the whole network level to understand resource exchange in a community, organization, or system (e.g., Burt, 1992; Coleman, 1990), or as pairwise exchanges of resources between dyads, in which case indicators such as trust and power play a role in the strength of a tie and the frequency of resource exchanges (Moran, 2005; Nahapiet & Ghoshal, 1998). The relational embeddedness view enhances understanding of smaller social networks where appropriate interpersonal data can be gathered to provide context. A sole focus on the structural configuration of a network is often more practical for large networks. When appropriate to the scale of the network, a combined analysis using both structural and relational embeddedness provides a richer view of the how and why of the social action under examination.

Much of the research on embeddedness, despite its focus on network concepts and over-reliance on whole network structural configuration, has not used social network analysis (SNA) mapping tools for visualization to clarify the interpretation of network data at either the whole network/structural or dyadic/relation level, as in this dissertation. One exception is Mandarano (2009), who used SNA to evaluate the effectiveness of collaborative planning in creating social capital between government agency participants, as demonstrated by new interorganizational relationships established during a planning process. Mandarano quantitatively analyzed the whole network as a static snapshot of an agency workgroup that had worked together for six years. These results were informed by qualitative evaluation of the collaborative process that helped or hindered new relationship formation between agencies. As Mandarano notes, her study was a first attempt at using SNA to understand collaborative planning in relation to certain elements of Putnam’s (2000) definition of social capital, and how local network structure facilitates or constrains collective action. Again, the Mandarano study was bound up with the multi-layered social capital concept and focused on a static look at an established group of
collaborating agencies, versus individuals, so the study was unable to show structural network changes as the collaboration developed.

Longitudinal analysis of social network change in the present study also provides the opportunity to quantify the relational impact and efficacy of an arts-based community initiative as it evolves through its earliest stages of growth. With an understanding of network change and the embedding process at the formative stages of a community arts initiative from this current study, future research may be able to use SNA tools to guide new programs building community networks for social change.

**Social Networks**

The social network perspective examines structural patterns of relationships in social systems that influence beliefs, decisions, and actions to help explain their consequences and why they occur. To state it another way, network analysis aims to explain the sources of social action and how entities are influenced through patterns of interactions apart from their individual attributes. According to Knoke and Yang (2008), SNA was first developed by anthropologists in the 1930s using hand-drawn sociograms to understand community behaviors by mapping direct and indirect relationships. Psychologist Jacob Moreno formalized his method of sociometry to measure the relationships between social structures and psychological well-being, and started the journal *Sociometry* in 1937. Anthropologist John Barnes (1954) studied community relationships on a Norwegian island and is credited with first use of the term, *social network*. Based in graph theory and statistics, SNA allows the identification, measurement, and testing of hypotheses regarding the structural and contextual elements of social relationships (Knoke & Yang, 2008; Cross & Parker, 2004). Sociologists started taking a strong interest in SNA concepts and methods in the 1950s. Granovetter’s (1985) concept of embeddedness is meant to express this same idea that networks are a way to examine individuals in context, and he is
one of the key researchers credited with popularizing network thinking to a broader audience (Knox et al., 2006). Social psychologist Stanley Milgram became interested in the SNA small-world problem in the 1960s and developed a method to test the idea, now known as the small-world approach, stating that two randomly selected individuals, almost anywhere in the world, can be contacted through a chain of no more than six intermediaries (Milgram, 1967; Watts, 1999). The social network phenomenon of small worlds was then popularized in a Broadway play and movie by Guare, *Six Degrees of Separation* (Watts, 1999; Guare, 1990).

SNA tools provide a means to quantify and explain social relationships and structures at a deeper level than is typically used to study and manage organizations or collective behaviors. Tools such as organizational charts are good for showing agreed-upon lines of authority in a group, but not for showing how work actually gets done, how information moves through a group, or how key people serve to expand the network as facilitators or block information flow as communication bottlenecks. Managerial approaches to improving collaboration usually involve a blanket approach of increased communication, leading to more meetings for everyone due to a lack of sufficient information about key leverage points in the social network that would efficiently improve information flow. While community initiatives are often developed through the creation of new social connections, as well as the knowledge and resources that individuals carry, broad attempts at managing network processes, without a clear understanding of contextual influences and leverage points within a network structure, can have the negative result of network fragmentation (Balfour & Alter, 2016a; Balfour, 2013; Obstfeld, 2005; Cross & Parker, 2004; Kogut & Zander, 1992; Brown & Duguid, 1991).

In discussion of social networks, an understanding of information flow relates both to innovation and the embedding process. Obstfeld (2005) discusses recent work on social networks and innovation at the individual and firm level in the context of two different conceptual
structures—(a) dense cohesive networks and (b) sparse networks with structural holes. While structural holes (Burt, 1992, 1997) represent unique ties to individuals or firms that provide superior access to information, they also create opportunities to gather power and exert control over connections, limiting information flow. Dense networks represent the potential to build knowledge through repeated interactions and bonds of trust (Ahuja, 2000; Coleman, 1988), making innovative ideas easier to implement, but redundancy of information flow and path dependencies limit novel idea generation. Granovetter (1973) notes that people tend to cluster in groups with strong within-group ties, and this creates a high velocity of redundant information flow within the group, so new ideas must come from the weak ties connecting separate groups. While dense networks are common in complex organizations that require sustained incremental innovation efforts, individuals who build new connections within and across networks are valuable for novel idea generation and development. In the context of the arts incubator, these facilitators are critical components in developing innovative collaborations and programs while helping to limit knowledge silos and network information loss. These facilitators also create value in the process of integrating new information and ways of thinking into projects (Balfour & Alter, 2016a; Balfour, 2013; Burt, 2003; Allen, 1977; Katz & Tushman, 1981).

**Arts-Based Development and Entrepreneurship in Rural Communities**

Arts-based community development initiatives provide a means for creative forces in the community to exert pressure on social systems through interactions that strengthen sense of community and civic engagement while shaping the public identity of the individual. The arts, as the term is used here, are products of creative expression including the visual arts (painting, drawing, sculpture, photography), performing arts (theater, music, dance, film), and literary arts. However, a creative community context can also support related artisanal occupations such as crafts and culinary arts, although these businesses operate in a more functional commercial
mode in relation to the marketplace. In a broader context, the arts are a visible social product resulting from interactions, including social infrastructure and organizations such as schools and government that support the production of art (Anwar McHenry, 2011a; Firth, 1992; Wolff, 1981; Becker, 1974). Many forms of visual and performing arts are viewed in public spaces, drawing people out of their homes and prompting both social interaction and civic participation that help build sense of community (Wellman, 2001; Oldenburg, 1989; Wolff, 1981). The arts can engage communities by developing a stronger sense of place, increasing individual confidence, reducing isolation, facilitating understanding, and creating a focus for rural community development (Anwar McHenry, 2011b; Ife & Tesorio, 2006; McQueen-Thomson et al, 2004; Shaw, 1995).

Arts-based development and rural entrepreneurship have been promoted as means to foster community and economic development along with civic engagement and sense of community (e.g., Theodori, Hudec, & Drumm, 2015; Clammer, 2014; Grodach, 2011; Anwar McHenry, 2011b, 2009; Gibson, 2010, 2002; Markusen & Schrock, 2006; Gibson & Connell, 2004; Florida, 2002; Psilos & Rapp, 2001; Scott, 2000). Arts-based community development initiatives that broadly engage diverse perspectives can also increase collaborative capacity through social interaction, network expansion, and trust development while increasing information flow and the potential for innovation (Balfour & Alter, 2016a; Balfour, 2013; Burt, 2004; Wilkinson, 1999).

When attractive natural amenities are combined with a local environment that supports entrepreneurship—an entrepreneurial context—artists and creative professionals may seek out rural areas that would otherwise remain stagnant or decline (McGranahan, Wojan & Lambert, 2011). Communities that are high in artistic amenities and support systems may therefore draw more entrepreneurs overall, and culturally support their efforts once they arrive—an important
outcome of an arts-based development strategy. An entrepreneurial context supports the growth of businesses of a range of sizes, so we need not think of an arts business as employing only one artist, and should consider the interactions between multiple businesses that benefit a community. If rural arts businesses can be created and sustainably maintained with the support of arts business incubators that provide community workspace and train artists in business skills, an entrepreneurial context can be created or strengthened to develop and attract creative employment, potentially slowing youth-outmigration and creating a reason for college-trained artists to return to and/or come to rural communities (Balfour & Alter, 2016b; Markusen & Schrock, 2006). Arts employment and arts initiatives are forms of sustainable development because they focus on both near-term and long-term improvements in collaborative capacity, civic engagement, arts education for all ages, aesthetic connections to nature, and inclusive perspectives that bridge class, ethnic, and power divisions in the community (Grodach, 2011; Markusen & Gadwa, 2010; Fleming, 2009; Reardon, 2005; Gibson, 2010; Adams & Goldbard, 2001; Matarasso, 1997).

The business climate in rural areas is usually lacking in urban-style support systems for entrepreneurs (Dabson, 2001). In addition, employment in arts sectors such as the visual and performing arts tends to create a market oriented toward the self-employed and those who are available to work part-time with flexible hours, putting artists in a category where they are least likely to find job security (Grodach, 2011; Throsby, 2008; Currid, 2007; Lloyd, 2006; Markusen & Schrock, 2006). As with other self-employed occupations, networking and relational ties are often the key for artists to find work, collaborators, project funding, sponsors, special tools or equipment, and increased access to new markets or sales channels (Grodach, 2011; Markusen & Johnson, 2006; Evans, 2001; Scott, 2000). As a focal point of community cultural activity, the social elements of arts centers and incubators provide networking, mentoring, and career development opportunities, while also serving as public venues for social interaction and
information exchange that strengthen community (Grodach, 2011; Stern & Seifert, 2010, 1998; Currid, 2007; Boyte, 2004; Fleming, 2004; Evans, 2001; Oldenburg, 1989; Williams, 1995).

In 1982, the Sonoma County community of Rohnert Park, about an hour north of San Francisco, was selected as the site for a new 600,000-square-foot Hewlett-Packard (HP) manufacturing facility for electronic measurement devices and became the largest employer in the area. HP closed its Rohnert Park campus in 2004 after transferring its manufacturing operation overseas. This created an opportunity for Rohnert Park-based real estate developer Codding, which bought the campus in 2005. The 200-acre campus was rebranded as Sonoma Mountain (SOMO) Village, along with surrounding land to provide 27 acres of parks and community gardens with nearly 4,000 homes in a walkable, mixed-use community built on sustainability principles. In 2016, Codding began a series of planning sessions with the idea of enhancing quality of life at SOMO by becoming a major arts destination, collaborating with an existing small tenant, TouchFab, to create an arts business incubator in 2017— the SOMO Village Makery. A complementary effort, the Music Foundry (SOMO), also started in 2016 to serve the music community. Unless specific references are necessary for clarity, I will use the terms, arts incubator or incubator in this document to reference both the arts (Makery) and music (Music Foundry) initiatives at SOMO.

The physical component of the Makery functions as a limited-access maker space for artists—a common and collaborative workspace equipped with digital and metal fabrication tools where experts mix with amateurs to build things. New users are typically trained how to use tools such as 3-D printers, machine tools, welders, laser and plasma cutters, and other industrial fabrication machines. As a project-oriented space for making art, the Makery is available to new and experienced artists rather than the general public. The local Credo High School moved onto the SOMO campus in 2017 and plans to teach blacksmithing/science and
woodworking at the Makery. It is rare for maker spaces to do more than provide shop
workspace and training on use of the tools. As an arts incubator, the Makery also focuses on
building businesses, providing mentoring, tools, and training in business skills,
marketing/publicity, planning, management, business development, and thinking like a
community-oriented entrepreneur.

The Music Foundry is intended to help musicians learn entrepreneurial skills while building
stronger community networks and support systems. Music business entrepreneurship
workshops will begin in 2017 for Credo High School students and for practicing adult musicians.
SOMO has a small stage at its Sally Tomatoes restaurant, so the Music Foundry will use this
venue in late 2017 for bi-weekly networking meetings aimed at coordinating and developing the
local music scene. The bi-weekly meetings include time for three local bands to test out original
music on stage for review by their peers and occasional music business professionals, such as
talent buyers from regional venues. Music Foundry programs are continuing to develop through
a co-creation process with the music community.

For this case study, the SOMO Village Makery and Music Foundry were selected because
the author (participant-observer) has both an unusual level of access to the study
environment—serving on the board of directors for the neighboring SoCo Nexus technology
business incubator, an entirely separate entity—and because both SOMO initiatives are at an
erly stage of development. Studying the planning and implementation phases of this arts
incubator provides an opportunity to examine the embedding process, the formation of a
community social networks, and structural changes to the network resulting from the actions of
the participants. Comparing the development of the art and music networks at SOMO over the
same period of time also provides greater insight into cluster development, embedding
processes, and power relationships that help or hinder structural synergies within this community.

RESEARCH QUESTIONS

In the context of an arts business incubator development process, I will address the following questions related to process and social structures of community embeddedness (split into the dependent variables of structural and relational embeddedness for this study):

**RQ1:** Can the planning and implementation process for a rural arts business incubator foster community embeddedness as evidenced through increased trust, improved information flow, and social network growth?

**RQ2:** Within the incubator initiative, how do the music and arts networks compare in terms of their co-evolution and structural embeddedness during their planning and implementation phases?

**RQ3:** What is the role of power in the combined incubator network (arts and music)? Are community power structures or behavioral norms present that impede or facilitate embeddedness?

IMPORTANCE AND LIMITATIONS

Although this study is focused on a single case, making the results harder to generalize over a large population, examination of the links between community networks and the embedding process at the formative stages of a new arts initiative may provide insight into social mechanisms that stimulate or promote positive change in small communities. This analysis may also inform understanding of the interplay of rural entrepreneurship and arts-based development. Longitudinal analysis of social network change is an opportunity to quantify the relational impact and efficacy of an arts-based community initiative as it evolves through its
earliest stages of growth. Based on this study, practitioners and researchers may have a better understanding of embedding processes for new community ventures and how SNA tools can be applied to guide their optimal network development.

Research through on-site interviews provides significant breadth and depth of understanding (Patton, 2002), but steps must be taken to minimize researcher bias during data collection and analysis. Sampling bias or subjective interpretation of the results can affect generalizability, and the researcher needs to be aware of this possibility to minimize the problem. Interview participants may also be inclined to provide data that they believe will be viewed in a more positive light due to the halo effect of implied social pressure. There can also be issues connected with participant selection, and this could lead to inaccuracies in respondent perceptions or interpretations of individual questions (Bonjean, 1963). Selection issues are mitigated in this study by interviewing all of the participants directly engaged in planning the arts incubator initiative. Specifically, as will be detailed in Chapter 3 (Methodology), a purposive sampling approach is used in this study to select key informants relevant to the research questions (Bryman, 2012). Key informants have knowledge about specific characteristics of the population of interest, such as those who know more about a community or organization than other potential participants (Payne & Payne, 2005). Additional limitations are discussed in Chapter 3 (Methodology).

SUMMARY AND STRUCTURE OF DISSERTATION

This dissertation follows a mixed-method case study research design. Following this introduction, which provides some background and definition of the topics under discussion, a critical review of the literature in Chapter 2 covers theory and practice related to arts-based community and economic development, the structure and function of business incubators, structural and relational embeddedness, and social networks. Chapter 3 provides details on the
quantitative and qualitative methods used for this research in the context of a case study. *Chapter 4* presents results from the community profile, providing a historical and environmental perspective on the portion of Sonoma County that is in the immediate proximity of the arts incubator, as well as a brief art history to help understand how the local culture and climate for arts entrepreneurship has developed since the 1800s. *Chapter 5* presents the findings related to structural embeddedness, largely drawn from social network analysis of the whole network. Longitudinal network structural change resulting from the arts incubator planning and implementation process is also presented. *Chapter 6* presents the findings from the analysis of relational embeddedness, focusing on interpersonal dyadic indicators such as trust, behavioral norms, and power. Longitudinal network relational change is also discussed. *Chapter 7* is a blended analysis that examines patterns across the analytical results from previous chapters, especially considering that both levels of analysis are required for a fully informed understanding of the how and why of network change resulting from community initiatives (Moran, 2005). An embedding process model with related SNA measures is provided. *Chapter 8* is a conclusion that considers the implications of the findings from this research related to the embedding process, network mapping as a tool to quantify the embedding process, and new directions for future research.
CHAPTER 2: LITERATURE REVIEW

INTRODUCTION

This chapter critically reviews contemporary research literature regarding arts-based community and economic development, arts business incubation, embeddedness, and social networks. Social capital is examined in the context of power and in the development of trust relationships. Social networks are discussed in terms of how they explain the structural sources of social action by mapping relationship patterns. The literature review is conceptually organized as follows:

ARTS-BASED DEVELOPMENT OF COMMUNITY
(Why use the arts as a platform for community development)

- Arts Benefits for Rural Places
- Small Group Theory
- Public Venue Advantages
- Creative Class Issues
- Gentrification/Commodification
- Creative Community Change
- Arts and Community Incubation

EMBEDDEDNESS
(What I’m investigating in this study)

- Structural Embeddedness
- Relational Embeddedness
- Trust and Embeddedness
- Embedding Community Ventures
- Managing Embeddedness

SOCIAL CAPITAL/TRUST
(What I’m investigating in this study)

- Social Capital as Resource
- Concept Limitations
- Relationships
- Trust and Reciprocity
SOCIAL NETWORKS
(How I’m applying network concepts)

- Network/Social Capital Concept Overlaps
- Structural Holes
- Tie Strength
- Density/Cohesion
- Sparse and Cohesive Network Differences
- Facilitators, Brokers, and Information Flow
- Power in Networks
- Small-World Networks

Combining concepts from the embeddedness and social network literature provides background for this study’s examination of social structures, processes, and network influences on community behaviors. The specific focus of this research relates to process and structural impacts on, and responses to, entrepreneurial development of an arts business incubator as a community venture. In the first part of this literature review, I establish the theoretical basis for arts-based community and economic development as a tool for social change.

ARTS-BASED COMMUNITY AND ECONOMIC DEVELOPMENT

Community and economic development driven by the arts are often cited as a means to stimulate local cultural assets and improve quality of life while attracting jobs, tourists, and new residents (Markusen, 2014; Markusen et al., 2013; Pearn, 2007; Markusen & Schrock, 2006; Mills & Brown, 2004; Gibson, 2002; Guetzkow, 2002). While most of the research literature on arts-based development focuses on urban areas (e.g., Markusen, 2014; Markusen & King, 2003; Florida, 2002; Landry, 2000; Stern & Seifert, 1998), the benefits of this approach in rural places received little attention until the 2000s (e.g., McGranahan, Wojan & Lambert, 2011; Grodach, 2011; Gibson & Connell, 2011, 2004; Anwar McHenry, 2011b, 2009; Gibson, 2010, 2002; Markusen & Schrock, 2006; Psilos & Rapp, 2001; Scott, 2000). Art festivals, music festivals, and cultural tourism are among the event strategies used by rural communities.
Benefits of Arts-Based Development in Rural Communities

Woods (2010) gives the community regeneration example of Hay-on-Wye in Wales, a rural community with about 1,600 people, specializing in used literature with over 30 used bookstores and 80,000 visitors a year at its annual Hay Festival of Literature and the Arts (see Figure 1).

Figure 1. Hay-on-Wye, Wales. Hay Festival of Literature and the Arts 2016.

Arts tourism may also be the primary means for some small communities to survive, such as Birdsville in Queensland, Australia. According to the Australian Bureau of Statistics (2006), Birdsville has 115 residents with a median age of 36. Established as a toll station for cattle drives in 1881, its population went as high as 300 in the 1890s, dropping to about 50 residents in the 1950s. Fifteen people are still employed in cattle ranching. Birdsville is a remote inland town in the desert, 12 hours away from paved roads and larger populations. However, it does have an airfield, a hotel that serves beer, a bakery that serves curried camel pie, and a very large sand dune called Big Red. The annual Big Red Bash (see Figure 2) is a three-day rock music festival that started in July 2013 with an audience of 600, but has now grown to about 7,000 attendees per year (Sebag-Montefiore, 2016). Revenue from the music festival supports
local residents and allows the town to build infrastructure improvements, such as the geothermal power station built in 2012 that provides drinking water and one-third of the town’s electricity. Between the Big Red Bash and an annual six-day desert marathon race, the events have raised about $600,000 USD for diabetes research since 2013 (Australasian Leisure Management, 2016). A portion of revenues are also donated to the Royal Flying Doctors Service.

Figure 2. The 2016 Big Red Bash music festival in Birdsville, Queensland, Australia.

Although regional economic impacts are often overlooked in studies of rural festivals and events, they can be significant (Gibson & Connell, 2011). The neighboring community of Bedourie, over 5 hours away by car from Birdsville, has a population of 283 (Australian Bureau of Statistics, 2006). In July 2016, the town attracted about 1,500 visitors to its Camel and Pig
Races, developed to take advantage of the crowds returning from the Birdsville Big Red Bash (Morton, 2016).

Arts initiatives in rural communities, including festivals, demonstrate impacts that strengthen collective sense of identity, increase social and civic engagement, build resilience to inequity, improve regional economic and social networks, and promote rural sustainability in terms of revitalization, empowerment, and well-being (e.g., Anwar McHenry, 2011b, 2009; McGranahan, Wojan & Lambert, 2011; Markusen & Johnson, 2006; Trewin, 2005; Markusen & King, 2003; Guetzkow, 2002). However, Gibson and Connell (2011) note that festivals have been criticized since the Worlds’ Fairs began in the nineteenth century. Festival creation can build community while diversifying local economies, but can also expose the contradictions and tensions of local culture as community forces engage with tourism and economic development. Interests of the local elite and civic boosterism may be served while intensifying social exclusion of minorities or other less powerful elements of the community.

Many studies examine the beneficial effects of creative placemaking in urban communities to attract cultural entrepreneurs and stimulate collateral businesses (e.g., Markusen, 2014; Markusen & King, 2003; Florida, 2002; Landry, 2000; Stern & Seifert, 1998), but research on rural places increased in the 2000s (McGranahan, Wojan & Lambert, 2011; Grodach, 2011; Gibson & Connell, 2011, 2004; Anwar McHenry, 2011b, 2009; Gibson, 2010, 2002; Markusen & Schrock, 2006; Psilos & Rapp, 2001; Scott, 2000). These studies have raised awareness of artists and their impacts on rural communities. Working artists, particularly those who are younger or involved in the performing arts, often seek out urban communities to pursue their goals. However, 48% of US artists, as reported in the 2000 Census, are also self-employed and mobile, and many seek the amenities of rural areas (Markusen & Schrock, 2006). Rural areas near large metropolitan centers are also sought out by artists for affordable housing, low costs
of living, natural amenities, and reasonable transportation access to urban environments (Fleming, 2009; Mitchell et al., 2004; Bunting & Mitchell, 2001). White (2010) notes that 24% of cultural and creative employment in the European Union (EU) is located in rural areas with small populations. Recognizing the opportunity, the EU is promoting smart, sustainable, and inclusive growth through creative sector businesses at all regional and municipal scales and stages of development (Naldi et al, 2015; Jakob & Van Heur, 2015; European Commission, 2012), stating that the cultural and creative sector grew faster than the general European economy from 1996-2003 (European Commission, 2012).

While rural communities may have fewer concentrated financial or educational assets compared to urban areas, arts initiatives need not be large to provide community benefit, nor do they need to be initiated by local elites to succeed (Grodach, 2011). In rural areas, raising the visibility of local artists through arts festivals and exhibitions, or expanding artists’ professional networks and capabilities by providing physical arts venues, are initiatives that can be driven by small groups of citizens to build stronger communities (Grodach, 2011; Markusen & Gadwa, 2010). These public venues for the arts can also become informal collaborative and creative free spaces that promote the growth of engaged communities by drawing people from their homes and businesses to interact with their neighbors (Currid, 2007; Boyte, 2004; Farrell, 2001; Oldenburg, 1989).

**Small Groups and Public Arts Venues**

In addition to the value of mixing ideas and people with differing perspectives to develop common understandings, the effect of these public venues are also described in small group theory (Fine, 2012). The link between small groups and social cohesion—to effect social change through community-based arts programs—is a powerful catalyst for social network expansion and developing viable, healthy communities (Guetzkow, 2002; Williams, 1995). A 1994 national
Australian study of 89 community-based arts projects found that the value of these projects and programs is largely evident in terms of social or cultural impact, rather than the expected short-term economic impact. These projects, driven by small groups of citizens engaged with local government, influenced positive outcomes related to social change, social capital, human capital, economic performance, community identity, community development, and increased communication between citizens and local government (Williams, 1995).

Small groups, as meaningful social units, socialize individuals in the value systems and behavioral norms of civil society, using group dynamics to embed citizens in communities, associations, and institutions (Fine, 2012; Harrington & Fine, 2000, Putnam, 2000). Meeting in public venues for social attachment, small groups become the intermediary between the individual and society at large. In this bounded civic space outside the close circle of family and friends, a person’s identity merges with those of interaction partners to form a modified public identity in which responsibilities for community well-being may be shared and collective action can be organized (Boyte, 2004; Walzer, 1992; Back & Polisar, 1983; Arendt, 1972). Norms are established and reinforced through small groups that develop a shared vision and engage in collective action, prompting a stronger sense of community and trust (Mandarano, 2009; Flora & Flora, 2003).

An example of a successful rural arts public venue is the New York Mills Regional Cultural Center (NYMRCC) in Otter Tail County, Minnesota (see Figure 3). Markusen and Johnson (2006) provide a detailed rural case study of the NYMRCC, which I also visited in July 2016. The town of New York Mills has a population of 1,199, no college, little tourism (other than arts), and is about 3.5 hours northwest of Minneapolis. The main employer in town is a boat manufacturer with over 500 employees. Housed in a renovated 1885 building on Main Street, the NYMRCC has a store, a gallery, a large performance/exhibition/classroom space, rooms for
visiting artists, and is adjacent to a bakery and the public library. Since the opening of the non-profit NYMRCC with its gallery in 1990, it has provided multidisciplinary arts programming, including art classes, annual community art festivals, a concert series, business workshops for artists, and an artist’s retreat program.

![New York Mills Regional Cultural Center, Minnesota, July 2016.](image)

The NYMRCC was started by John Davis in the late 1980s. Davis was an artist who moved into the area, got to know his farmer neighbors, and started an artist’s retreat in a refurbished farmhouse with the help of community members. He organized a board of directors reflecting local demographics, half of them over sixty, including some with backgrounds in art, education, and government, and the board convinced the local bank to lend him the money for the renovation in 1990. After initial resistance from the city council, he then formed a partnership with the city to create the regional cultural center under the status of an economic development project. A downtown building was donated, alongside several other abandoned buildings, and renovated by local workers using donations from the city council, community members, and private foundations.
Visiting artists-in-residence volunteer 15 hours a week in the community, typically teaching at the high school or on community arts projects. By providing opportunities such as exhibitions, performances (local and traveling groups), workshops/classes (skills and arts business), artist networking events, retail space, and continually reaching out to broaden its audiences, the NYMRCC has substantial community support. It is also the hub of a burgeoning regional arts network in an area with limited arts opportunities, and is noted for building a sense of community and encouragement for artists and their careers. The population growth to 1,199 was twice the projected estimate by the city council prior to the center’s construction in 1990 (Markusen & Johnson, 2006). By 2015, seventeen new businesses opened and employment increased by 40% (Markusen & Johnson, 2006).

The NYMRCC was so successful in New York Mills that its founder, John Davis, was recruited in 2009 by the town of Lanesboro, Minnesota, two hours south of Minneapolis, to do it all over again. Lanesboro’s population was 754 in 2010 (US Census Bureau, 2010) when Lanesboro Arts was established with its new gallery close to an existing community theater. The gallery became a focal point for over 100 regional artists (see Figure 4). Davis worked with the city council and previously uncoordinated arts groups to create a master plan for the arts in Lanesboro. In 2013, the national organization, ArtPlace America, designated Lanesboro one of the top twelve small towns for the arts based on its concentration of arts organizations, arts businesses, and creative occupations. Others receiving the ArtPlace designation that year included Taos, New Mexico and Marfa, Texas (Combs, 2013). In 2014, the Lanesboro Arts gallery received over 20,000 visitors (Larson, 2014).
Figure 4. Lanesboro Arts gallery and store, Minnesota, July 2016.

While arts initiatives are often associated with the creative sectors of major metro areas, running the gamut from neighborhood galleries to huge performing arts centers, New York Mills and Lanesboro demonstrate that rural arts initiatives need not be large to provide community benefits. As with the NYMRCC, started by an artist with local farmers, rural arts initiatives also do not need to be initiated by local elites to succeed in engaging and developing small communities (Grodach, 2011).

Arts Initiatives and Rural Social Issues

In the rural context, arts-based development may help to address social issues that are common in rural US communities. Youth out-migration continues to exacerbate the brain drain in rural areas, whether due to high unemployment rates and nonstandard work, high poverty rates, or because high-achievers leave town to seek urban college educations, after which they are less likely to return (Hertz et al., 2014; Jensen & Jensen, 2011; McLaughlin & Coleman-Jensen, 2008). In-migration of retirees, young families, and mid-life career changers is
insufficient for many rural communities to withstand natural population loss and out-migration over the long-term (McGranahan, Cromartie & Wojan, 2010; Carr & Kefalas, 2009). Some distressed post-industrial communities in the US, such as Oil City, Pennsylvania and Paducah, Kentucky, have addressed the issue of population loss through artist relocation programs—a targeted approach to creative placemaking that uses incentives such as low-cost housing, zoning for live/work spaces, and below-market rents to attract professional artists (Perritt, 2013).

Beyond the developed countries, arts education and entrepreneurial development initiatives have helped communities in Southeast Asia and Africa recover from civil war and genocide while creating rural employment and social healing. Clammer (2014) provides case studies in Cambodia and Rwanda. In post-Khmer Rouge Cambodia, a master weaver from Japan reintroduced traditional textile arts to village women. These women achieved financial independence through weaving, selling their products through local retail stores and creating local demand for silk farming to supply the looms. In Rwanda, scarred by a recent history of genocide, a local artist started the Ivuka Arts Center Kigali in 2007 as a workshop and gallery for young artists, including women and orphans, to develop their skills and sell their work. The original artists managed to sustain themselves on the earnings from their art, and many of them have become internationally recognized through exhibits in Rwanda, the US, and the UK. As in the Cambodian example, an often overlooked aspect of arts production is that it is rare for it to be a solitary activity. Artists need supplies and intermediaries to create, distribute, and sell their work, generating revenues for others in addition to themselves. Arts programs such as these may also cultivate new economic opportunities for the training and employment of youth, reducing the need for them to move away from their home communities to seek work.
The Somewhat-Creative Class

There may be a temptation among development professionals to support fast-growth entrepreneurship. The idea is that this growth will spill over into more job creation and higher incomes, and this will lead to the development of a well-rounded community with cultural amenities and arts businesses. However, many communities are taking an inverse approach, following Florida’s (2002) creative class concept. Simplified, Florida’s argument is that urban growth performance is tied to the density of creative class workers. Therefore, cities should tailor their environments to attract creatives with plenty of technology, literacy, talent appreciation, and tolerance toward all sexual, religious, and political orientations. Florida doesn’t detail how cities are to do these things, leaving implementation open to interpretation (Grodach, 2013). In his follow-up book, Florida (2004) suggests attracting creatives with a city’s coolness factor by redeveloping historic neighborhoods, investing in the arts, and promoting cultural diversity.

While the creative class term is often taken to mean arts, media, and cultural occupations, these workers are actually lumped in with accountants, managers, and many other mostly white-collar occupations. While the idea of a class seems to indicate a sociological perspective, Florida does not refer to creative class members as a stratified socioeconomic group of people with common interests. As Sacco, Ferilli, and Blessi (2014) observe, urban policy supporting the creative class serves the vested interests of high-income professionals and real estate developers while legitimizing a status quo of social inequality. In a case study of Baltimore, Ponzini and Rossi (2010) describe how creation and support of creative class policies have exasperated social inequalities in the city. Florida (2010) responds to this criticism by agreeing and then saying that more creative class leadership is needed to address this problem.
There are many critics of the creative class/cities approach, noting that Florida’s creative city ideas have had a major influence on urban policies while reinforcing neoliberal agendas, promoting the interests of elite groups, increasing socioeconomic inequalities, and prompting the government-supported gentrification of core urban zones (Markusen, 2014; Grodach, 2013; Ponzini & Rossi, 2010; Long, 2009; Peck, 2005; Gibson & Klocker, 2005). There is also a questionable basis for Florida’s statistical inferences (Sacco, Ferilli & Blessi, 2014; Markusen & Gadwa, 2010; Hoyman & Faricy, 2009; Christophers, 2007; Gibson & Klocker, 2005). In most cases, creative city ideas are implemented as place-marketing tools or as trendy jargon to support traditional economic development strategies that continue as before (Grodach, 2013). As an example, Grodach’s (2013) case study of Austin, Texas cited the vague language of the creative class concept, allowing city staff to get more funding to reinforce pre-existing economic development and marketing programs, although they were unable to secure more arts funding.

Sacco et al (2014) note that the creative class economic impact approach to development fosters the attitude that “culture matters insofar as it attracts resources and talents, not in or by itself” (p.2811). Sacco et al then question whether there is a difference between the creative class concept and a traditional, education-driven, endogenous growth model (Aghion & Howitt, 1998). The creative class concept is also similar to the new economic geography model of city growth with knowledge spillovers (Henderson, 2007; Glaeser et al., 1992). Florida later restated his theory in new economic geography terms, stating that higher densities of creative workers prompt knowledge spillovers resulting in urban growth, making the creative class theory “look more like mainstream economic thinking on urban development” (Sacco et al., 2014, p.2810).

The main value of Florida’s work for smaller communities is that he has helped to popularize the notion of arts-based development. This discourse may build local awareness of what might otherwise effectively be an underground arts economy, and therefore elevate its
importance in civic planning. Despite the issues with creative class definition, statistics, and Florida’s lack of interest in rural areas, an analysis by McGranahan, Wojan and Lambert (2011) found an association between creative class presence in rural counties and rural job growth where natural amenities were plentiful and entrepreneurship was common. Other rural researchers note that creative professionals and entrepreneurs are attracted by scenic, cultural, and lifestyle amenities (McGranahan, Wojan & Lambert, 2011; Waitt & Gibson, 2009; Sopuck, 2003). When conditions are ripe—an entrepreneurial context combined with attractive natural amenities—artists and creative professionals may seek out rural areas that would otherwise remain stagnant or decline (McGranahan, Wojan & Lambert, 2011; Waitt & Gibson, 2009). Communities that are high in artistic amenities may therefore draw more entrepreneurs overall, and culturally support their efforts once they arrive—an important outcome of an arts-based development strategy.

Despite the efforts of urban planners, marketers, and creative class/city proponents, the attraction of creative workers may not happen as planned. Florida (2004) and Landry (2000) both propose that big cities and redeveloped, densely populated, inner-city neighborhoods are the most creative places that will attract the creative class. Waitt and Gibson (2009) provide the example of Wollongong, in New South Wales, Australia. With a sizable population of 280,000 that is one hour’s drive south of Sydney, Wollongong is a hub for many creative industry sectors. Wollongong developed a creative city plan, ten years before Florida or Landry popularized the idea, with the intent to draw creative workers to its post-industrial city core. Redevelopment happened in the urban core in traditional fashion as the marketing campaigns began. This prompted a rise in housing prices, without any new creatives moving in, while street musicians/buskers and other non-permitted outdoor arts activities were removed. Building code changes forced the Wollongong Symphony Orchestra and the Australian Chamber Orchestra to move from the city core to the suburbs. No attempt was made to support creative workers who
were already located in the city. While creative workers leaving overpriced Sydney were drawn to Wollongong over the next fifteen years, they stayed away from the city core and settled in the small rural hamlets at the outer fringes of Wollongong. In these hamlets, housing was cheaper and they could find live/work accommodations between the rainforest and the scenic beaches. The hamlets never made any formal attempt to attract creative workers, and Wollongong never included them in any of their plans because they were not part of the urban core, or later because they lacked creative city traits described by Florida. This type of migration away from creative urban cores like Sydney, with a population over four million, runs counter to the arguments of both Florida and Landry.

In the case of Wollongong, lacking broad support outside the local growth machine, the plan to attract creatives to the city core has failed. As Waitt and Gibson note, while the Wollongong creative city plans happened to correspond with the ideas of Florida and Landry, they were implemented as a traditional and “rather unimaginative urban design enhancement” (p.1232). This problem was exacerbated by policies against anti-social behavior that were not updated to reflect support for a new creative cluster in the city core, forcing street musicians, poetry readers, and other performers to go elsewhere. In addition, older working-class neighborhoods and the steel industry still dominate the city narrative, alongside the university presence, creating conflict in the popular understanding of which industries drive the local economy. With a cultural plan initiated and driven by the local elite, no attempt was ever made to gain support through interaction with the steel and university communities in Wollongong. With its networks of disconnected and uneven power relationships, Wollongong’s creative city plans became more of an urban regeneration fantasy (Waitt & Gibson, 2009).
The Creative Context for Community Change

Establishing, renewing, or maintaining a creative context through social interactions is one of the keys to addressing community transformation. As Simmel (1976 [1918]) observes, the creativity that results from collective cultural efforts exists in both an interdependent and an antagonistic relationship with cultural systems—the institutional forms that are the products of creative dynamism. Cultural forms can only survive as the product of creative inputs, but these are also the forces that change and destroy them. Simmel characterizes the process of cultural change, dependent on cultural creativity, as a cycle between “death and rebirth, rebirth and death” (1976 [1918], p.224). A problem that Simmel (1976 [1918]) identifies is that cultural creativity can develop and evolve faster than the inflexible institutions it creates, leaving the two unsynchronized and resulting in a cultural malaise. The cultural malaise is an interruption in cultural evolution through a lack of social innovation; a type of stagnation where standardization wins out over individuality. When this occurs, the individual breaks away from collective creativity and acts only in their own self-interest, resulting in gradual self-destruction of both the cultural system and individual’s creative relationship to social life. When the creative context of social interaction is weakened or missing, a community stagnates and becomes less capable of adapting to change (Nedelmann, 1991). John Stuart Mills (1987 [1848]) also suggests that the source of creative progress is the interaction of multiple perspectives, where people are in contact with those dissimilar to themselves who think and act in different ways. In the business innovation literature, Frans Johansson (2004) refers to this as the Medici Effect—innovation that happens when disciplines and ideas intersect. Therefore, a lack of interaction degrades the creative context in community and sets it on a path toward destruction.

The engagement of artists with the rest of the community can also introduce new elements of creativity applied to local challenges. This is the principle behind creative placemaking efforts (Markusen & Gadwa, 2010) and other approaches that integrate the arts with daily life (Mayes,
An example of this type of interaction is provided by Fleming (2009) of rural Chatham, North Carolina, with many arts events and activities where artists have engaged in both community and economic development. Artists with metalworking skills, who had originally collaborated on building life-size chess sets from scrap metal, later joined together to start a biodiesel facility for vehicle fuel. The biodiesel plant also serves to draw visitors to the grounds with a sculpture garden and dance performances, providing an open public space for community interaction. This facility is an example of the boundary-crossing and development of sense of belonging inspired by arts activities. These effects are especially notable when they reach out to youth and rural residents, resulting in personal connections to arts and environmental activities (Waitt & Gibson, 2013).

**Gentrification and Commodification**

Causal explanations linking job growth and gentrification to cultural industries in cities also remain under-tested and difficult to compare because most are based on descriptive individual case studies or correlations not based on causal models of arts-based development (Markusen & Gadwa, 2010). Describing Manhattan, Zukin (1982) characterized arts activities as the bringers of gentrification to be exploited by developers, who would then increase housing prices and market pressures to displace those with lower incomes, such as the artists themselves. Stern and Seifert (1998) responded with a detailed study of 94 Philadelphia neighborhoods, finding that those with more artists and participation in the arts experienced more revitalization than those without, and there was no clear evidence of racial or ethnic displacement. Stern and Seifert went on to suggest that cultural investments in places that lack generalized housing market pressures show no signs of gentrification, but do nurture bonding and bridging social capital while achieving both growth and equity goals, increasing incomes, lowering crime rates, and stabilizing diversity (Markusen & Gadwa, 2010; Stern & Seifert, 2010, 1998). Fleming (2009) suggests that rent controls and community land trusts have been successful in
maintaining affordable housing for artists as well as other low-income residents who might otherwise be subject to increasing market pressures, and these can be built into arts-based development strategies from their inception.

Arts-based development initiatives must be accessible to the broadest cross-section of the community from the earliest planning stages to avoid exclusion and reduce obstacles to enhanced sense of community. Excessive commodification of place and cultural goods can have negative socio-economic effects on community, as when there is an over-reliance on cultural tourism development. However, Fleming (2009) notes that creativity and economics are intertwined. Artists must become businesspeople to have a sustainable career in art. A stronger economy means more support for the arts, and creativity promotes a vibrant society. If entrepreneurship can be viewed broadly as launching something new amidst uncertainty, the same skills required to create noteworthy art may translate readily into skills for reinvigorating local economies through the launch of creative ventures.

**Incubation for Arts Businesses and Community Development**

The professionalization and development of working artists is often a haphazard process dependent on networking and luck (Giuffre, 2001), and a university degree does not necessarily mean that an artist has learned how to build a business even though they may have excellent artistic skills. This process can be accelerated by engaged communities that support the development of arts-based businesses, and their own local economies, just as they might with other kinds of entrepreneurs (Markusen & Schrock, 2006; Farrell, 2001).

While largely focused on urban environments, several researchers have elucidated best practices for development of community arts ecosystems as tools for the development of cultural entrepreneurs (Markusen, 2013; Grodach, 2011, 2013; Grogan & Mercer, 1995), including:
• Identification of local artists and community arts organizations
• Sharing of equipment in common spaces (arts centers, incubators)
• Establishment of sustainable artist studio and live/work space
• Provision of exhibition and rehearsal spaces
• Support of local artists through entrepreneurial training, networking, and marketing opportunities to accelerate professionalization and advancement
• Partnering with academic organizations (arts and entrepreneurship faculty)
• Embedding artists in community development strategies

For community arts ecosystems to be effective at community and economic development, they need a focal point organization for coordination, management, and networking contact. Arts business incubators can serve this function, and have also done so in small communities and rural places when government agencies or other non-profits fail to take the initiative. About half of all business incubators are sponsored by government or non-profits with the intent to create jobs, diversity the economy, and expand the tax base (Phillips, 2004). Where urban arts initiatives tend to favor big and flashy projects such as flagship museums and performing arts centers for economic development, urban neighborhoods and other small communities focus on community development (Grodach, 2010; Phillips, 2004). Arts business incubators occupy an advantaged position that satisfies both community and economic development needs.

The earliest business incubators were physical facilities with administrative support services. The National Business Incubator Association (NBIA) identifies the Batavia Industrial Center (BIC), started in 1959, as the first business incubator, meaning that it offered subsidized leased office space along with shared office services, business training, mentoring, and help in securing financing for young businesses that needed a safe place to grow (Erlewine & Gerl, 2004). The NBIA itself was formed in 1985 as a wave of business incubator creation swept
across the US. Developmental business support services (mentoring and training) have become relatively more important than just providing facilities and administrative services (Peters, Rice & Sundarajan, 2004). The first arts business incubator, Arts Bridge, launched its first program in Chicago in 1987 (Gerl, Miller-Upton, & Erlewine, 2000; Kahn, 1995). Arts Bridge is essentially an incubator for nonprofit arts organizations, not individual artists, but it follows the principles of providing developmental support services and shared space to help arts organizations grow.

At the virtual end of the spectrum is Creative Capital, based in New York City, which has no facility but provides an array of business support services and project funding to artists across the country. The goals of such virtual arts organizations are admirable, but without the face-to-face (FTF) interactions of artists in a physical facility, there is little chance to establish a sense of community and maintain it (Cooper, Hamel & Connaughton, 2012; Giuffre, 2001). Exclusively virtual contact can also create barriers to collaborations, mentoring, and the regular contact that supports long-term impact on artists’ careers (Cooper et al., 2012). A lack of local or regional FTF contact among artists and stakeholders does little for community development or the expansion of professional networks and sales channels (Giuffre, 2001). Efforts to form and maintain a community in connection with a physical arts incubator may happen as an afterthought or by accident, but a coordinated community with a physical location can be a significant source of mutual support, reciprocal learning, innovation, and co-creation (Borrup, 2011; Grodach, 2011). For community development, endogenous enterprise development is more sustainable and cost-effective than the traditional economic development strategies of business attraction and retention/expansion (Dabson, Rist, & Schweke, 1996; Lyons & Hamlin, 1991).

There are three broad elements of a well-rounded arts business incubator intended to meet the goals of nurturing arts businesses for community and economic development: 1) Space for
artists to work, exhibit, and perhaps sell while facilitating interaction with other artists and the public; 2) Professional development training and support for business creation and growth; 3) Community—both in terms of sense of community and the synergistic development of professional or collaborative relational ties that promote arts business growth and support networks (Cooper, Hamel & Connaughton, 2012; Bollingtoft & Ulhoi, 2005). The primary goal of any business incubator is to produce successful businesses, meaning that they are financially viable and independent once they leave the program. A drawback to incubators that focus on economic development to the exclusion of community development is that businesses can just graduate and leave the community if they have not developed a critical mass of community ties.

Essig (2014) created a typology of arts incubators, based on organizational objectives and stakeholder theory (Allen & McCluskey, 1990), and determined that there are currently 43 arts incubators in the US:

- 22 “arts incubators” focused on individual artists (15) and arts organizations (3) or both (4) as their primary stakeholders (with a wide variation in their capabilities/services)
- 11 “community development incubators” with communities as their primary stakeholders despite providing services to developing arts businesses
- 7 “commercial incubators” that help arts-based businesses start and grow, with entrepreneurs as their primary stakeholders
- 3 “student venture incubators” with student artists as their primary stakeholders

Summary

In their study of activities that build social capital, Putnam and Feldstein (2003) concluded that the arts represent the most significant forum in America for rebuilding community, offering safe spaces for cultural experiences and community dialogue that make citizen participation fun. Unless it is limited by exclusionary local elites, the communal nature of the arts welcomes
community members, whether as fellow artists or engaged spectators. Despite potential limitations arising from the misuse of power, gentrification, and commodification, arts-based development provides an opportunity for communities to make a creative break from traditional smokestack-chasing modes of development that may no longer be appropriate. One of these tools for creative community support is the arts business incubator, aiming to build creative businesses and a local creative context that improves quality of life for local residents.

Having established context for understanding arts-based community and economic development and its potential for social change, I review research on community embeddedness in the next section. Both structural and relational embeddedness, defined below, can be viewed as mechanisms for mobilizing collective action. They also provide a framework for understanding the process and activities needed to engage local resources in support of new community ventures.

EMBEDDEDNESS

A community and its networks of relations create a frame for social action, resource exchange, agency, and development. This frame, the community context, created through a history of social interactions and processes, has a direct effect on local perceptions of new opportunities or programs, and this can be positive, negative, or neutral. Granovetter (1985) observed that actors are embedded in ongoing systems of social relations that shape behavior. The social embeddedness of individual actors, such as entrepreneurs, and their congruency with the structure of local society, determines their ability to draw on social and economic resources (Jack & Anderson, 2002). Resources could include financial capital, facilities, marketing, status, referrals, labor, ideas, and advice (Ozdemir et al., 2016). To phrase it another way, the social community context shapes entrepreneurial outcomes, and embedding is the mechanism that allows an entrepreneur to become part of the local social structure (Jack &
Embeddedness in a positive community context helps an actor to identify social resources that can support a new business (Jack & Anderson, 2002; Hansen, 1995), program, or idea. However, a negative community context can also make overembeddedness a liability, as when the local society constrains an actor’s behavior and takes precedence over economic imperatives (Uzzi, 1997). For example, a local elite composed of big business interests might use social control to prevent a competitive entrepreneur from drawing on local social and material resources. This is discussed further later in this chapter.

Bourdieu’s (1984) habitus is a related concept, in which group culture, beliefs, behavioral norms, and socialized perceptions of reality motivate actions that reflect and reproduce social structure, including power, that limit or enhance an individual’s life chances. These elements of habitus share similarities to the concept of relational embeddedness, which will be described in more detail in the following section. An embeddedness perspective examines networks of relationships to understand action informed by the motives and interests of individual actors. As Granovetter (1985) said in his attempt to differentiate between economic and sociological views of behavior, “most behavior is closely embedded in networks of interpersonal relations” (p.504). Granovetter states that social ties can either facilitate or impede economic exchange, and that economic exchange is embedded in social relations, using the context of interfirm networks as an example. This view is similar to that of Polanyi (1957), who described the social structure of modern markets using the concept of embeddedness, noting that economic behavior both influences, and is influenced by, the social structure of relationships. If we consider entrepreneurship as a socioeconomic process embedded in a local context of community (McKeever et al., 2014; Jack & Anderson, 2002), then it extends beyond the economic domain (Watson, 2013; Gartner et al., 2006) as a socially situated process (Cope, 2005; Jack & Anderson, 2002; Fligstein, 2001; Granovetter, 1985) that frames opportunity and the use of resources. As such, the interaction of the embedded entrepreneur with a community
demonstrates the importance of social resources to both support entrepreneurship and to create social change in a community through the entrepreneur’s actions (McKeever et al., 2014; Carsrud & Johnson). In this dissertation, community embeddedness is examined both in terms of structural and relational embeddedness.

**Structural and Relational Embeddedness**

Most of the previous studies of embedding follow Granovetter’s (1985) initial concept and focus on *structural* embeddedness—the configuration and properties of a whole social network, or what Nahapiet and Ghoshal (1998) refer to as the “impersonal configuration of linkages between people or units” (p.244). Structural embeddedness properties include elements such as the presence or absence of ties between actors, or the density of linkages in the network (Simsek et al., 2003; Wasserman & Faust, 1994). The study of structural embeddedness is enhanced through an understanding of context in the network, or *relational* embeddedness (Gilsing & Duysters, 2008; Granovetter, 1992).

Nahapiet and Ghoshal (1998) define relational embeddedness as the quality of personal relationships achieved through a history of personal interactions between pairs of actors (dyads), including the elements of trust, power, reciprocity, and other behavioral norms (Simsek, Lubatkin, & Floyd, 2003; Granovetter, 1992; Coleman, 1990). Frequency of interaction, duration of contact, and the strength of relational ties are key to generating relational embeddedness (Greve et al., 2010). Both structural and relational levels of analysis are required for a fully informed understanding of the how and why of network change resulting from community initiatives, and studies using this type of multi-level analysis of embeddedness remain underdeveloped (Ozdemir, Moran, Zhong, & Bliemel, 2016; Payne, Moore, Griffis, & Autry, 2011; Moran, 2005).
Trust in embeddedness manifests as interpersonal trust in relational embeddedness or as impersonal reputational trust in structural embeddedness (Ozdemir et al., 2016; Raub & Weesie, 1990). Interpersonal trust is when an actor is viewed as trustworthy in a dyadic relationship. Reputational trust is when an actor's behavior is expected to be governed by the mutual norms and reciprocity among their web of local connections.

Cognitive embeddedness, a type of compatibility among actors where common views and frameworks of meaning are shared, has been explored by some researchers (e.g., Simsek et al., 2003; Dequech, 2003; Dacin et al., 1999), and is similar to affinity network analysis in SNA. However, a quantitative analysis of cognitive embeddedness is not necessary in this study, which already includes a qualitative analysis of affinity and shared meaning as it relates to my relational embeddedness findings. My primary focus is on structural and relational embeddedness with SNA to analyze longitudinal change in social structures resulting from a new community venture.

New community ventures—typically nonprofit entities or networks—are embedded in local networks with the intent to develop social wealth (Teasdale, 2010). Community ventures intend to address societal or social welfare problems and opportunities (Montgomery et al., 2012; Vestrum et al., 2010). As in this study, community ventures can include new cultural activities intended to enhance economic, social, and cultural capital (Vestrum et al., 2010; Gursoy et al., 2004; Markusen, 2014; Markusen & Schrock, 2006) while increasing quality of life (Anwar-McHenry, 2009; Haugh, 2007; Gibson, 2002) and creating new job opportunities (Johnstone & Lionais, 2004; Johannisson, 1990). An entrepreneur developing a venture for social change needs to become embedded in the community to access, coordinate, and mobilize local resource holders (Montgomery et al., 2012, Vestrum et al., 2010; Di Domenico et al., 2010). As noted by Vestrum (2014), a new community venture may push the boundaries of local
structures, norms, and resources while changing the role and characteristics of the local community. This also means that local resource holders with goals of their own can influence or alter the activities of a community venture (Morris et al., 2011; Peredo & Chrisman, 2006).

**Managing Embeddedness**

Social ties can be both structurally and relationally embedded, but actors can manage relationships differently based on time constraints to achieve their network goals (Ozdemir et al., 2016). Actors who prefer to build and maintain relationally embedded ties with interpersonal trust must be willing to make the time investment required to maintain such ties. This time investment can limit expansion of their networks. However, personal referrals to new connections can be started and maintained as less time-consuming structural ties if the actor introduces their new contact to an established contact (Ozdemir et al., 2016; Vissa, 2012).

There is a theoretical downside to forming triad relationships out of dyads when an entrepreneur introduces two actors who were formerly not connected. The introduction can reduce the entrepreneur’s relational time investment, but they also lose brokerage power by closing structural holes (Burt, 2002). However, this issue is context-dependent and other researchers argue for increased connectivity to benefit both the proactive entrepreneur and other actors in the network, often referred to as the *tertius iungens* (Latin for “third who joins”) strategy (Obstfeld, 2005). The pros and cons of this argument will be detailed in the *Social Network* section of this chapter. This study examines both structural and relational ties to better understand the embedding process.

As noted by Jack and Anderson (2002), becoming socially embedded in the local context is about more than developing social networks, which will be discussed in the next section. Embeddedness requires an understanding of the local social structure, forging new ties within the structure, and maintaining the structure. For the community entrepreneur, this involves
developing enough contextual knowledge of how business is conducted while performing social actions that increase the credibility of the entrepreneur, thereby extending their capacity to access resources and recognize appropriate opportunities. Entrepreneurial embedding creates a bridge between the economic and social spheres of a community, and a successful process of embedding in a positive community context provides enough information and resources to compensate for environmental constraints that could otherwise present too many obstacles to success (Chell & Baines, 2000). As the social structure is changed through the embeddedness of the entrepreneur, the entrepreneur’s actions are shaped and directed by the social structure (McKeever et al., 2014; Vestrum, 2014; Jack & Anderson, 2002).

Wilkinson (1970, 1991) stated that the process of community development attempts to strengthen local capacity for community action through the improvement of social networks. These improvements are effected through interactional ties while also developing trust relationships that can be leveraged as a social capital resource, as discussed below.

SOCIAL CAPITAL

As a resource that can facilitate or impede action, social capital is a relational element of the social network structure that is being developed by the arts incubator effort. This section looks at the various definitions of social capital, the effects of relational ties that vary in strength, structural power considerations related to social capital, and issues with using the social capital concept. This is not meant to be an exhaustive review of the social capital literature, but more of an overview of the social capital topics that directly relate to this study and an explanation as to why I’m not focused primarily on the multi-level social capital concept for this analysis. After the social capital conceptual space is introduced, the following section will deal more directly with social network concepts and their connection with elements of social capital.
**Social Capital as Resource**

Social capital is a resource that an individual or community can invest in relationships with an expectation of future return, due to bonds of trust and norms of reciprocity, facilitating collective action (Coleman, 1988; Woolcock & Narayan, 1998; Flora, 1998; Putnam, 2000). Social networks, as a part of community structure that enables the exchange of social capital, can also play a role in social capital definitions. Putnam (2000) defines social capital as the "connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them...enabling participants to act more effectively to pursue shared objectives" (p.19). Putnam et al. (1993) refer to these elements of trust, norms, and networks as features of social organization that facilitate coordinated actions for a more efficient society. Flora (1998) describes social capital as the relationships and networks within a social structure where individuals contribute to the common good. Woolcock and Narayan (1998) define social capital as the “norms and networks that enable people to act collectively” (p.226). These definitions tend to follow a pattern of assuming a neutral community environment with clear boundaries where there are common institutions and few social cleavages (Bridger & Alter, 2006; Luloff & Bridger, 2003).

Schafft and Brown (2003) suggest that the traditional understanding of social capital mechanisms tends to ignore context-specific and historically embedded relations of power and privilege (Bourdieu, 1986) while often employing a concept originally intended to explain collective behavior among individuals or small groups (Coleman, 1990) at the aggregate level of communities or regions (e.g., Putnam 2000, 1993; Evans, 1996). Bridger and Alter (2006) go on to state that “social capital is a resource that facilitates action—and that action can be positive or negative” (p.7). Interpersonal networks can generate mutual identity and strong norms that enable collective behavior, but can also create barriers to innovation or different perspectives (Nahapiet & Ghoshal, 1998; Rumbaut, 1997; Portes & Sensenbrenner, 1993).
Social Capital Relationships

Types of relationships affect returns on social capital investments in communities. Levitte (2004, p.46) cites Gittell and Vidal’s (1998) coining of the terms bonding and bridging social capital, where bonding social capital refers to close relationships, such as those between family members or close friends, and bridging social capital refers to relationships between people who do not know each other well. Putnam refers to bonding social capital as sociological superglue (Putnam, 2000, p.23). These concepts are similar to Granovetter’s (1973) ideas of strong ties (bonding social capital) and weak ties (bridging social capital). In Granovetter’s conception of weak ties as social bridges that facilitate information and resource flows, the individual’s active role in linking actors on opposite sides of the bridges is not examined. Again, the original social capital concept is enabled by bounded communities of relative equality where face-to-face interactions occur regularly over a long period of time (Bridger & Alter, 2006; Schafft & Brown, 2003; Flora, 1998; Coleman, 1993). This ideal place with its dense social structure most closely resembles the small agrarian communities of the nineteenth century (Bridger & Alter, 2006).

Trust

The embedding process is shaped by the social capital of a community. As the embedding process shapes social capital, so part of a community entrepreneur’s job is to build an enabling network of trust through the combination of actors and resources from a variety of community segments (Montgomery et al., 2012). To build this trust, Vestrum (2014) notes that some researchers suggest a need for entrepreneurs to be closely tied into community social structures for credibility (Partzsch & Ziegler, 2011; Johannisson, 1990). Less-embedded entrepreneurs with ties outside of the community may have more innovative ideas for social change that can extend local action to broader networks (Somerville & McElwee, 2011; Kalantaridis & Bika, 2006; Svendsen & Svendsen, 2004). Trusted actors are more likely to bring
resources into reciprocal exchange relationships when their willingness to trust is supported through repeated cycles of interaction, mutual exchange, shared risk, and successful fulfillment of expectations (Rousseau, Sitkin, Burt & Camerer, 1998). The development of network trust for social change then becomes something of a balancing act for the entrepreneur. The tradeoff is between linking internal and external structural ties while taking the time to maintain enough frequency of interaction among actors to build or maintain credibility. Credibility is important because it affects the strength of ties, and tie strength is a proxy for trust in this study.

Trust and cooperation are not the same thing, as cooperation can also happen through coercion (Sitkin & Roth, 1993). However, there is a fuzziness in this distinction that makes comparative study of the trust concept difficult, especially between disciplines (Rousseau et al., 1998). There is some agreement that trust involves: 1) a willingness to be vulnerable and 2) positive relational expectations that enable cooperative behavior (Rousseau et al., 1998). However, as summarized by Rousseau et al. (1998), economists consider trust to be a calculation of perceived gains and losses (Williamson, 1993; North, 1990); psychologists focus on emotional response to personal attributes and interpersonal attachment or identification (Tyler, 1990); and sociologists think of trust as a socially embedded property of relationships (Granovetter, 1985) or institutions (Zucker, 1986). Lewicki, McAllister and Bies (1998) observe that trust also means that an actor has an absence of negative intentions balanced against their belief in the positive intentions of another actor.

Social Capital and Power

Referring to much of the literature that only views social capital as a positive resource, Schafft and Brown (2003) state that social capital theory often overlooks the power structures embedded in a community and how power influences the distribution of scarce resources or maintains established structural inequalities. Portes and Landolt (1996) suggest that individual
social capital cannot simply add up to a collective value for social capital, and that an individual claiming some of this resource in a social network will do so at the expense of others. Flora and Flora (2003) note that communities lacking in social capital, where individuals see themselves as isolated or self-reliant, also lack the capacity for change. Social capital can remain locked within interest groups, or specific social networks, and this can impede the development of trust relationships among groups (Bridger & Alter, 2006; Luloff & Bridger, 2003). While participatory community planning is offered as a solution to overcome some of these challenges, structural inequalities and persistent power dynamics can still impede the redistribution of power and influence in the coordination and planning process of new community programs or ventures (Schafft & Brown, 2003; Luloff & Bridger, 2003; Daley & Kettner, 1981).

Embeddedness and the analysis of social networks are the primary foci of this dissertation, along with considerations of how power and social structure either impede or enhance supportive network development or resource flow as a result of the arts incubator planning and implementation process. As such, the social capital concept is less important for this study outside of using some of its elements (trust, in particular) as additional context to inform the analysis of community relationships through social network structures as explained in more detail in the next section.

SOCIAL NETWORKS

The focus of this study relates to the evolution of the planning and implementation network for an arts incubator and the embedding process that enables its development. Social network analysis starts from the structural assumption that individuals interact with other actors in social systems, and that these interactions influence behaviors. Network analysis allows the identification, measurement, and testing of hypotheses regarding the structural and contextual elements of social relationships (Knoke & Yang, 2008; Cross & Parker, 2004). The intent of the
SNA perspective here is to provide a detailed study of relationships that connect the network actors as they evolve over time, but this also provides insight into collaboration and the process of embedding with a community venture. As noted by Granovetter (1973, 1983), even micro-studies of social networks such as this can provide insight into the connections between social structures, processes, and personal experiences, or between the micro- and macro-level of social organization (Clark, 2007).

While there are overlaps in the concepts of social capital and social networks, most of the literature on social networks has focused on “patterns of connection independent of social meaning,” or social structure without the contextual perspective provided by social capital studies (Moody & Paxton, 2009, p.1495). In effect, with some exceptions, social networks have primarily been studied from a structural embeddedness perspective. Most social capital articles, on the other hand, typically consider relationship elements such as trust, norms, reciprocity, and values independent of network structure—essentially a relational embeddedness perspective. When social capital (or some of its elements) and social network concepts have been combined, studies have been more informative, allowing the study of effects on networks moderated by relational content and clarifying the mechanisms that drive outcomes (Felmlee & Faris, 2016; Moody & Paxton, 2009; Baker & Faulkner, 2009; Obstfeld, 2005; Granovetter, 2005; Felmlee, 2001; Podolny & Baron, 1997). As noted earlier in this dissertation, the social capital concept is complex and has been applied in a variety of situations in different ways, emphasizing particular elements of the concept as needed. The term has therefore lost some of its meaning while making it harder to compare studies. In the present work, as described in the Methods chapter, use of the complex social capital term is minimized, preferring instead to identify the pertinent elements of social capital that characterize relational embeddedness, such as trust (tie strength) and behavioral norms such as reciprocity.
Network Density and Structural Holes

Individuals in a group tend to focus on their own activities and interests, creating holes in the flow of information among groups. An absence of connections among groups in a network is what Burt (1992, 2004) refers to as structural holes, and the holes near individuals represent opportunities where unique ties to other individuals or groups could be bridged to promote information exchange. Burt (2004) observed that people specialize within clusters, and integrate via bridges across clusters, noting that “the creative spark, on which serendipity depends, in short, is to see bridges where others see holes” (p.351).

Tie strength is a separate concept from structural holes, but still relates to Burt’s bridges. Tie strength refers to the closeness, or bond strength, of an actor’s relationships, which Granovetter (1992, 1985) later referred to as relational embeddedness. Granovetter’s (1973) concept of weak ties—a form of Putnam’s bridging social capital (as cited in Luloff & Bridger, 2003)—are interpersonal linkages between acquaintances that facilitate collective action across otherwise isolated social network structures. Strong ties are close bonds between individuals in a group that engender mutual trust, social cohesion, group identity, and willingness to engage in collaborative activities (Coleman, 1988; Krackhardt, 1992; Luloff & Bridger, 2003). The presence of weak ties does not automatically infer the presence of structural holes (Capaldo, 2007; Zheng, 2008). Structural holes may also be present when there are strong ties between an actor and some individuals in another group (Burt, 1992).

Barnes (1969) defines density as a measure of interconnection between an individual’s network contacts with one another. Dense or cohesive networks, with few structural holes, represent the potential to build knowledge through repeated interactions and bonds of trust, especially in communities or complex organizations (Ahuja, 2000; Hansen, 1999; Uzzi, 1997; Coleman, 1988). Dense networks make innovative ideas easier to implement, but redundancy
of information flow and path dependencies limit novel idea generation. Granovetter (1973) observed that people tend to cluster in groups with strong within-group ties, and this creates a high level of redundant information flow within the group, so new ideas must come from the weak ties connecting separate groups. In research organizations, larger numbers of strong ties in dense networks weakened creativity related to innovation, while larger numbers of weak ties strengthened innovation (Perry-Smith, 2006).

“Sparse” networks, with many structural holes, generate new ideas, but there is no connection between idea generation and useful implementation of new ideas in these environments (Burt, 2004). Implementation can be difficult because the sparse, unconnected people around structural holes, with their diverse interests and perspectives, are inherently more difficult to coordinate (Obstfeld, 2005). Actors who bridge the holes in social network structures can link those with new ideas to those who can implement them. Actors who perform this function are equipped with alternative perspectives and behaviors through contact with others, providing options that can be synthesized for implementation (Burt, 2004).

There is disagreement in the literature between proponents of dense/cohesive networks versus sparse networks with structural holes, although comparisons between studies can be hard to make due to differing units of analysis. Coleman (1988), for example, favors dense networks to build trust and foster norms of cooperation, while sparse network proponents favor structural holes that expose actors to diverse viewpoints, new ideas, and superior information (Burt, 1992). Dense networks are often favored in the literature when units of analysis larger than the individual are the focus of study, while acknowledging dense network limitations with regard to innovation (Zheng, 2008). Sparse networks can be preferable when new information or power/control is desired, and cohesive networks are favored when actors need to be
mobilized to implement new ideas, although a balance with structural holes is preferable when innovative success is the desired result (Zheng, 2008; Obstfeld, 2005; Adler & Kwon, 2002).

While structural holes represent unique links to individuals or firms that provide superior access to information, they can also create opportunities for individuals or groups to gather power and exert control over connections, limiting information flow (Burt, 1992, 1997). From the sparse network/structural holes viewpoint, the ability to trap novel information and control its distribution is an advantage, as when a firm discovers a partner with new information that it can develop for market advantage (Zheng, 2008; Podolny & Baron, 1997; Burt, 1992; Simmel, 1955 [1897]). Structural holes are most often viewed as beneficial in the literature when individuals are the unit of analysis, but only partially for larger groups (Zheng, 2008). Burt's (1992) discussion of information control benefits around structural holes was based on Simmel's (1955 [1897]) tertius gaudens (Latin “third who benefits”) concept, in which one actor benefits by controlling interactions between two other unconnected parties, thereby altering the social dynamics of what would otherwise be a direct dyadic tie by keeping the two parties separate. Obstfeld (2005) notes that Burt (1992) did not include Simmel's (1955 [1897]) alternative triad strategy, where a third party acts as a non-partisan mediator to link two unconnected parties. Obstfeld (2005) extends this mediator concept with a tertius iungens (“Latin “to join” or “to throw a bridge over a river”) strategy, in which a network actor introduces or facilitates coordination between previously unconnected parties, creating a combination that can lead to innovation. Actors with a tertius iungens strategy are comfortable in both sparse and dense networks as they seek to create new connections.

Within groups, individuals who perform the role of network-bridging information broker tend to be good communicators, and they are more likely to have their ideas carefully considered by the group (Burt, 2004; Obstfeld, 2005). Facilitators of this tertius iungens type are critical
components in developing collaborations and programs while helping to limit the proliferation of knowledge silos and network information loss. These facilitators also build social capital because they create value in the process of integrating new information or thinking into projects (Burt, 2004; Allen, 1977; Katz & Tushman, 1981).

So, considering the arguments related to dense, sparse, or hybrid networks, is there an optimal network structure for innovation and action? While the balance in a hybrid network can be good, the local context may argue for a greater emphasis on cohesion to implement new ideas, or for innovation to break through information redundancies/groupthink. Arguments by Granovetter (1973, 1985), Burt (2004), and Coleman (1988) lead to different conclusions, while later researchers determined that the local context should determine the best network form (Ozdemir et al., 2016; Gilsing & Duysters, 2008; Nieto & Santamaria, 2007; Hagedoorn & Duysters, 2002; Ahuja, 2000; Kogut, 2000). Much of the earlier research focused on network configuration aspects (e.g., Wasserman & Faust, 1994; Knoke & Kulinski, 1982) tied to structural embeddedness without the social context, or relational embeddedness. More recent network researchers have considered the relational context, realizing that place and community can either enable or constrain opportunities (McKeever et al., 2014). The entrepreneurship literature used to have a similar blind spot in the belief that entrepreneurs accepted the local context as given (Welter, 2011), rather than examining how social resources and relational bonds impact community ventures. The role of community in entrepreneurship has only recently been considered important, and has therefore not been well studied (McKeever et al., 2014; Lyons, Alter, Audretsch, & Augustine, 2012).

**Power in Networks**

The concept of power can mean the ability to act, or influence others to act or choose inaction (Brennan & Israel, 2008; Fisher & Sonn, 2007). Power in social networks may be
viewed as a dyadic, relational property or from a structural perspective describing the entire network. As a relational property, an actor has power because they can dominate others, although this may simply manifest as control over information flow or relational ties to maintain a controlling brokerage role. In this relational sense, power comes from being connected to those who are powerless. This aligns with the perspective that power is derived from dependent relationships and is inversely related to the number of alternative relationships available to pursue goals (Marsden, 1983; Emerson, 1962). As a structural property of the network, power is a pattern of relations and the amount of power in a social structure also varies by the density/cohesion of relational ties. As noted by Hanneman and Riddle (2005), a low-density, sparse network is too loosely connected for power to be exerted, but the opposite is true of high-density networks. While two comparable networks might have the same amount of power, it can be equally distributed across the structure in one, but not the other. For example, degree centrality, the most commonly used structural network measure, is a simplistic indicator for network power because an actor who has many ties may have access to more network resources and information through alternate routes, reducing dependency on particular actors and giving them a higher potential for power (Hanneman & Riddle, 2005; Burt, 1994; Freeman, 1977). Actors with high degree centrality are often deal-makers in exchanges with others, and are often in good positions to be facilitators. However, actors are not equally important or powerful just because they have the same degree (Cook et al, 1983). The Bonacich modification of the Freeman degree centrality approach argues that centrality is a function of how many connections an actor has, and how many connections the actors in the neighborhood have (Bonacich, 1987; Hanneman & Riddle, 2005; Freeman, 1977). In this case, an actor with high degree centrality is more central when connected to actors in the local neighborhood who have more connections themselves—a power by association or “knowing the right people”
effect. The same actor is more powerful if they are connected to local actors who have fewer connections—a type of “big fish in a small pond” effect.

The exercise of pluralist power is the basis for collective civic engagement and democracy, where power is dispersed and diluted across community interests (Brennan & Israel, 2008; Israel & Beaulieu, 1990; Dahl, 1961). In SNA terms, pluralist power is more effective in a high-density collective unless controlling broker personalities dominate the collective. Increasing community interaction and communication through planning for sustainable action is a primary tool for building collective agency (Brennan, 2007; Varley & Curtin, 2006). Elitist power is concentrated in a small group that is separate from the average class of citizen, typically due to wealth, prestige, or authority, and can often set the local agenda (Gaventa, 2008; Gallardo & Stein, 2007; Beaver & Cohen, 2004; Molotch, 1976). As with pluralism, elitist power is hard to exercise in a sparse network with a low density of relational ties. The control of elite groups can be overcome through collective mobilization (pluralism) and capacity/relational tie building that harnesses dispersed power in the community (Brennan & Israel, 2008; Brennan, 2007; Gaventa, 1980). This development of collective agency to obtain power also promotes community well-being—development of the community (Flora, 2003; Summers, 1986; Kaufman, 1959). In an organized community, elites are less able to exercise power and less likely to dominate through inaction (Brennan & Israel, 2008). SNA measures of centrality and density/cohesion, along with more refined measures such as eigenvectors and clustering coefficients, are used to detect relational patterns of power in this study. These SNA measures are explained in more detail in Chapter 3 (Methodology) and Chapter 5 (Structural Embeddedness Results) sections.

Knowledge is path dependent, and can be a source of innovation or a barrier to it or bad in the hands of powerful actors (Carlile, 2002). Novel ideas required for innovation conflict with the
path-dependent nature of common knowledge, limiting network information flow for knowledge sharing (Carlile, 2002; Brown & Duguid, 2001). In effect, boundaries are established between disciplines or specializations, and working across these boundaries is necessary to create and maintain innovative ideas (Brown & Duguid, 2001; Leonard-Barton, 1995). Common knowledge can be beneficial for a quick decision in a knowledge domain of low complexity and little innovation. However, the opposite can also be true, such that the path-dependent nature of knowledge has negative impacts when it is unable to deal with novelty (Carlile & Rebentisch, 2003; Hargadon & Sutton, 1997). When a powerful actor applies common knowledge to deal with a novel situation, they can reinforce their own power while limiting the capacity of other actors to innovate. Powerful actors who are overembedded in a social structure of sufficient density can therefore limit the development of new ideas or programs through the use of path-dependent knowledge. Collective mobilization of community power is then necessary to overcome this exercise of elitist power (Brennan & Israel, 2008).

The concepts of tie strength, density, structural holes, and power are all relevant aspects of measurable network theory relevant to the examination of social structures and embeddedness in this dissertation. Should the network under examination become large enough, “small-world” structures could start to appear in the analysis that have special properties as described below.

**Small Worlds**

As used here, a network structure with high density and strong ties in a local group, combined with weak bridging ties to other clusters, is a “small-world network” (Zheng, 2008; Fleming & Marx, 2006; Uzzi & Spiro, 2005, Watts, 1998). Integrating the research on tie strength/dense networks and structural holes/sparse networks, small-world networks are shortcut paths linking cluster elements that can develop into effective ecosystems for entrepreneurial and community development due to their ability to generate or synthesize new
ideas while also having the capacity to act on them. Small-world networks demonstrate the important role of facilitators in creating weak bridging ties between groups to increase innovation (Burt, 2004; Uzzi & Spiro, 2005; Fleming & Marx, 2006; Zheng, 2008). Small-world networks can also shape behaviors through connectivity and social cohesion, allowing creative material to circulate between clusters as linking actors gain credibility through repeated contact, creating the trust and risk-tolerance necessary to accelerate the implementation of novel ideas (Uzzi & Spiro, 2005; Newman, 2001; Watts, 1999; Granovetter, 1973). However, as discussed earlier in relation to network density, too many embedded ties in a local network can be good to get things done, but can also be a problem. Uzzi & Spiro (2005) suggest that there is a point of diminishing returns at which point intense connectivity among groups limits the pool of novel material that can be passed between them. The homogenizing effect of these high-frequency embedded ties can also lead teams or groups of collaborators to overlook inconsistencies in their thinking due to path dependencies and behavioral norms, reducing the flow of novel information (Uzzi & Spiro, 2005; Kuhn, 1970).

In 1958, a political scientist (Pool) and a mathematician (Kochen) collaborated on a structural mathematical model of social tie formation, deriving estimates of path length distribution between contacts in a social network (Schnettler, 2009; Watts, 1999; Pool & Kochen, 1978). The interdisciplinary collaboration by Pool and Kochen had started with observations that friends in high places could be used to gain favors, and that it was a common occurrence for two strangers to meet and then learn that they shared a common acquaintance, thereby giving the small-world phenomenon its name (Pool & Kochen, 1978). Over time, references to this phenomenon were generalized to mean a structure of direct and indirect contacts through which individuals experience a variety of social processes (Schnettler, 2009; Kochen, 1989). Although the 1958 paper by Pool and Kochen was widely circulated, they did not publish their conclusions until 1978 (Watts, 1999; Pool & Kochen, 1978). In the meantime,
social psychologist Stanley Milgram picked up the small-world problem and developed a method to test the idea, now known as the "small-world approach," stating that two randomly selected individuals, almost anywhere in the world, can be contacted through a chain of no more than six intermediaries (Milgram, 1967; Watts, 1999). This phenomenon was popularized in a Broadway play and movie by Guare, *Six Degrees of Separation* (Watts, 1999; Guare, 1990). In 2002, Kleinfeld reviewed Milgram’s original research materials in the Yale archives and noted that many of Milgram’s chain-letter experiment results were never reported, such as low experiment completion rates, low participation rates, and sample bias that favored high-income individuals with excellent social connections (Kleinfeld, 2002; Schnettler, 2009).

Watts and Strogatz (1998) presented a new approach to formal modeling of social networks, demonstrating how the small-world phenomenon might operate, that inspired many articles on the small-world problem and a focus on the structure and function of complex networks in contexts ranging from computer science to biology, neuroscience, and the social sciences (Schnettler, 2009; Kleinfeld, 2002; Watts, 1999). The Watts and Strogatz (1998) model also made sense of some of Milgram’s experimental results related to high failure rates in passing a message between two random people through intermediaries in a small-world chain, acknowledging that it can be hard for individuals to find personal connections to a chosen contact target (Kleinfeld, 2002; Watts, 1999). Milgram (1967) also noted that social distance, rather than physical distance, seemed to be the main barrier to social communication. From an embeddedness perspective, this differentiation becomes more apparent. Along similar lines, Crossley (2008) stated that proximity in small worlds reflects social configurations. Crossley noted that he was acquainted with sociologists from all over the world, but did not know any of the chemists working in the neighboring building on campus, primarily because his interests did not intersect with theirs. As discussed previously in reference to social network studies, there is criticism that small-world analyses based solely on mathematical network models tend to
overlook sociological factors. These factors include meaning in social communications, time and space considerations that effect social organization, message distortion, and how technology can modify relationships (Crossley, 2005; Moody & Paxton, 2009).

The terms, “small-world effect” and “small-world network” refer to different properties of complex networks. The small-world effect refers to the observation that most pairs of vertices, or nodes, in most networks can be connected by a short path through the network (Newman, 2003). Watts and Strogatz referred to “small-world networks” as a class of networks that share high-density clusters and short average geodesics (Watts, 1999; Watts & Strogatz, 1998)—with a geodesic being the shortest path between two actors—so small-world networks are a type of network demonstrating the small-world effect, a common property of real social networks (Schnettler, 2009). In a small-world network, locally dense clusters of cohesive internal ties are linked by occasional bridging ties that reduce social distance. As noted by Granovetter (1973), strong ties are unlikely to link novel sources of information, which is why innovation depends on weak bridging ties to other clusters. Any clusters that are isolated, or that have plentiful bridging connections among sparse elements of a network, such as to relatively isolated inventors, do not exhibit small-world structure (Fleming & Marx, 2006). These concepts and their relation to bridging ties are discussed further in Chapter 5 (Structural Embeddedness Results).

This section has considered the aspects of social network theory that are most useful in measuring network impact from the arts incubator initiative as well as structural and relational influences on the community embedding process.

SUMMARY

As discussed in this literature review, the theoretical and conceptual underpinnings of this study form a basis for exploration into social interaction mechanisms and network influences on
community behaviors, particularly with regard to rural entrepreneurship and arts-based development. Table 1 below summarizes the main points from this literature review.

Table 1. Literature Analysis Summary

<table>
<thead>
<tr>
<th>Summary Analysis</th>
<th>Concept</th>
<th>Reference Examples</th>
<th>Application to Study</th>
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<tr>
<td><strong>ARTS-BASED COMMUNITY DEVELOPMENT</strong></td>
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<tr>
<td>1</td>
<td>Arts cited to stimulate local cultural assets, improve quality of life, attract jobs, tourists, new residents. Prior research main focus urban areas; more attention to rural in 2000s.</td>
<td>Arts Benefit Rural Places</td>
<td>Markusen, 2014; Markusen et al., 2013; Pearn, 2007; Markusen &amp; Schrock, 2006; Mills &amp; Brown, 2004; Gibson, 2002; Guetzkow, 2002; Florida, 2002; Landry, 2000</td>
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<td>2</td>
<td>Arts initiatives, including festivals, strengthen collective sense of identity, increase social and civic engagement, build resilience to inequity, improve regional economic and social networks, and promote rural sustainability in terms of revitalization, empowerment, and well-being. However, festivals may serve elite interests and civic boosterism, increasing social exclusion.</td>
<td>Arts Benefit Rural Places</td>
<td>Anwar McHenry, 2011b, 2009; McGranahan, Wojan &amp; Lambert, 2011; Markusen &amp; Johnson, 2006; Trewin, 2005; Markusen &amp; King, 2003; Guetzkow, 2002; Gibson &amp; Connell, 2011</td>
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<td>3</td>
<td>Artists favor rural areas for affordable housing, low cost of living, natural and lifestyle amenities, reasonable access to urban areas.</td>
<td>Arts Benefit Rural Places</td>
<td>McGranahan, Wojan &amp; Lambert, 2011; Waitt &amp; Gibson, 2009; Fleming, 2009; Mitchell et al., 2004; Bunting &amp; Mitchell, 2001</td>
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<td>4</td>
<td>Despite more limited financial assets than urban areas, rural arts initiatives can be small and beneficial to community, particularly when driven by small groups of non-elite citizens. Small groups promote cohesion and network expansion.</td>
<td>Small Group Theory</td>
<td>Fine, 2012; Grodach, 2011; Markusen &amp; Gadwa, 2010; Guetzkow, 2002; Harrington &amp; Fine, 2000; Putnam, 2000; Williams, 1995</td>
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<td>5</td>
<td>Norms are established and reinforced through small groups developing shared vision and engaging in collective action, prompting stronger sense of community and trust. Individual identity merges with group identity enabling collective action.</td>
<td>Small Group Theory</td>
<td>Mandarano, 2009; Flora &amp; Flora, 2003; Boyte, 2004; Walzer, 1992; Back &amp; Polsar, 1983; Arendt, 1972</td>
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<td>6</td>
<td>Public venues for the arts can be informal collaborative and creative free spaces promoting growth of civic engagement by drawing people from their homes and businesses to interact with neighbors.</td>
<td>Public Venue Advantages</td>
<td>Currid, 2007; Markusen &amp; Johnson, 2006; Boyte, 2004; Farrell, 2001; Oldenburg, 1989</td>
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<td>Page</td>
<td>Florida argues that urban growth performance tied to density of creative class workers that cities should attract with cultural investments, historic redevelopment, diversity. Critics note poor statistical inferences of Florida work and that creative class approach serves growth machine interests, increases social inequalities, reinforces neoliberal agendas, gentrification, all urban perspective. Appears to restate “new economic geography” concept.</td>
<td>Support for arts incubator as community development platform</td>
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<td>8</td>
<td>Engagement of artists with community, including youth, can introduce new creative solutions to local challenges. This is principle behind creative placemaking efforts and other approaches integrating arts with daily life. Without creative interaction, community decays.</td>
<td>Creative Community Change</td>
<td>Support for arts incubator as community development platform</td>
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<td>9</td>
<td>Some research cites arts development as causing gentrification in urban cores, while others disagree. Causality is unclear, difficult to compare studies, no causal models test arts-based development. More evidence suggests cultural investments increase social capital, achieve growth and equity goals, lower crime rates, and stabilize diversity.</td>
<td>Gentrification &amp; Commodification</td>
<td>Support for arts incubator as community development platform</td>
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<td>10</td>
<td>Arts incubators and coordinated arts ecosystem investments to support cultural entrepreneurs accelerate professionalization of artists and improve local economies. Arts incubators satisfy both economic and community development needs. Physical facilities for FTF contact best for career development, networking, and sense of community.</td>
<td>Arts &amp; Community Incubation</td>
<td>Support for arts incubator as community development platform</td>
</tr>
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<td>11</td>
<td>Embeddedness of social entrepreneurs determines accessibility to social and economic resources. Overembeddedness a liability constraining behavior and can block entrepreneur access to resources.</td>
<td>Embeddedness</td>
<td>Theoretical framework for research questions</td>
</tr>
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<td>12</td>
<td>Study of structural embeddedness (network configuration) is enhanced through an understanding of context in the network, or relational embeddedness (dyadic personal relationship elements).</td>
<td>Embeddedness</td>
<td>Theoretical framework for research questions</td>
</tr>
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<td>Page</td>
<td>Studies combining structural and relational analysis to understand how and why of network change remain underdeveloped.</td>
<td>Embeddedness</td>
<td>Ozdemir et al., 2016; Payne et al., 2011; Moran, 2005</td>
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<td>14</td>
<td>Frequency of interaction, duration of contact, and strength of relational ties key to generating relational embeddedness. These affect behavioral norms trust, reciprocity, power.</td>
<td>Relational Embeddedness</td>
<td>Greve et al., 2010; Simsek et al., 2003; Granovetter, 1992; Coleman, 1990;</td>
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<td>15</td>
<td>Trust in embeddedness manifests as interpersonal trust in relational embeddedness or as impersonal reputational trust in structural embeddedness.</td>
<td>Trust &amp; Embeddedness</td>
<td>Ozdemir et al., 2016; Raub &amp; Weesie, 1990</td>
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<td>16</td>
<td>Community ventures, such as cultural nonprofits or networks, develop social wealth, economic and cultural capital, increase quality of life, and create jobs.</td>
<td>Embedding Community Ventures</td>
<td>Markusen, 2014; Vestrum, 2014; Montgomery et al., 2012; Vestrum et al., 2010; Teasdale, 2010; Anwar-McHenry, 2009; Haugh, 2007; Gursoy et al., 2004;</td>
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<td>17</td>
<td>Social entrepreneurs need community embeddedness to access, coordinate, mobilize resource holders. Entrepreneurs bridge social and economic spheres of community, and successful network embedding compensates for environmental obstacles to goals.</td>
<td>Embedding Community Ventures</td>
<td>Montgomery et al., 2012, Vestrum et al., 2010; Di Domenico et al., 2010; Jack &amp; Anderson, 2002; Chell &amp; Baines, 2000, Wilkinson, 1991</td>
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<td>18</td>
<td>New community venture may push boundaries of local structures, norms, and resources while changing role and characteristics of local community. Local resource holders with goals of their own can influence or alter activities of a community venture.</td>
<td>Embedding Community Ventures</td>
<td>Vestrum, 2014; McKeever et al., 2014; Morris et al., 2011; Peredo &amp; Chrisman, 2006; Jack &amp; Anderson, 2002</td>
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<td>19</td>
<td>Actors can manage relationships differently based on time constraints to achieve network goals. Forming triad relationships out of dyads reduces entrepreneur time investment, but also reduces brokerage power by closing structural holes. Other researchers argue for increased connectivity/facilitation for community ventures/social entrepreneurs.</td>
<td>Managing Embeddedness</td>
<td>Ozdemir et al., 2016; Vissa, 2012; Obstfeld, 2005; Burt, 2002</td>
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<td>20</td>
<td>Social capital is resource that individual or community can invest in relationships with expectation of future return, due to bonds of trust and norms of reciprocity, facilitating collective action (positive or negative). Also arises from social networks for community benefit.</td>
<td>Social Capital as Resource</td>
<td>Luloff &amp; Bridger, 2003; Putnam, 2000; Coleman, 1988; Woolcock &amp; Narayan, 1998; Flora, 1998; Putnam et al., 1993</td>
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<td>21</td>
<td>Traditional understanding of social capital mechanisms ignores context-specific and historically embedded relations of power and privilege while often employing a concept originally intended to explain collective behavior among individuals or small groups at the aggregate level of communities or regions. Assumes neutral community environment with clear boundaries, common institutions, and few social cleavages.</td>
<td>Concept Limitations</td>
<td>Bridger &amp; Alter, 2006; Schafft &amp; Brown, 2003; Putnam, 2000, 1993; Evans, 1996; Coleman, 1990; Bourdieu, 1986</td>
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<td>22</td>
<td>Interpersonal networks generate mutual identity and strong norms enabling collective behavior, but can create barriers to innovation or different perspectives.</td>
<td>Concept Limitations</td>
<td>Nahapiet &amp; Ghoshal, 1998; Rumbaut, 1997; Portes &amp; Sensenbrenner, 1993</td>
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<td>23</td>
<td>Bonding social capital refers to close relationships; bridging social capital refers to relationships between people who do not know each other well. Similar to strong ties (bonding) and weak ties (bridging).</td>
<td>Relationships</td>
<td>Putnam, 2000; Gittell &amp; Vidal, 1998; Granovetter, 1973</td>
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<td>24</td>
<td>Weak ties facilitate information and resource flows, but Granovetter did not examine active role of individual in bridging actors.</td>
<td>Relationships</td>
<td>Granovetter, 1973</td>
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<td>25</td>
<td>Entrepreneur needs to build credibility and an enabling trust network through combination of actors and resources from various community segments.</td>
<td>Trust &amp; Reciprocity</td>
<td>Vestrum, 2014; Montgomery et al., 2012; Partzsch &amp; Ziegler, 2011; Johannisson, 1990</td>
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<td>26</td>
<td>Trusted actors are more likely to bring resources into reciprocal exchange relationships when willingness to trust is supported through repeated cycles of interaction, mutual exchange, shared risk, and successful fulfillment of expectations.</td>
<td>Trust &amp; Reciprocity</td>
<td>Rousseau, Sitkin, Burt &amp; Camerer, 1998</td>
</tr>
<tr>
<td>27</td>
<td>Economists consider trust a calculation of perceived gains and losses; psychologists focus on emotional response to personal attributes and interpersonal attachment or identification; sociologists think of trust as a socially embedded property of relationships or institutions.</td>
<td>Trust &amp; Reciprocity</td>
<td>Rousseau et al., 1998; Williamson, 1993; North, 1990; Tyler, 1990; Zucker, 1986; Granovetter, 1985</td>
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</table>

**SOCIAL NETWORKS**

| 28 | Most social networks studies focus on patterns of social structure without the context provided by social capital studies—a structural embeddedness perspective. Most social capital studies focus on relationship norms, trust, reciprocity, values independent of network structure—a relational embeddedness perspective. Combining both clarifies mechanisms that drive outcomes. | Network/Social Capital Concept Overlaps | Felmlee & Faris, 2016; Moody & Paxton, 2009; Baker & Faulkner, 2009; Obstfeld, 2005; Granovetter, 2005; Felmlee, 2001; Podolny & Baron, 1997 | Theoretical basis for network concept application |
| 29 | Structural holes are absence of connections among network groups, and holes near individuals are bridging opportunities for novel information. | Structural Holes | Burt, 2004, 1992 | Theoretical basis for network concept application |
| 30 | Tie strength refers to the closeness, or bond strength, of an actor’s relationships, which Granovetter later referred to as relational embeddedness. Weak ties facilitate action among acquaintances, strong ties among closely bonded actors engender trust, cohesion, group identity, collaboration | Tie Strength | Luloff & Bridger, 2003; Krackhardt, 1992; Granovetter, 1992, 1985, 1973; Coleman, 1988 | Theoretical basis for network concept application |
| 31 | Dense or cohesive networks, with few structural holes, represent potential to build knowledge through repeated interactions and bonds of trust, especially in communities. Dense networks good for implementing ideas, but limit novel information flow and create path dependencies. | Density (Cohesion) | Ahuja, 2000; Hansen, 1999; Uzzi, 1997; Coleman, 1988; Granovetter, 1973 | Theoretical basis for network concept application |
| 32 | Sparse networks with many structural holes generate ideas, but need links to cohesive groups to implement. Sparse actors hard to coordinate. Disagreement in literature between cohesive network proponents vs. sparse networks with structural holes over which is better, although comparisons between studies hard due to differing units of analysis. | Sparse & Cohesive Network Differences | Obstfeld, 2005; Burt, 2004 | Theoretical basis for network concept application |
| 33 | Brokers gather power by controlling interactions that provide information and access to resources. Facilitators have the same potential control, but give up power by coordinating introductions between previously unconnected actors. | Facilitators, Brokers, and Information Flow | Zheng, 2008; Obstfeld, 2005; Burt, 2004, 1997, 1992; Podolny & Baron, 1997; Katz & Tushman, 1981; Simmel, 1897 | Theoretical basis for network concept application |
| 34 | Power can mean the ability to act, or influence others to act or choose inaction. As a structural property of the network, power is a pattern of relations and amount of power in a social structure varies by the density/cohesion of relational ties. A low-density, sparse network is too loosely connected for power to be exerted, but opposite is true of high-density networks. | Power in Networks | Hanneman & Riddle, 2005; Brennan & Israel, 2008; Fisher & Sonn, 2007; | Theoretical basis for network concept application |
| 35 | Degree centrality is a simplistic indicator for network power because an actor who has many ties may have access to more network resources and information, reducing dependency on particular actors. Bonacich argues that actors are more powerful when connected to local actors with fewer connections who are dependent on them. | Power in Networks | Hanneman & Riddle, 2005; Burt, 1994; Bonacich, 1987; Freeman, 1977 | Theoretical basis for network concept application |
| 36 | A network structure with high density, short paths, and strong ties in a local group, combined with weak bridging ties to other clusters, is a small-world network; a shortcut to reduced social distance, increased cohesion, trust, and improved information flow. | Small-World Networks | Zheng, 2008; Fleming & Marx, 2006; Uzzi & Spiro, 2005; Watts, 1998 | Theoretical basis for network concept application |

The concepts I have discussed in this chapter have their limitations or have not been fully explored due to their relative novelty in the research literature. For example, until recently, most of the research on embeddedness has been focused on whole network structural configuration as a proxy for structural embeddedness, rather than the contextual influence of relational embeddedness, and most studies have not delved into network details using the visualization capabilities of SNA that could help clarify the nature of relational interactions and network power. There is also a gap in understanding the process of community embedding at the level of practice (Vestrum, 2014; Jack, 2002). Similarly, the social capital research has largely overlooked structural inequalities and power relationships that limit the usefulness of the concept in the context of individual communities. Social capital research also uses the term at multiple levels of aggregation that confuse interpretation of results and limit comparability or generalizability between studies. Social network research has been limited by its early focus on structural patterns independent of relational content variation, ignoring the complexity of interpersonal interactions that can modify the meaning of network configurations. Local context has often been viewed as a generic background, much as the entrepreneurship literature did until recently. This is a significant limitation because community initiatives are often developed through the creation of new social connections, as well as the knowledge and resources that individuals carry. Broad attempts at managing network processes, without a clear understanding of contextual influences and leverage points within a network structure, can have the negative result of network fragmentation (Balfour & Alter, 2016a; Balfour, 2013; Obstfeld, 2005; Cross & Parker, 2004; Kogut & Zander, 1992; Brown & Duguid, 1991). Studying the planning and
implementation phases of the SOMO arts incubator provides an opportunity to examine the embedding process, the formation of a community social network, and structural changes to the network resulting from the actions of the participants. This allows for a more cohesive analysis of social factors and behaviors that have potential for guiding future community ventures to successful outcomes using arts-based development initiatives, as I am attempting to do in this research.

The following chapter on methodology describes how the investigation into the community embedding process, social network mechanics, and structural influences on the arts incubator initiative will be conducted based on the theories presented here.
CHAPTER 3: METHODOLOGY

INTRODUCTION

This mixed-method case study was conducted to better understand social interaction processes and network influences on community behaviors resulting from the planning and implementation of an arts business incubator used as a community and economic development platform. The quantification of network structure and embeddedness changes, at both the whole network and dyadic levels of interaction, is intended to provide a well-rounded view of community impact and the embedding process resulting from the arts business incubator initiative. The network analysis is informed by qualitative analysis of context provided by key informant interviews, a survey, field observations, and community profiling. The dependent variables in this study are structural embeddedness (for the whole network) and relational embeddedness (for dyadic relationships). The independent variables for structural embeddedness are: cohesion (network density), embeddedness, information flow, and facilitation/brokerage. The independent variables for relational embeddedness are: trust/tie strength and behavioral norms.

Both qualitative and quantitative data analysis techniques are used in this case study. This combination is part of a post-positivist and critical realist approach to triangulating methods for improved understanding of meaning in the findings, and the epistemological assumptions behind this methodology are compatible. Post-positivism rejects the relativist concept that different perspectives are incompatible and that we can never understand others because we each have different experiences and culture (Trochim, 2006). Objectivity is a social phenomenon, rather than an individual characteristic, and bias affects our observations, but we can attempt objectivity through triangulation and peer review of our work. As Bryman (2012) notes, research methods can be viewed as autonomous, and can be combined to take
advantage of the strengths of individual data collection and data-analysis techniques. This mixed-method approach is not intended to favor one method over another, but part of the intent of this research is to develop a means to measure the embedding process through the study of network change, and this requires the use of multiple methods. Mixed-methods research, just like single-method research, must still be appropriate to the research questions, and there is no point to collecting additional data with the idea that more is better, or that one method is better than another.

Although the findings from this research may lead to an interactive tool for guiding the optimal growth of community networks in support of new ventures, the findings were not shared with the members of the network under observation to avoid contamination of data in the ongoing study. Once the research is complete, findings will be shared with the incubator community for additional verification and potential later use in development of the incubator network.

The following section describes the procedures used for this study, including the data-gathering methods: face-to-face interviews, community profiling, ethnographic study, and social network analysis. Triangulation of methods is described, along with procedures used for field protocol, participant selection and recruitment, and participant confidentiality protection. The last section deals with methods used to analyze the collected data, concluding with threats to validity and reliability.

CASE STUDIES

Case study research is concerned with the detailed examination and intensive analysis of a single complex phenomenon, allowing the study of human events and actions in their natural environment (Bryman, 2012; Stake, 1995). A case study is most useful as a method “when: a) ‘how’ or ‘why’ questions are being posed, b) the investigator has little control over events, and c)
the focus is on a contemporary phenomenon within a real-life context” (Yin, 2009, p.2). Although case study results would not typically be the basis for grand inferences, this method helps the researcher understand how interactions occur and evolve while providing a limited empirical basis to explore hypotheses and provide insight into social action and meaning (Bryman, 2012; Yin, 2009). Case studies also provide a foundation for analytical generalizations against current theory while providing a well-rounded examination of a phenomenon that can be distilled to build new theory (Yin, 2009; Stake, 1995).

Case study research is sometimes confused with case study teaching, as with business school cases where study material may be altered to more effectively make a point, which would not be allowed in case study research that requires a balanced presentation of all evidence and analysis (Yin, 2009). Another common criticism of single-case studies has to do with limited external validity since results cannot be generalized to other cases or populations. However, the same might also be said of single quantitative experiments, and proponents of case study research state that the question is not whether study findings can be generalized to a larger population, but how well the researcher generates theory from the findings (Bryman, 2012; Yin, 2009). Bryman (2012) also notes that case studies have been used for both theory generation and theory testing, and that case study findings can often be generalized by comparison to cases by other researchers.

To gain a greater understanding of complex social interactions, case studies increasingly use mixed methods for analysis (Yin, 2009). This flexibility allows case studies to provide for both quantitative and qualitative research strategies—when a qualitative strategy is used, the case study takes an inductive approach to the relationships between theory and research, and a deductive approach is taken when the strategy is quantitative (Bryman, 2012). Maxwell (2013) states that “quantitative researchers tend to be interested in whether and to what extent
variance in x causes variance in y, while qualitative researchers tend to ask how x plays a role in causing y, what the process is that connects x and y” (p.31). Recent research (Miles & Huberman, 1994, as cited in Maxwell, 2013) also supports the idea that qualitative field research is “better than solely quantified approaches at developing explanations of what we call local causality—the actual events and processes that led to specific outcomes” (p.132).

Case Selection

For this case study, the SOMO Village Makery was selected because the author has both an unusual level of access to the study environment and because the Makery is at an early stage of development. Studying the planning and implementation phases of this arts incubator provides an opportunity to examine the embedding process, the formation of a community social network, and structural changes to the network resulting from the actions of this arts initiative. Yin (2009) would classify this case study as a longitudinal case, in the sense that the investigator studies changing conditions of a single case over time. However, this study could also be considered an exemplifying or representative case because it “captures the circumstances and conditions of a commonplace situation” (Yin, 2009, p.48; Bryman, 2013).

The study environment is commonplace in the sense that it is analogous to relational structures and embedding processes of the broader category of organizational planning processes and small business incubators, despite being focused on the development of arts businesses.

PROCEDURES

The following sections break down the process used in performing this mixed-methods case study. The triangulated data-gathering methods used in this study—face-to-face interviews; community profiling; ethnographic study; and social network analysis—will be described, along with the procedures used for field protocol, participant selection and
recruitment, and participant confidentiality protection. The final section deals with techniques used to analyze the collected data.

**Triangulation and Longitudinal Data Collection**

To explore different aspects of the embedding process and network change, four different methods were used—face-to-face interviews; community profiling; ethnographic study; and social network analysis. Triangulation is used to examine a phenomenon from multiple perspectives in the attempt to confirm or contradict evidence and create a more well-rounded analysis (Bryman, 2012). Deacon et al. (1998) promote the use of triangulation as a means to cross-check findings derived from research using both quantitative and qualitative methods. Maxwell (2013) also notes that triangulation reduces the risk of conclusions that reflect only the biases of a single method, while also observing that multiple methods can provide divergent perspectives that create a more complex understanding of a phenomenon. From post-positivist and critical realist perspectives, all measurement and observations are fallible and biased, so objectivity is attempted through triangulation with multiple measures (Carter & Little, 2007; Trochim, 2006).

The longitudinal study of relational network change resulting from the incubator planning process is an important component of this investigation. Data collection for longitudinal analysis came from multiple sources, and this also provided a means to cross-check dates of participation and meetings among network actors. The startup phase occurred during the first four months of 2016 with individual meetings to discuss the larger effort. May 1, 2016, is used as the starting point for comparison of the initial network with the completed network as of May 1, 2017. During the course of the study, dates of initial contacts between actors were recorded in field notes to supplement contact information provided in the survey and face-to-face interviews conducted in May 2016 and May 2017. This approach allowed me to track and
compare progressive changes in both the music and arts subnetworks. Dates of initial contacts between dyads specifically reflect participation in the incubator planning process, whether or not the actors knew each other beforehand. The survey then goes into more detail about the quality and length of these relationships.

**Participant Selection and Recruiting**

A non-probabilistic, purposive sampling approach was used to select “key informants” who were relevant to the research for participation in the face-to-face interviews (Bryman, 2012). Key informants have knowledge about specific characteristics of the population of interest and know more about a community or organization than other potential participants (Payne & Payne, 2005). In social network terms, the informants for this study were selected as part of a “nominalist” strategy, in which a network boundary is defined by imposing a conceptual framework for the purpose of the study (Knoke & Yang, 2008). In this case, participants in the planning and implementation of the arts/music incubator established the network boundary. Participants for the face-to-face interviews were key informants connected with multiple organizations involved in the planning and implementation process. There were approximately 59 participants involved in some way in development of the incubator. A total of 13 research participants (7 male, 6 female) were recruited to participate in the research interviews.

Informant contact was initiated via e-mail or telephone using a simple recruitment script identifying the researcher, the researcher’s connection to Penn State, and a request to participate in an interview related to development of the arts incubator. The request also noted that the interview questions would examine community relationship ties and development interactions that facilitate, or obstruct, information flow and collaboration.
Face-to-Face Interviews

Blumer (1965, p.685) stated that “the analysis of relationships between variables creates a static view of social life that is independent of people’s lives” (as cited in Bryman, 2012, p.179). This is a common criticism of research that is solely focused on the quantitative nature of events, overlooking meaning and content in favor of objectivism. Face-to-face interviews are one type of qualitative data-gathering method that addresses this issue, allowing informants to describe their subjective interpretations of phenomena. Patton (2002) noted that a particular strength of interviewing is in the discovery of things that cannot be observed directly and in exploring alternative explanations of things that can be observed. Research interviews can combine both quantitative and qualitative questions for data collection, and each style of interview has its positive and negative aspects.

Structured interviews use specific closed-ended questions, often with a fixed range of possible answers, delivered in a specific order (the interview schedule) so that all informants receive identical stimuli and their answers can be aggregated for quantitative analysis (Bryman, 2012). This element of standardization helps to reduce error due to question variation, improving measurement validity while also making it easier to process responses for analysis.

Semi-structured interviews use questions in the general form of an interview schedule, but question order can vary, additional questions may be asked, and the questions themselves are open-ended and qualitative in nature (Bryman, 2012). Answers need to be filtered and categorized/coded for analytical comparison, and this process can introduce error due to misinterpretation of responses, variation in response categorization, and interviewer or coder variability if multiple researchers are involved in the process. However, the qualitative data derived from semi-structured interviews provide greater insight into the meaning and content of phenomena, or an understanding of process and how phenomena occur.
Survey Instrument

The research instrument for the face-to-face interviews in this study (see Appendix B) has both structured and semi-structured components using carefully worded questions as a guide for the interviewer. Part 1 is a structured component used to collect basic demographic data, occupation, and length of residence in the area.

Part 2 of the survey instrument is a structured component used to collect both social network data and responses using a Likert-type scale that relates to collaboration, trust, power, and perceptions of co-workers as those who demonstrate social facilitation actions.

Social network data collected in Part 2 protects individual identities of informants and of their social network alters—people identified by the informants as part of their network who may or may not be interviewed as part of this study—through the use of first and last initials in place of full names. As noted by Zheng (2008), this method is often used in studies that measure tie strength, and it depends on the informant’s recall of key contacts. However, informants most easily recall individuals with whom they share positive and frequent interactions, so distant or infrequent contacts may be overlooked. In this study, only ten alters are requested from the informant’s contact network, and this could therefore bias the contact list toward strong ties. When the social network analysis technique used on the data is related to cluster density or to brokerage/facilitation within a network, this is less of an issue, but it may have an effect on measures of tie strength between clusters, potentially overlooking secondary contacts/facilitators that support facilitation. This sampling bias may be mitigated through data collection where informants represent a sample that is broad enough to identify secondary contacts between clusters within the network boundary.

Several questions in Part 2 use a Likert scale of responses. Likert scales are a multiple-indicator, or multiple-item measure, asking informants about their level of agreement with a
statement focused on a certain issue or theme (Bryman, 2012). Variations in this format may measure frequency, as do some of the questions in this study. Multiple-measure indicators such as Likert scales help to reduce misclassification of responses from a single indicator that might, for example, ask only a single question that is too general to assess a concept with multiple aspects (Bryman, 2012). When multiple indicators are used to examine various aspects of a theoretical concept, techniques such as factor analysis can determine whether groups of indicators cluster together, thereby reducing the number of significant variables for analysis through an inductive link between conceptualization and measurement. However, factor analysis is not used in this study due to a sample size that is too small to achieve reliable results, necessitating a deductive approach to theoretical concepts derived from the literature (MacCallum et al., 1999).

Part 3 of the survey instrument is a semi-structured component that asks open-ended questions primarily focused on relational embeddedness, including the role of facilitators/information brokers, power, trust, and behaviors that either support, or are barriers to, the professional development of artists. The intent of this section is to allow informants the latitude to discuss details and examples about “how” collaborations happen within the community, providing context on the nature of dyadic ties affecting relational embeddedness. While some of the questions expand on the relative importance that the informants placed on certain indicators related to collaboration and facilitation in Part 2, other questions in this section help to identify the strength of relational ties, the presence or lack of barriers to development and collaboration, or the nature of trust relationships. Many of these responses will be associated with results from the social network analysis, serving as triangulating indicators of the presence or lack of phenomena important to this study.
Questions 1-3 and 5-7 probe informant perspectives on the nature of local collaborative art networks—including path dependency, reciprocity, and power—while providing context for understanding changes in relationships evident from the network analysis. Questions 2, 3, and 5 also seek to understand restrictions or incentives to new arts collaborations and embeddedness that improve opportunities for contact with novel ideas and resources. Specifically, question 5 seeks to identify barriers to the professional development of local artists. Question 4 asks about informal socialization between the informant and other actors as an indication of trust relationships that can lead to new collaborations.

Interview Process

Prior to the start of the interview, informants were assured that their responses and identities would remain confidential, and their consent to participate in the research project was obtained using a signed informed consent form (IRB Protocol ID# STUDY00004601; included in the Appendix). All informants were at least 18 years old at the time of the interview. Informants were also told that the interview would take about an hour and that they could choose not to answer any question, or could refuse to participate in the study.

All interviews were conducted face-to-face by the principal investigator. Audio recording was done with permission of the informant. Participants were told that the audio recordings would be securely stored and only reviewed by the P.I., with identities coded at the time of transcription to protect their identities.

The evaluative interview procedure suggested by Lincoln and Guba (1985) was used as a guide for the interviews in this study:

1. For the interviews, choose individuals who can provide the most applicable and informational data.
2. Prepare for the interview. The interviewer should choose an appropriate role, decide on level of formality and appropriate dress, and obtain confirmation of the interview appointment.

3. Provide an overview of the nature and purpose of the interview for each participant. This includes getting a signed consent form, obtaining basic demographic data to start the interview with easy questions, and being sensitive to the participant’s perspective of the interview.

4. Pace the interview and make it productive through the use of appropriate questions and prompts.

5. Terminate the interview once the scheduled questions have been asked, repeating the final point made by the participant to gain closure. Participants were thanked to end the session and thank you notes were subsequently mailed to them.

After each interview, I transcribed the informant’s responses from the audio recordings. As Maxwell (2013) suggests, brief notes/memos were taken during and after each interview to remind the interviewer of important observations, nonverbal gestures, or insights generated by the informants. These aids to reflection and analytic insight were included in the coding process at the data analysis stage.

**Community Profile**

The study site is in Rohnert Park, California, adjacent to the communities of Penngrove and Cotati in Sonoma County. To better understand the nature of the environment where the arts incubator is being established, basic quantitative and qualitative information about this location is provided. This includes overview information about socioeconomic characteristics, history, educational, and cultural resources. A basic understanding of the community context will inform
interpretation of the case study results in relation to collaborative relationship development and
cultural support or barriers to arts-based development. Since the arts incubator is housed in part
of a former Hewlett-Packard laboratory campus known as SOMO (Sonoma Mountain) Village, a
description of SOMO and its ownership/operation is also important to the community context
and will be discussed as such. A few critical individuals, identified by their initials, are identified
by function due to their importance in the planning and implementation of the SOMO Village
Makery (arts incubator), and the Music Foundry (music incubator). Descriptions of individuals
are generally given in terms of their network functions to maintain anonymity in this relatively
small network, except where express permission was given to waive anonymity.

Ethnographic Study

Field observations were conducted by the researcher over a sixteen-month period. Field
observations occurred as often as two to three days a week over the last six months of the
study, and handwritten field notes were written up as full field notes within a day of the original
observations. First and last initials were used in place of full names in the notes when
participants were mentioned. No audio recordings were made of these planning meetings.

The field role of the researcher in this closed/non-public setting, was what Bryman (2013)
would refer to as an “overt full member” (p.441), in which the researcher is a full member of the
group being studied, and the group is aware that the member is also a researcher. Due to the
relatively short time frame for the ethnographic portion of this study, a focused approach was
taken to data-gathering, using what some authors have referred to as micro-ethnography
(Wolcott, 1990; Bryman, 2013). This micro-ethnographic approach, intended to supplement the
other qualitative components of this study, is primarily focused on socio-cultural behaviors
related to collaboration, the arts community, and the process of community embedding. The
nascent local interest in developing an arts community and an arts incubator at SOMO evolved
into active program development as this study began, and was therefore an opportune time to observe both discussion and action related to planning and implementation.

Maxwell (2013) notes a validity threat that could come up in relation to ethnographic and other qualitative studies is reactivity, or reflexivity, in which the researcher influences the setting or individuals being studied. Since the P.I. was a regular presence in the planning meetings, mostly as an observer rather than an active participant, the group’s awareness that he was also doing research had a minimal, if any, effect on the behaviors under study. However, Maxwell also says that reactivity is an inescapable influence during interviews, but that it is more important in qualitative research to understand how the interviewer affects the informant and how this affects the validity of inferences drawn from the interview (2013, p.125). Bryman (2012) states that ethnographic studies are sometimes associated with the issue of going native, in which the researcher loses objectivity and takes on the worldview of those being studied. Bryman notes that going native is not inevitable, and that an awareness of the possibility when gathering and interpreting data minimizes the potential for this type of threat.

DATA ANALYSIS

Both qualitative and quantitative data analysis techniques are used in this case study. Qualitative data was analyzed through strategies that categorize and contextualize the available data, including memos written during and after data-gathering to aid reflection and insight (Maxwell, 2013). Descriptive statistics were used to characterize the quantitative data generated from the interviews, which was analyzed with SPSS software. Multiple analytic passes were made through all of the data to ensure completeness and comparison for rival explanations of the results. Within the topic areas of this study, quantitative data were analyzed first to develop details related to the variables of interest, after which the results were analyzed against underlying concepts and potential rival explanations derived from the qualitative data. Findings
from all methods used are triangulated in a blended analysis examining how the results answer the research questions from Chapter 1.

**Qualitative Data Analysis**

As an organizing framework for qualitative data analysis, the five-step procedure suggested by Creswell (1998) was applied to the data gathered from the interviews:

1. Organize the data: Arrange facts about the case in a logical order.
2. Categorize the data: Identify major themes and cluster the data into meaningful groups.
3. Code interpretation: Examine groups of statements for meaning in relationship to the objectives of the study, identifying specific statements that assist interpretation, noting both similarities and differences within the data.
4. Pattern identification: Draw conclusions based on pattern and thematic relationships that emerge from the study data.
5. Synthesis: Conclusions and recommendations are related to the overall context of the study based on data interpretation.

*Atlas.ti* data analysis software was used to arrange the data, identify major themes, code groups of related statements for meaning, and assist with pattern identification. *Atlas.ti* is a type of computer-assisted qualitative data analysis software (CAQDAS) that reduces some of the clerical tasks associated with the manual coding and retrieval of data, although it does not help with decisions about the coding of text or the interpretation of findings. As an example, when interview transcripts were coded for this study, all text sequences related to a particular code, or combination of codes, could be sorted and retrieved together for faster comparison and
analysis. Queries could also be generated to show the co-occurrence of terms or phrases across all of the interview transcripts to search for patterns and thematic relationships.

After an initial reading of the interview transcripts and memos, at which point initial coding and thematic analysis memos were made related to conceptual similarities, the data were ready for categorization through coding. Codes capture meaning in the data. The coding process is intended to “fracture” the data into meaningful chunks that can be rearranged into categories for comparison (Strauss, 1987, p.29, as cited in Maxwell, 2013). An initial sort of the data into organizational categories such as “trust,” or “norms,” would be followed by a second sort into substantive or theoretical categories that relate to the content of an informant’s statement or action (Maxwell, 2013), such as those primarily descriptive of informant concepts or beliefs. Theoretical categories may either be derived from prior theory or from theory developed concurrently with the study data, but they typically represent the researcher’s, rather than the informant’s, concepts (Maxwell, 2013). This type of sorting continues as a means of repeated comparison between the data, theory, and research questions in an effort to gain new insight into the relationships being studied and how they support or conflict with theory.

One drawback to this type of fragmented categorical coding is that it can replace contextual relationships in an original interview with new categories limiting awareness of the relationships described by the informant. Maxwell (2013) suggests connecting strategies that take a more holistic view of the interview material, looking for relationships that connect categories and themes as a step toward building theory. Pure connecting strategies are applied before fragmentation to understand individuals or situations, but cannot be used to build more general theory without categorization. The approach taken in this study seeks to retain contextual ties that might otherwise be lost in the fragmentation and categorizing process. This is done through review of longer segments of transcript from the original interviews, and the frequent use of
analysis memos that retain these connecting links, after each sequential step in categorization has taken place. These memos include narrative summaries, as suggested by Maxwell (2013), containing a condensed analytical reference to both the context and stories described by the informants.

**Quantitative Data Analysis**

Descriptive statistics were used to characterize the quantitative data generated from the interviews. *SPSS* software was used to generate frequency distributions and contingency tables. *Gephi* software was used to perform the computational aspects of social network analysis, explained in more detail below. Graph visualizations were also created using *Gephi*.

Figure 3 is a conceptual diagram of variable relationships within this study. The dependent variables in this study are structural embeddedness (for the whole network) and relational embeddedness (for dyadic relationships). The independent variables for structural embeddedness are: cohesion (network density), embeddedness, information flow, and facilitation/brokerage. The independent variables for relational embeddedness are: trust/tie strength and behavioral norms. The indicators for these independent variables are noted in Table 2. Table 2 complements Figure 5 and further breaks down these conceptual variables into their component indicators, and types of results, based on analyses from both SNA and the quantitative components of the face-to-face interviews.
Figure 5. Conceptual diagram of variable relationships and indicators.
Relational Embeddedness

As used in this study, the relational embeddedness (dyadic) dependent variable is related to the independent variables of trust (tie strength) and behavioral norms, while the structural embeddedness (whole network) dependent variable is related to the independent variables of cohesion (network density), embeddedness, information flow, and facilitation/brokerage (see Figure 5 above and Table 2 below). Trust and behavioral norms, discussed in Chapter 6 (Relational Embeddedness Results), are both multi-indicator measures using data collected from the face-to-face interviews. While SNA is used to analyze most of the quantitative data in this study, the relational embeddedness data are also interpreted using bivariate tests to understand whether statistically significant differences exist between the response means of trust relationship characteristics. Respondents were asked to characterize their relationships with ten individuals they identified as being directly engaged in arts incubator planning and implementation. The “Don’t Know” response is also used as a proxy for a “No Trust” response due to the unlikeliness of its use by respondents, even though they knew that individual identities would remain anonymous. These relational embeddedness characteristics included:

- Level of trust in other actors in relation to frequency of workplace contact
- Level of trust in relation to length of relationship (time known)
- Level of trust in relation to frequency of voluntary social interaction (not related to work)
- Level of trust in relation to perceived interest of other actors in facilitating collaboration
- Level of trust in relation to perceived reliability of other actors

Cross-tabulation was used to determine the frequency of responses for each of these characteristics by level of trust (criterion variable), and a Spearman’s rho correlation coefficient was used to determine if the respondent’s level of trust in the individuals that they identified had
a statistically significant relationship to any of the characteristic predictor variables—contact frequency, time known, social frequency, facilitation, or reliability—at the p < 0.05 level.

With a small sample size, multivariate analysis would not provide meaningful results. For the same reason, factor analysis is not appropriate, as discussed previously, necessitating a deductive approach to theoretical results derived from the literature. Frequency tables are used to display some of the indicators related to facilitation, such as the number of instances that particular actors in the network are identified by others in the face-to-face interviews as demonstrating proactive collaborative behaviors.

Table 2 shows the variable relationships and indicators leading to community embeddedness—broken down in the left column into its two dependent variables of structural and relational embeddedness—within the arts incubator community. The second column refers to the independent variables. The third column refers to the indicators for each independent variable, along with data sources and measures used for each variable (where a source is typically “SNA” for Social Network Analysis measures or P#Q# for data sources based on responses to individual questions in the informant interviews, i.e. P2Q2 refers to Part 2 Question 2 of the interview schedule (see Appendix B). This table also corresponds to Figure 5.
Table 2. Variable relationships and indicators leading to community embeddedness (indep. variable).

<table>
<thead>
<tr>
<th>DEPENDENT VARIABLES</th>
<th>INDEPENDENT VARIABLE</th>
<th>INDICATOR and Source *</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURAL EMBEDDEDNESS (whole network)</td>
<td>Cohesion</td>
<td>Density (whole network): SNA (density, degree centrality, and small world)</td>
</tr>
<tr>
<td></td>
<td>Embeddedness</td>
<td>Embeddedness: SNA (average clustering coefficient)</td>
</tr>
<tr>
<td></td>
<td>Information Flow</td>
<td>Information Flow: SNA (average path length, network diameter, betweenness)</td>
</tr>
<tr>
<td></td>
<td>Facilitation (Brokerage)</td>
<td>Facilitation: SNA (Eigenvector centrality, betweenness)</td>
</tr>
<tr>
<td>RELATIONAL EMBEDDEDNESS (dyadic)</td>
<td>Trust (Tie Strength)</td>
<td>1. Frequency: P2Q1, P2Q2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Time Known: P2Q4</td>
</tr>
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<td></td>
<td></td>
<td>3. Voluntary Socialization: P2Q3, P3Q4</td>
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<td></td>
<td></td>
<td>4. Facilitation: P2Q5, P2Q8, P3Q2</td>
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<td></td>
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<td>5. Reliability: P2Q7</td>
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<tr>
<td></td>
<td>Behavioral Norms</td>
<td>1. Reciprocity: P3Q1, SNA (Density)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Path-Dependency: P3Q2, P3Q3, P3Q5, P3Q6, P3Q7</td>
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<tr>
<td></td>
<td></td>
<td>3. Power: P2Q6, P2Q8, P3Q3, P3Q7, SNA (Eigenvector centrality, betweenness)</td>
</tr>
</tbody>
</table>

* Source is either SNA (Social Network Analysis) or Part #/Question # from interview

Relationship of Variables and Indicators to the Research Questions

The Table 2 structural and relational embeddedness variables are noted below as they relate to the research questions. Definition of the SNA measures for each variable, and how they are derived, are briefly described in the next section (see Table 3). Descriptions of the SNA measures are detailed in context in the embeddedness results chapters.
**RQ1:** Can the planning and implementation process for a rural arts business incubator foster community embeddedness as evidenced through *increased trust, improved information flow,* and *social network growth*?

*Relational:* Trust measures

*Structural:* SNA Longitudinal snapshots of:

- Trust (Strong/Weak Ties)
- Cohesion (Density/Collaborative Capacity, Degree Centrality)
- Information Flow (Network Diameter, Avg. Path Length)

**RQ2:** Within the incubator initiative, how do the music and arts networks compare in terms of their co-evolution and structural embeddedness during their planning and implementation phases?

*Relational:* Behavioral Norms (Power, Reciprocity, Path Dependency)

*Structural:* SNA Longitudinal snapshots of:

- Embeddedness (Avg. Cluster Coefficient)
- Cohesion (Density/Small World, Degree Centrality)
- Information Flow (Network Diameter, Avg. Path Length)
RQ3: What is the role of power in the combined incubator network (arts and music)? Are community power structures or behavioral norms present that impede or facilitate embeddedness?

*Relational*: Power: Behavioral Norms (Eigenvector Centrality, Betweenness)

*Structural*: SNA Longitudinal snapshots of:

- Facilitation (Eigenvector Centrality, Betweenness)
- Information Flow (Avg. Path Length, Betweenness)

*Structural Embeddedness*

As used in this study, the SNA characteristics of network cohesion, embeddedness, information flow, and facilitation/brokerage are analyzed as part of the structural embeddedness independent variable (see Figure 5 and Table 2 above). Details of SNA methods used are given in context with the results of each test in Chapter 5 (*Structural Embeddedness Results*).

A total of 13 research participants were recruited from the arts and music incubator groups sharing a common network. As part of the face-to-face interview, participants also provided verbal responses to social network analysis survey questions in which they were asked to characterize attributes of 10 individuals they identified as being part of the arts and music incubator communities. Out of a potential 130 network data points, only 59 actor nodes were identified because some participants named less than ten relational ties with other actors.

A social network is a set of nodes/actors linked by relational ties (Borgatti & Halgin, 2011; Knoke & Yang, 2008). Actors may be individuals or groups, and a relational tie connects a pair of actors, or dyad. If a relational tie is directed, the first actor initiates and the second actor/alter in the dyad only receives. A nondirected tie indicates a two-way information flow between actors.
in a dyad. These ties interconnect through shared end points to form indirect paths linking nodes/alters that are not directly tied. The pattern of network ties reveals a particular structure of node positions. A particular configuration of empirical relations among actors reveals the pattern of a network structure. As noted by Knoke & Yang (2008), a core issue in network analysis theory is how to explain the presence of different structures and the variation in relational linkages between actors. In terms of SNA theory, Borgatti and Halgin (2011) differentiate between network theory, which refers to the “mechanisms and processes that interact with network structures to yield certain outcomes for individuals and groups,” (p.1168) and theory of networks, which refers to the processes that determine why certain network structural characteristics exist, such as centrality or density.

As noted previously, SNA allows the identification, measurement, and testing of hypotheses regarding the structural and contextual elements of social relationships (Knoke & Yang, 2008; Cross & Parker, 2004). SNA of the arts incubator development process may also provide guidance for development of this arts community by identifying fragmentation points between relational, functional, and hierarchical structures among the various clusters of network density operating in this environment. Individual actors with formal ties, such as those connected with the same organization, may be subject to path dependency in dealing with collaborators who are co-workers. With co-workers, everyone’s expertise is commonly known and at least a minimum working threshold of trust between dyads has been established. This type of path dependency will be apparent in the network analysis with verification from the informant interviews. SNA also allows the identification of facilitators, or Burt’s (2004) information brokers, who play a critical role in creating weak bridging ties between groups to increase information flow and innovation. These facilitators are most useful in close proximity to structural holes (Burt, 2004).
In a complete or full network study design, information is collected about each actor’s ties with all other actors—an approach that is essentially a census rather than a sample. When a network is fully mapped, it shows the complete structure of relationships in a population. Due to the exponential complexity of trying to map a complete network, a network boundary can be imposed to focus only on ties among actors in a selected population, excluding ties to nodes outside the network boundary. Informants are asked to report the alters with whom they have a specified type of relation, as when the informant is asked whom they consider influential on this project (Knoke & Yang, 2008). In this study, valued, nondirected data measures are used, asking each informant to indicate the presence of a network tie with up to ten other individuals while also ranking the frequency and intensity of the interactions. This type of question also helps to measure tie strength and trust (Granovetter, 1973).
SNA is used to identify network characteristics (see *Table 3* above) that relate to structural embeddedness in the incubator network. One of the simplest network measures is degree centrality, which counts the number of direct connections (degrees) an actor has with all other
actors in the network (Wasserman & Faust, 1994). The density measure is an indicator for group cohesion, capacity for collective action, and small-world conditions (Knoke & Yang, 2008; Obstfeld, 2005). It is also used with betweenness to help locate structural holes (Burt, 1992) in this study. In Figure 6, Node B is part of a cluster with high density, strong ties, and redundant links between its members, which is often an indicator of path dependency and an internally focused work group with a low level of novel information flow. As noted by Granovetter (1973), strong ties are unlikely to link novel sources of information, which is why innovation depends on weak bridging ties to other clusters, as in Node A of Figure 6. Node A also sits beside a structural hole in the network. SNA in this study uses eigenvectors and betweenness centrality to identify actors with these weak bridging ties who act as facilitators—also known as brokers in SNA terminology (see Node A in Figure 6). The most effective facilitators may not be apparent on cursory examination of a group. A dominant leader in a hierarchical group might appear to be the best network contact, when a quiet staff person lower in the hierarchy may actually be the best network facilitator. While betweenness centrality measures the potential for actors to control or mediate flows of information or resources between indirectly connected dyads (Knoke & Yang, 2008), eigenvectors locate actors with the most powerful connections (Cherven, 2015) who could be the key facilitators. Connecting with facilitators is an important means of expediting the embedding process for new community ventures such as business incubators.
Figure 6. Node A is a facilitator with weak ties to other clusters—a small-world network with structural holes. Node B is part of a dense network with strong ties and redundant links.

The average clustering coefficient (Aldenderfer & Blashfield, 1984) is used as a measure of structural embeddedness. This measure evaluates the density of ties among groups of actors, or network clusters, relative to the number of all possible actor triplets (cliques of 3). A low score (near zero) on embeddedness could be a case where two actors are connected only to each other, and a network map of this case would tend to show they are positioned far apart from each other. This low score would imply little similarity between the actors. As noted by Cherven (2015), higher embeddedness scores (near 1) can point out both the ties to an actor’s local neighborhood group as well as the less obvious connections to secondary neighborhoods. These secondary neighborhood ties can be examined further through density and average path length measures to determine if they represent small-world bridging ties between clusters. In a network map, high embeddedness scores also tend to correlate with close physical proximity (short average path lengths, or geodesics) among similar actors. Moderately high embeddedness scores are also used to discover neighborhoods that are significant to an individual actor. The embeddedness score is therefore important to the analysis in this study as a means to show the network effects over time resulting from the new incubator initiative, which is mainly driven by a small number of actors. As with other quantitative measures in this study,
the informant interviews help to illuminate and confirm the function of these individuals, and their relation to facilitators, to characterize power and information flow in the network.

The focus of data collection in this study relates to the planning and implementation network for the arts and music incubators. The intent of the SNA perspective here is to provide a detailed study of relationships that connect the network actors as they evolve over time, but this also provides insight into collaboration and the process of embedding. As noted by Granovetter (1973, 1983), even micro-studies of social networks such as this can provide insight into the connections between social structures, processes, and personal experiences, or between the micro- and macro-level of social organization (Clark, 2007).

Limitations of the SNA in this study include the restricted view of an informant’s social structure due to practical restrictions on data collected about each relationship network. The examination of network structures and relationships among actors are limited to ten individuals identified by each informant during the interview process, and this may omit some actors who play supporting or less significant roles within the network. These omissions may be minimized through the use of multiple informants with overlapping networks. Since this is a longitudinal study, multiple interviews with the same informants may also provide opportunities for them to recall other alters who may have been missed in prior interviews.

Social networks are dynamic. The type of SNA performed for this study provides a longitudinal view of network change as a result of the arts incubator planning process, but each static snapshot of a network cannot be perfectly matched for comparison to other snapshots as people move in and out of the arts incubator sphere of influence while the surrounding environment also evolves. However, each snapshot is sufficient for a detailed examination of network attributes related to embeddedness as the community develops, and the longitudinal
analysis of network change provides another perspective to contribute to practice and theory development.

**Validity and Reliability**

Validity, or accuracy, is the extent to which an assessment measures what it’s supposed to measure. Reliability, or consistency, is the extent to which a measurement gives consistent results. Threats to external validity and internal validity are described in this section.

*External Validity (Generalization)*

Generalization of findings across social settings is an external validity threat often associated with case studies and small samples (Bryman, 2012). Lincoln and Guba (1985) take the approach that qualitative research typically examines characteristics of small groups in depth, rather than achieving the breadth of quantitative studies, so qualitative findings are not so much generalizable as they are transferable if they contain enough “thick description.” Thick description provides enough cultural detail about the contextual uniqueness of the study subject so that others can determine the transferability of findings to another environment (Geertz, 1973). The present study is not statistically representative of all arts incubators in small communities, but the findings are transferable in the sense that they can be analytically generalized based on the context of arts-based development network behaviors and collaborative relationships within a conceptually closed network boundary. Maxwell (2013) made a related observation about qualitative studies and generalizability, stating it is more important to understand the processes and contexts in which things happen, and how these are understood by participants, than it is to rigorously compare the study’s situation with others. This is similar to the earlier assertion by Flyvbjerg (2001) that case studies offer contextualized knowledge about specific problems addressed in particular settings. Flyvbjerg goes on to note that “formal generalization is overvalued as a source of scientific development, whereas the
power of the good example is underestimated” (2001, p.77). As noted earlier, this study is an exemplifying case (Yin, 2009) describing a commonplace situation, so the findings are generalizable in the sense that the planning process, relational structures, and the embedding process related to development of the arts incubator are similar to processes and structures in the broader categories of nonprofit organizational development and business incubation.

As described earlier in this chapter, triangulation was also used to support validity in this study by providing multiple perspectives on the data in the attempt to confirm or contradict evidence and create a more well-rounded analysis (Bryman, 2012).

*Internal Validity*

Internal validity is related to whether a conclusion involving a causal relationship between independent variables is genuine or may have been affected by extraneous variables. For qualitative research, LeCompte and Goetz (1982) interpret internal validity as whether there is a good match between observations and the theoretical ideas developed by the qualitative researcher, noting that this is a strength of ethnography because prolonged participation in a social group ensures congruence between concepts and researcher observations (Bryman, 2012). Ethnographic observations in the present study are used to support the other methods through triangulation, which also helps to ensure validity by providing multiple perspectives.

Instrumentation is a common threat to internal validity and reliability, since changes in the survey instrument—the interview protocol and the interviewer—could prompt different responses to otherwise standard questions asked in each semi-structured interview. During this study, interviews typically occurred at informants’ offices or the incubator space. This approach minimized changes to the environment, while the interviewer’s standard business casual attire and standard introduction describing the interview process and goals of the study helped to ensure consistency of responses.
Maxwell (2013) refers to the validity threat of reactivity, or reflexivity, in which the researcher influences the setting or individuals being studied. Since the author was a regular presence in the planning meetings, often as an observer rather than an active participant, the group’s awareness that he was also doing research had a minimal, if any, effect on the behaviors under study. However, Maxwell also says that reactivity is an “inescapable influence” during interviews, but that it is more important in qualitative research to understand how the interviewer affects the informant and how this affects the validity of inferences drawn from the interview (2013, p.125). Bryman (2012) states that ethnographic studies are sometimes associated with the issue of going native, in which the researcher loses objectivity and takes on the worldview of those being studied. Bryman notes that going native is not inevitable, and that an awareness of the possibility when gathering and interpreting data minimizes the potential for this type of threat.

Measurement Validity

Measurement validity is mostly related to quantitative conceptual measures in the current study, asking whether the measure devised for a concept actually represents the concept of interest (Bryman, 2012). This also relates to reliability, since an unstable measure could generate fluctuating, unreliable results. As one example, there is some consensus around social capital conceptual issues that include trust, but no consensus exists around the translation of these concepts into operational measures because these constructs are inherently abstract and require subjective interpretation to be operationalized. Putnam (2000) differentiates between bonding and bridging social capital, but these dimensions are not carried over to his aggregate measurement of social capital, which he measures in other ways such as group membership, informal socializing, and social trust (Knudsen, Florida & Rousseau, 2005).
Measurement limitations of the SNA analysis in this study include the restricted view of an informant’s functional role due to practical restrictions on data collected about ego’s relationship network. The examination of network structures and relationships between node members are limited to ten alters identified by each informant during the interview process, and this may omit some alters who play supporting or less significant roles within the network. These omissions may be minimized through the use of multiple informants with overlapping networks. Since only ten alters are requested from the informant’s contact network, this could create selection bias of the contact list toward strong tie relationships. When the SNA technique used on the data is related to cluster density or to brokerage/facilitation within a network, this is less of an issue, but it may have an effect on measures of tie strength between clusters, potentially overlooking secondary contacts/facilitators that still play important supportive roles. As noted by Zheng (2008), most studies that measure tie strength ask for the informant’s recall of key contacts. People tend to recall those with whom they have positive and frequent interactions. It takes more effort to recall people with whom one has infrequent contact. This bias problem may be mitigated through data collection where informants represent a sample that is broad enough to generate enough contact names to identify secondary contacts between clusters within the network boundary. Alternatively, a larger set of network contacts could be generated by each informant, although this approach might require dividing up the task of identifying contacts over more than one sitting to reduce informant fatigue and improve recall of weaker relationship ties.

SUMMARY

This chapter presents a justification for a mixed-methods case study of the arts incubator development in terms of its structural and relational embeddedness characteristics. A strategy was described for each method and there will be a blended analysis that combines the findings from each method in relation to the study’s research questions.
To briefly summarize the approach to this study, these components will be examined through quantitative and qualitative analysis:

1. SNA of the arts incubator planning group/community to determine the overall network structure and characteristics of structural embeddedness (density/cohesion, embeddedness, information flow, and facilitation/power) along with relational embeddedness indicators.

2. Qualitative analysis of informant interviews and ethnographic observations for analysis of relational embeddedness and context for structural embeddedness.

3. Statistical and qualitative analyses of relational embeddedness indicators affecting trust and behavioral norms in the context of network structures and processes.

4. Longitudinal analysis of social network evolution resulting from the planning and implementation of the arts incubator.

5. Qualitative analysis of community profile to provide a basis for understanding the historical, socioeconomic, and cultural context for local arts-based development.

6. Blended analysis to cross-correlate findings from the structural and relational embeddedness analyses in relation to the research questions.

This chapter concluded with a brief discussion of threats to validity and reliability, along with mitigation strategies for those threats when appropriate. The following chapter begins the presentation of findings from this study with a focus on the community profile of the environment in which the arts incubator is being developed. The community profile is followed by chapters on findings ending with the *Blended Analysis* chapter. The concluding chapter examines implications of this study’s findings, limitations, and suggestions for future research.
CHAPTER 4: COMMUNITY PROFILE

INTRODUCTION

To support the examination of social network evolution and community embeddedness in relation to the planning and implementation of the SOMO arts incubator, this community profile of Rohnert Park and its adjacent communities in Sonoma County, California, as well as the SOMO campus itself, provides basic quantitative and qualitative data to inform the overall analysis and describe the environmental context where the arts incubator is being established. This includes overview information about socioeconomic characteristics, history, and cultural resources. A basic understanding of the community context will inform interpretation of the case study results in relation to collaborative capacity and cultural support, or barriers, to arts-based development and the community embedding process. Since the arts incubator is housed in part of a former Hewlett-Packard laboratory campus known as SOMO (Sonoma Mountain) Village, a description of SOMO and its ownership/operation is also important to the community context and will be discussed below. A brief “art history” and an examination of Sonoma County’s climate for philanthropic and public support of its arts organizations are also provided. While this community profile is not an exhaustive description of these elements, a basic understanding of the community context as presented here will inform interpretation of the case study results in terms of collaborative relationship development and the community embedding process.
Sonoma County

An hour (in light traffic) north of the Golden Gate Bridge in San Francisco, on the northbound Interstate 101 highway that cuts straight through the rolling hills and relatively small communities of Sonoma County on its way to Oregon, a visitor sees a primarily agricultural region (see Figure 7). During the afternoon commuting period, when the one-hour trip becomes a two-hour commute, drivers heading north from San Francisco on this route have plenty of time to admire the pricey homes of affluent Marin County, the transition to rolling grassy hills that start at the Sonoma County boundary, and eventually the small communities with comparatively lower home prices that drew many of them to live in Sonoma County. The region’s favorable Mediterranean climate, about half an hour from the coast, provides a good home for the
vineyards of Sonoma County where there are over 250 wineries. There are another 500 wineries in adjacent Napa County to the east (Sonoma County EDB, 2016b). Sonoma County vineyards produce the most wine in California’s wine country region. About 80% (58,300 acres) of non-pasture agricultural land in primarily rural Sonoma County is dedicated to vineyards (Sonoma County EDB, 2016a). The county unemployment rate is 5.3% (Sonoma County EDB, 2016b) with an ongoing decline in agricultural employment. While Sonoma County food service, health care, education, and retail sectors added hundreds of jobs in Sonoma County in 2015, agriculture declined by 1,000 jobs—a 16% decrease that left farm employment at 5,300 (Sonoma County EDB, 2016b). Wine growers have noted a shortage of skilled workers. There are indications that Cannabis growers/manufacturers are improving the employment picture for agricultural workers—particularly since recreational use will be legal as of January, 2018—but reliable statistics aren’t available yet (Sonoma County, 2016a).

Agriculture is the primary land use in Sonoma County (61%, 625,897 acres), followed by residential (26%), government (8%), commercial/industrial (5%), and recreation/other (0.15%) (Sonoma County, 2016a). Within the county, 7% of the land area (71,000 acres of the county’s 1,026,060 acres) is considered urbanized, and county general plans have oriented city-centered development along the Highway 101 corridor to protect the surrounding agricultural and resource lands (Sonoma County, 2016c). Designated community separators maintain open space between cities. All nine of the county’s incorporated cities have established urban-growth boundaries to protect agricultural land and open space. As noted in the county’s general plan (Sonoma County, 2016c), much of the county land area experiences an interface between wildlands and agriculture or homes, and this development pattern is “typical for many of California’s rural counties” (p.4.1-2). Rural residential parcels are increasingly being used for agriculture as well. Over the last decade, as vineyard development has increased, agricultural land that can be converted to vineyards has attained a value comparable to land for residential
development. The county general plan states that the success of the agricultural sector, along with efforts to preserve it, has facilitated urban center growth while avoiding sprawl. Sonoma County population density is the second lowest for counties in the Bay Area, with 291 people per square mile, compared to Napa County at 165/square mile. These counties in the North Bay are large in land area but much less populated than Alameda County in the East Bay (Oakland/Berkeley area) at 1,957/square mile, and the County of San Francisco at 16,634/square mile.

As noted by DeClercq (1997), the neighboring communities that became Rohnert Park, Cotati, and Penngrove were originally inhabited by the Coast Miwok Indians, with the largest village of Kota’ti run by Chief Kota’ti. Living in an area of rolling hills, streams, lakes, and woods.
with plentiful fish and game in a moderate climate, these people became best known as artists who wove fine quality baskets. Their neighboring coastal Miwok relatives welcomed Sir Francis Drake to Tomales Bay in 1579. Spanish and Mexican settlers gradually moved into the area in the 19th century. When the Russians established Fort Ross in 1812, the threatened Spanish founded Mission San Rafael in 1817 and Mission Sonoma in 1823 to claim the land and keep the Russians out. The missions ended most of the regional Miwok tribes, who were captured to build the missions and work the land while dying from diseases brought by the Europeans. In 1844, General Vallejo paid his soldiers to defend the area against Russian fur traders and paid them with grants of land, one of which was Rancho Cotati (see Figure 8), the area that now includes Rohnert Park, Cotati, and Penngrove. The completion of the Northwestern Pacific Railroad in 1870 allowed Penngrove to become a major supplier of basalt paving stones for San Francisco and other regional cities. After the turn of the century, Penngrove (see Figure 9) was the second largest egg and poultry producing area in the country behind neighboring Petaluma (see Figure 10), and it was said that chickens paid better than gold mines (Harris, 1980).

![Figure 9. Downtown Penngrove.](image)

Waldo Emerson Rohnert bought a ranch in the Cotati area in 1929, and the Rohnert family gradually established a seed business second only to the Santa Rosa gardens of horticulturalist Luther Burbank, which was farther north in Sonoma County. The first air mail flight in the
country was from nearby Petaluma to Santa Rosa in 1911. The Redwood Highway was built in 1915 when farmers in Penngrove and Cotati donated the necessary land, and this remained the major highway until 1957, when it was replaced by Route 101. The Rohnerts sold the seed farm to developers in 1955 and the Rohnert Park Community Services District was formed. All four residents of the area showed up for the first district meeting, where three of them were required to become district officers. Rohnert Park became one of the country’s first master-planned communities, based on Pennsylvania’s Levittown, where each 250-home neighborhood would center on a school and a park. The Rohnert Park population of 2,775 citizens was incorporated in 1962, and Sonoma State University in Rohnert Park opened its doors in 1966.

Figure 10. Petaluma Egg Day Parade, August 20, 1921.

Rohnert Park’s seasonally unadjusted employment rate was 4.5% in June 2015, which is a bit higher than the 4.3% rate for Sonoma County overall during the same month, but down from 5.7% during the same month the previous year. Unemployment in Rohnert Park is significantly lower than its peak of 11% in March of 2010. Cotati has a 5.7% unemployment rate. About 52%
of Rohnert Park’s population is employed in the service sector, including education, health care, tourism, and legal services.

Table 4. June 2015 Economic Profile (Sonoma County EDB, 2016b)

<table>
<thead>
<tr>
<th></th>
<th>Population 2015</th>
<th>Unemployment Rate %</th>
<th>Median Household Income</th>
<th>Race % White/Hispanic</th>
<th>Nonprofit Arts Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rohnert Park</td>
<td>41,967</td>
<td>4.5</td>
<td>$58,719</td>
<td>76/22</td>
<td>2</td>
</tr>
<tr>
<td>Cotati</td>
<td>7,399</td>
<td>5.7</td>
<td>$62,498</td>
<td>82/17</td>
<td>3</td>
</tr>
<tr>
<td>Penngrove</td>
<td>2,564</td>
<td>4.2</td>
<td>$64,424</td>
<td>88/12</td>
<td>2</td>
</tr>
</tbody>
</table>

There are a small number of nonprofit arts organizations in Rohnert Park (2, one of which is a historical society and the other is television production), Cotati (3 in music, including the annual accordion festival), and Penngrove (2, one of which is a farm museum and the other is live theatre), compared to the 210 arts and cultural organizations officially acknowledged by the county—while only 103 of these are considered active organizations by the IRS, and 79 of these are in Santa Rosa (National Center for Charitable Statistics, 2012). Sonoma County’s Arts Action Plan (Cultural Planning Group, 2014) noted that there is limited multicultural representation in the larger Sonoma County arts community, despite demographic trends predicting a majority Hispanic population in the county by 2040. The arts plan also noted that there is no formal and detailed inventory of the creative sector in the county, but that there are a number of nationally or internationally successful visual artists who live in the county. A growing number of younger artists choose the county due to natural amenities, a casual lifestyle, and cheaper housing compared to areas closer to San Francisco or Oakland. Stakeholder interviews in the arts plan found that creative businesses are mostly hidden in the county with little interconnection or networking and that there is little awareness of the impact of the local semi-hidden arts economy among local government agencies. While there are no detailed statistics on numbers of artists per city, Markusen (2010) used census data to estimate that there are
about 3,556 artists in Sonoma County, with 64% (2,275) of them being self-employed, 25% (889) working for private employers, and 11% (391) in the public sector. Of the 3,556, which comprises 1.2% of the total county workforce, 51% (1823) are visual artists.

**Sonoma Mountain Village (SOMO)**

In 1982, the community of Rohnert Park, just east of where the 101 passes through Petaluma, was selected as the site for a new 600,000-square-foot Hewlett-Packard (HP) manufacturing facility for electronic measurement devices. According to Derammelaere (2007), HP split part of its operations to become Agilent in 1999, at which point the 5,000 HP workers in Sonoma County became Agilent employees. Agilent closed its Rohnert Park campus in 2004 after transferring its manufacturing operation overseas, and the small remaining staff was consolidated with offices 20 miles north in Santa Rosa, which now houses 1,250 employees as the rebranded Keysight Technologies. This created an opportunity for Rohnert Park-based real estate developer Codding, which bought the campus from Agilent in 2005. Codding built one of the first suburban shopping malls in the 1960s, but over eight decades also built other malls, thousands of homes, hotels, restaurants, banks churches, and other commercial properties around the county. The 200-acre Agilent campus was rebranded as Sonoma Mountain (SOMO) Village, along with surrounding land to provide 27 acres of parks and community gardens with nearly 4,000 homes in a walkable, mixed-use community built on sustainability principles. Codding installed enough solar panels on the roofs of the campus buildings to provide over 3 megawatts of power (enough to power 1,036 homes for a month). This is the largest privately funded solar power system in California. The development was designated as North America’s first One Planet community in 2008 and certified at the highest level under the Leadership for Energy and Environmental Design (LEED) Neighborhood Development building standard. In 2008, SOMO Village was awarded California's most prestigious environmental honor—the
Governor’s Environmental and Economic Leadership Award (GEELA) as a model for comprehensive land-use planning. SOMO is projected to eventually house 4,400 residents (home construction starts in 2017) and provide over 3,300 jobs.

Codding also started a nonprofit business incubator at SOMO in 2006, now known as SoCo Nexus, with the intent to help develop businesses in the high-tech, sustainable, and socially relevant sectors. In 30,000 square feet of office and lab space, the incubator grew to house 20 small businesses by 2016, leasing them offices while providing mentoring, business skill training, seminars, and mixer events. Sonoma State University, about two miles away from SOMO, is also an engaged partner with the incubator.

In 2016, Codding began a series of planning sessions with the idea of enhancing quality of life at SOMO by becoming a major arts destination, adding a performing arts stage with facilities to accommodate 3,000 people, purchasing major artworks to display on campus, commissioning works by local artists, creating live/work space for artists, starting an artist-in-residence program, and finally partnering with an existing small tenant, TouchFab, to create an arts business incubator in 2017—the SOMO Village Makery. The physical component of the Makery will function as a limited-access “maker space”—a common and collaborative workspace equipped with digital and metal fabrication tools where experts mix with amateurs to build things. New users will be trained how to use tools such as 3-D printers, machine tools, welders, laser and plasma cutters, and other industrial fabrication machines. In most cases, a monthly membership fee will be paid for access to the tools in an industrial shop space, with classes taught on how to use the tools. As a project-oriented space for making art, the Makery will be available to new and experienced artists rather than the general public. The local Credo High School moved onto the SOMO campus in early 2017. Credo is a public charter Waldorf
school that combines art with most of the high school subjects that are taught there. Credo has plans to start teaching blacksmithing/science and woodworking at the Makery.

It is rare for maker spaces to do more than provide shop workspace and training on use of the tools. Despite this, small companies such as Square (a successful credit card reader for small businesses using cell phones for transactions) have used maker spaces to prototype new products, which is all they can normally do in such shops. As an arts incubator, the Makery also focuses on building businesses, providing mentoring, tools, and training in business skills, marketing/publicity, planning, management, business development, and thinking like a community-oriented entrepreneur. Whether or not they have art degrees, most independent artists have never been trained in entrepreneurship or business skills, and typically depend on luck or networking in their attempts to develop viable businesses. The Makery is an arts adaptation of the business incubator model that has been successful at developing new companies since 1959, as discussed in the business incubator section of this document.

**Music History**

Of the three neighboring communities most pertinent to this study, Cotati has been the only one to develop venues for musicians, as well as an active downtown area. As a result, this section will primarily focus on the music history of Cotati.

Fearing annexation by Rohnert Park, Cotati incorporated in 1963. Since the bedroom community of Rohnert Park had no place for Sonoma State students to spend their leisure time, walkable downtown Cotati became the local college town. New businesses sprang up to meet the demand. In 1968, a lengthy summer party started by 22-year-old Sonoma State student Greg Cochrane needed a new home, so Cochrane leased a former Italian restaurant to create a new live music venue called the Inn of the Beginning (McDermid, 1998). As a bar and coffee shop with music, the Inn stayed in business for over 30 years under various owners. The Inn
was a social hub for the North Bay music community and an important venue for well-known Bay Area musicians to try out new material (Draper & Draper, 2004). In the 1970s, local rock bands such as the Grateful Dead and Van Morrison played at the Inn weekly, while unannounced visitors such as Jefferson Airplane, Carlos Santana, Neil Young, Arlo Guthrie, Joan Baez, and Janis Joplin also stopped by to perform (McDermid, 1998). A long list of blues, jazz, and country musicians stopped at the Inn after performing for large audiences in San Francisco. All of this musical activity prompted the growth of a regional music ecosystem of recording studios, concert promotion, talent management, and other businesses, many of which remain in the area (e.g., Prairie Sun Recording Studios and Second Octave Entertainment, both interviewed for this research). However, the music scene later became more restricted due to contractual changes at San Francisco venues that prevent bands from performing in most of Sonoma County around the same time.

The distance of Cotati from San Francisco is both a barrier and an opportunity, prompting the growth of a regional music scene while still being too isolated for most homegrown bands to establish the visibility they need to get a foothold in higher-paying San Francisco venues. At the same time, Cotati and other regional communities also provide a rural atmosphere and privacy for celebrities wanting homes where they can be somewhat anonymous. While contact with these celebrity musicians could be beneficial to emerging bands, it is rare for them to interact with the local music community or to support philanthropic causes. Key informants interviewed for this study made similar comments about the lack of contact or support from celebrity musicians, noting that donations for music-related events, activities, and education tend to come from a small set of area businesses.
Figure 11. Annual jazz festival at La Plaza Park in Cotati.

Despite the small size of Cotati, the Inn of the Beginning complemented a downtown area that contained busy coffee shops and cafes such as the Last Great Hiding Place, which also had a theatrical stage in the back. While most of these businesses are now gone or have changed hands, the downtown area is still active with coffee shops and cafes that provide live music. The Inn bordered La Plaza Park at the center of Cotati, where citizens volunteered in the 1970s to build a bandstand for outdoor concerts, along with picnic tables, benches, swings, and sandboxes (see Figure 11). While the park structures were built without permission from the city, they were allowed to remain in place (City of Cotati, 2017). This is an example of the kind of public space appropriation representing local uniqueness that helps build community interaction (Grodach, 2009; Carr & Servon, 2009; Franck & Stevens, 2007; Oldenburg, 1989). The annual Cotati Jazz Festival began in La Plaza Park in June 1980. In August 1991, the first Cotati Accordion Festival launched an annual event that continues to this day, and a bronze statue of founder Jim Boggio was added to the park in 1997 after his death (Cotati Historical
Society, 2010). In general, the city council in Cotati has supported development of the local music scene over the years, understanding the festivals and live music performances to be revenue generators. Some Cotati mayors and council members have also been performing musicians, which may have helped to influence the city council’s understanding of the social and economic benefits of supporting live music. On Thursday evenings, the downtown area is very active with the “Cotati Crawl,” originally named by Sonoma State University students, but the coffee shops and bars are popular most days of the week.

Cotati’s ongoing focus on small music venues, public gathering spaces, and festivals also provides an interesting comparison to Rohnert Park, which has one large performing arts venue, the Green Music Center at Sonoma State University. The Green Center cost about $120 million to build with $45 million of university funds and education bonds and the rest coming from private donors such as Jean Schulz, the wife of cartoonist Charles Schulz (Hay, 2010). It took about 15 years to raise these donations. The Sonoma County nonprofit funding environment is described in more detail later in this section.

Art History

After the early 19th century capture of the local Miwok basketmaker artists to build the Spanish missions in what eventually became Sonoma County, later artists who moved to the area generally maintained a low profile until the 1900s, although nationally known landscape painters from the east coast, such as Frederick Butman and Albert Bierstadt, visited Sonoma County in the mid-1800s. Work by these visiting landscape painters was chronicled in the San Francisco newspapers and helped encourage landscape painting by California artists (History Museum of Sonoma County, 2015). In 1958, Sonoma County gained a new artist resident named Charles Schulz, whose popular Peanuts comic strip was first syndicated in 1950 and eventually was published daily in 2,600 newspapers in 75 countries, earning Schulz about $40
million per year (Boxer, 2000). With the regional airport named after Charles Schulz and statues of Snoopy (see Figure 12), Woodstock, and Charlie Brown on display all over the county, area artists recently complained to county government that there is more to art in Sonoma County than Charles Schulz and that marketing materials should reflect that diversity (Cultural Planning Group, 2014). Jean Schulz, his wife, continues to be a prominent philanthropist in the county, supporting causes for children and the arts.

In 1976, international attention was drawn to Sonoma County by artists Christo and Jeanne-Claude when they built a white nylon fence that was 18 feet high and 24.5 miles long, made of 2,050 panels and 90 miles of steel cables flowing across 59 ranch properties in the rolling hills between Cotati and the Pacific Ocean (see Figure 13). The project only existed for two weeks, but was preceded by four years of community engagement, including 18 public hearings and debates over potential impacts. The artists had to file an Environmental Impact Report, which was a first for a piece of contemporary art. The fence required hundreds of workers to install, all of whom were paid by the artists. The public meetings, court hearings, discussions, and working with the local residents were all considered part of the process of the art since it was intended to engage the community.
The small downtown area of Cotati has attracted local artists since the 1970s. Sculpture, art installations, and other forms of artwork are common. The most recent organized effort by the city to create more public art is the Cotati Arts Project (CAP). Started in 2012 by the Cotati Chamber of Commerce, collaborating with the Cotati Historical Society and the Community and Environment Commission, the CAP sponsors public art projects and exhibitions for local artists. With its sculpture program, CAP supports both established artists (see Figure 14 below) and art students. A collaboration between CAP and the Sonoma State fine arts program provides students the opportunity to submit public sculpture proposals to the city. Each selected sculpture is then funded by a local organization and honors a civic or neighborhood leader.

Figure 14. Athena by Peter Crompton, 2012, near La Plaza Park in Cotati. Funded by the Cotati Historical Society.
Sonoma County Arts Agencies and Funding Environment

According to McCallum (2013), the Arts Council of Sonoma County was officially formed in 1984 as an organizing influence for area artists, partnering with the state California Arts Council until its demise in 2013 due to lack of funding and the loss of its principal sponsors, which included the Hewlett Foundation and the Irvine Foundation. The group had sought to position itself as an umbrella organization for the 130 different arts groups in the county representing artists of all disciplines. Sonoma County’s Arts Action Plan (Cultural Planning Group, 2014) identified the lack of leadership resulting from the failure of the Arts Council, and proposed that the Board of Supervisors create a county arts agency, Creative Sonoma, to promote the development of the creative sector, including both nonprofit and for-profit arts organizations along with individual artists, musicians, and other creative professionals. Creative Sonoma was implemented as a program under the Economic Development Board in 2015, run by one executive director and two part-time administrative assistants. So far, Creative Sonoma remains limited by its funding and has had little impact on the county’s arts sector. It is focused on listing notices of art workshops and events through its website. In rare cases, it also acts as a fiscal sponsor to pass through external grant funds in support of a small number of music and art programs. As with many examples of local government-driven arts programs around the country, the barriers of funding, government bureaucracy, and leadership are the biggest limiting elements to program impact. This is true despite a great deal of public awareness of Creative Sonoma generated by the original community meeting process that developed the county’s Arts Action Plan.

Recent Sonoma County documents examining the regional arts sector (Cultural Planning Group, 2014) note a strong need for county arts funding due to a difficult philanthropic climate with few major arts patrons or major corporations located in the region. While the Community
Foundation Sonoma County includes the arts as an area of investment, its funds are modest. While there are pockets of significant wealth in the county, affluent residents frequently direct their donations to interests outside of the county. Public sector contributions to the arts are lower than national averages, with individual cities typically providing little or no financial support for the arts. County arts funding comes from the Advertising Fund. The national average of local government support for nonprofit arts organizations is 4% of an organization’s total revenues, with combined support from federal, state, and local government averaging 9% (Americans for the Arts, 2014). In Sonoma County, arts grants provide less than 1% of an arts organization’s total revenues.

Arts organization revenues in the US typically break down as 60% *earned income* (tickets, memberships, merchandise sales), 31% *contributed income* (foundations, corporations, individual donors), and 9% *public support* mostly provided by local government but including state and federal grants (Americans for the Arts, 2014). Sonoma County arts organizations receive more earned and contributed revenues than the national average but, as noted previously, public support is minimal. County arts grants would be approximately $1.5 million per year if raised to the 4% national average, instead of the less than 1% ($278,360) granted through the county’s Advertising Fund. The county would be likely to gain highly leveraged returns from increased public support of arts organizations, in addition to increased tax revenues and other community benefits. According to Americans for the Arts (2010), each $1 of local government support generates an average return of $3 through increased tax revenues.

**SUMMARY**

This community profile is intended to provide some insight into the socioeconomic characteristics, history, and cultural resource context in which the arts incubator is being developed and implemented. The characteristics of three Sonoma County communities of
Rohnert Park, Cotati, and Penngrove, all part of the original Rancho Cotati land grant, were detailed. Rohnert Park is the primary focus area in this study.

Key findings from the community profile include:

- Rohnert Park is the dominant community of the three in terms of size, but Cotati is dominant in terms of a “creative core” with its walkable downtown of music venues, artwork, cafes, and coffee shops. Downtown Cotati is conducive to interaction and random meetings, which are important for increasing and maintaining community embeddedness (Oldenburg, 1989). Rohnert Park does not have a downtown core, although it does have the Sonoma State University campus.

- Coordination for synergies among arts/music groups and venues in the region is severely lacking, although county government is attempting to correct that issue through its Creative Sonoma program started in 2016 (with limited funding and staffing).

- Public sector contributions to the arts are lower than national averages, with individual cities typically providing little or no financial support for the arts. Affluent county residents frequently direct their donations outside of the county. The university raised over $45 million to build a performing arts center, and another $75 million was raised from private donors, but this appears to have depleted much of the interest that large donors had for supporting the arts. This is a common impact from big performing arts center projects (Grodach, 2011). Interview respondents said there is also a sense among larger donors that Creative Sonoma is “taking care of things.”

- Despite demographic trends predicting a majority Hispanic population in the county by 2040, there is limited multicultural representation in the county arts sector.

- Younger artists choose Sonoma County due to natural amenities, a casual lifestyle, and cheaper housing compared to areas in and around San Francisco or Oakland. This is
consistent with research findings about the appeal of rural areas to formerly urban artists and young professionals (McGranahan, Cromartie, & Wojan, 2010; Markusen & Schrock, 2006).

- Markusen (2010) estimated that artists comprise about 1.2% of the county workforce. Lacking comprehensive statistics on the arts/music population of the county, there is limited awareness of impact from the semi-hidden arts economy. This arts economy invisibility is a common issue for rural places (Markusen & Johnson, 2006). Greater awareness of this impact could help the general funding picture for the arts, particularly among government agencies, although smaller entities such as the Cotati Chamber of Commerce and the city council seem more aware of arts economy benefits.

- The SOMO campus in Rohnert Park hopes to become a major arts destination and has funds set aside each year to purchase sculpture and other artwork. SOMO is involved in the planning for the arts incubator and hosts a summer concert series in collaboration with one of the campus tenants, concert promotion business Second Octave. Credo High School moved to SOMO in 2017 and its curriculum is heavily oriented toward arts and music. The arts incubator is creating collaborations among SOMO and its tenants.

This *Community Profile* chapter provides context for examination of the cultural and behavioral norms that affect collaboration and embeddedness in the study community, while also providing some insight into environmental factors and socioeconomic characteristics.

The next chapter examines change in the arts/music network during the incubator planning process by using a variety of SNA measures of structural embeddedness.
CHAPTER 5: 
STRUCTURAL EMBEDDEDNESS RESULTS

INTRODUCTION

Embedding is the process that allows an actor—such as a community entrepreneur—to become part of a local social structure, and their congruency with the structure of local society determines their ability to draw on social and economic resources (Jack & Anderson, 2002). This chapter examines the configuration and properties of the complete arts/music incubator network, using elements such as the presence or absence of ties between actors, or the density of network linkages, as indicators of structural embeddedness. Understanding the context of the arts incubator network through the quality of its interpersonal relationships—its relational embeddedness—will be examined in the next chapter. Both structural and relational levels of analysis are required for a full understanding of the how and why of network change resulting from community initiatives (Ozdemir, Moran, Zhong, & Bliemel, 2016; Payne, Moore, Griffis, & Autry, 2011; Moran, 2005). Community dynamics are also demonstrated in this study through longitudinal network diagrams. These diagrams are essentially snapshots of the network at different stages during the 16-month arts incubator planning process (January 2016 through May 2017).

In this chapter, SNA techniques are used to analyze various aspects of structural integration and interaction in the larger context of network dynamics. The arts incubator planning group, or clique in SNA terms, is an informal assortment of individual actors tied to a place, but not to one organization. The planning group actors have network linkages that cross functional, hierarchical, and physical boundaries. I refer to them as a planning group for convenience—there is no formal membership in the group, although there are key actors driving development of the arts incubator. The music incubator planning group has the same characteristics as the arts incubator. While it has some overlaps with membership in the arts
incubator group, the music incubator group forms a separate clique primarily composed of different actors. I refer to the arts or music incubator planning group when necessary for clarity, but more general statements that apply to both are just referred to as “the group.” For clarity in referring to network structures, I also refer to the “arts subnetwork” or the “music subnetwork” instead of referring to the planning group. Cross and Parker (2004) note that SNA is particularly effective when focused on informal groups with these characteristics because they can bridge common fragmentation points in networks. The bridging actors will be identified in the analysis. Data were gathered for these analyses through face-to-face interviews, including verbally administered surveys, with individuals in the SOMO arts and music incubator planning groups.

![Figure 15. Structural Embeddedness portion of study model.]

Chapter Organization

The Community Profile chapter examined the context of cultural and behavioral norms that affect collaboration and embeddedness in the regional arts incubator community. This chapter begins with a brief discussion of important functional roles of actors in this network as they relate to the results. I also describe the small-world network structure and its potential relationship to the mechanisms of embedding during the incubator planning process. The findings from the network measures used to characterize the independent variables for structural embeddedness (the dependent variable) are then provided (see Figure 15 above).
Longitudinal change in the network over the 16-month study is then examined, followed by a chapter summary that places all the findings in one section.

**The Relation of Facilitation and Small Worlds to Collaboration and New Initiatives**

The role of facilitators in overcoming network obstacles related to information flow and collaboration is an important component of any network intended to promote innovation or start new initiatives, but this function can become critical in environments that promote the formation of high-density clusters. New ventures and programs in rural places are often driven by the same small set of people or the same organization, and this would be evident as a high-density cluster in a network map. The incubator initiatives are intended to be inclusive and facilitate ties that cut across social fields in this community. The bridging function of a facilitator can connect dense clusters to form a small-world condition.

Small-world structure can be defined as the linkage of locally dense cohesive clusters by occasional bridging ties. Bridging ties reduce social distance because each network actor can reach most other actors in a larger network through a few indirect links, typically facilitated by a local actor who maintains connections with non-local clusters—a gatekeeper, broker, or facilitator (the term favored in this study for an actor who facilitates introductions and maintains relationships). Clusters that are isolated, or that have plentiful bridging connections to sparse elements of a network, do not exhibit small-world structure (Fleming & Marx, 2006).

Small-world networks govern behavior by shaping the level of cohesion and relational connectivity among actors (Fleming & Marx, 2006; Uzzi & Spiro, 2005; Watts, 1999; Granovetter, 1973). When small-world network conditions are present, sufficient trust exists among bridging ties to lend credibility to information flow, enhancing the prospects for novel material to be transmitted from one dense cluster to another and used productively. Whether or not small-world conditions are present, facilitators tend to be trusted actors who maintain
bridging communication links and seek opportunities to create new connections for collaborations. However, there is a point of diminishing returns beyond which connecting links become too plentiful and networks too dense, homogenizing the available pool of information so that redundant information sharing becomes the norm (Fleming & Marx, 2006; Uzzi & Spiro, 2005; Burt, 1994). High-density clusters insulate groups from new information and opportunities—increasing the risk of groupthink—prompting groups to maintain an inward focus and little communication with other groups unless linked by facilitators. Fleming and Marx (2006) reinforce the point that neither cohesive clusters nor bridging ties by themselves are responsible for seminal creativity in small worlds—the interaction of the two is key to new idea generation and information diffusion. The facilitation and maintenance of small-world network conditions can lead to a virtuous cycle of innovation, but facilitating links can easily fall apart if key actors leave a project or are removed from the network for other reasons.

Without facilitators, the opportunity for new ideas to be generated through structural hole interactions becomes an action problem (Burt, 2004). Unconnected individuals around structural holes are inherently difficult to mobilize or coordinate, and overcoming the inertia of engaging these actors may be insurmountable. As Burt (2004) notes, structural holes lead to good ideas, but there is no evidence that those ideas lead to implementation or innovation. Dense networks, on the other hand, are great at implementation and exchange of complex information, but the passing of redundant information within the network becomes the norm and it becomes difficult for new ideas to enter the dense cluster (Obstfeld, 2005; Burt, 2004; Hansen, 1999; Granovetter, 1973).

Other Network Roles Supporting or Limiting New Ventures or Projects

As noted by Burt (1994), the role of a gatekeeper, or broker, in a social network can also be one of positional control of information flow. Rather than introducing two unconnected actors to
each other, the broker may decide to keep them apart so that they remain dependent on the broker for interaction, thereby maintaining power. In this study, gatekeeper roles are differentiated by the terms, *facilitator* and *broker* to clarify the functions of these central connectors, with a broker being an actor who maintains a favorable position of control over interactions between other actors. As noted previously, central connectors are evident in SNA due to their disproportionate amounts of network connectivity, but SNA may not tell the complete functional story. The qualitative data from the informant interviews are also used to determine whether central connectors identified through SNA are actually facilitators or brokers.

*Table 5* below, which provides definitions of the SNA measures used in this study, is repeated here for reference in the following discussion.
Table 5. SNA measures used to evaluate structural embeddedness (dependent variable).

<table>
<thead>
<tr>
<th>SNA MEASURE</th>
<th>SNA MEASURE DEFINITION &amp; APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>Indicator for Cohesion/Collaborative Capacity and Small World. <strong>Density</strong> measures the extent of connectivity between actors within the network boundary. The ratio of reported dyadic ties divided by the maximum possible number of dyadic ties (Knoke &amp; Yang, 2008).</td>
</tr>
<tr>
<td>Degree Centrality</td>
<td>Indicator for Cohesion/Collaborative Capacity, Network Change. <strong>Degree Centrality</strong> measures the number of direct connections (degrees) an actor has with all other actors in the network (Wasserman &amp; Faust, 1994). Longitudinal use helps show growth or decline of social connections in overall network, although other measures are needed to evaluate importance of these ties.</td>
</tr>
<tr>
<td>Network Diameter</td>
<td>Indicator for Information Flow. <strong>Network Diameter</strong> measures distance between the most highly separated actors in the network. Comparison with Average Path Length indicates communication efficiency within the network (Cherven, 2015).</td>
</tr>
<tr>
<td>Avg. Path Length</td>
<td>Indicator for Information Flow and Small World. <strong>Average Path Length</strong> measures the shortest paths (a.k.a. geodesic distance) between all actors in the network. Can be compared to network diameter. A lower number indicates greater communication efficiency (shorter paths), but can also indicate information silos—good for implementation but not innovation (Cherven, 2015).</td>
</tr>
<tr>
<td>Avg. Clustering Coefficient</td>
<td>Indicator for Embeddedness. The <strong>Average Clustering Coefficient</strong> measures the level of actor grouping, or clustering, by calculating the number of closed actor triplets (clique size of 3, &quot;my friend knows my friend&quot;) relative to the number of all possible network triplets (Aldenderfer &amp; Blashfield, 1984). A high value indicates that most people in the network know each other.</td>
</tr>
<tr>
<td>Betweenness Centrality</td>
<td>Indicator for Information Flow and Facilitation/Brokerage. <strong>Betweenness</strong> measures the potential for actors to control or mediate information or resource flows between indirectly connected dyads (Freeman, 1978; Knoke &amp; Yang, 2008). Also used with density to locate structural holes (Burt, 2004).</td>
</tr>
<tr>
<td>Eigenvector Centrality</td>
<td>Indicator for both Facilitation and Power. The <strong>Eigenvector</strong> locates actors in a network with influential connections. A high value for Eigenvector Centrality means that an actor is directly connected to the most powerful individuals in the network (Cherven, 2015).</td>
</tr>
</tbody>
</table>

Table 6 below is the structural embeddedness portion of the earlier Table 2 from the Methodology chapter. Used in combination with Table 5 measure definitions on the previous page, this table shows how the SNA indicators are used to examine properties of the independent variables in the following section.
Table 6. Variable relationships and indicators leading to structural embeddedness (dependent variable).

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLE</th>
<th>INDICATOR and Source *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td><strong>Density (whole network):</strong> SNA (density, degree centrality, and small world)</td>
</tr>
<tr>
<td>Embeddedness</td>
<td><strong>Embeddedness:</strong> SNA (average clustering coefficient)</td>
</tr>
<tr>
<td>Information Flow</td>
<td><strong>Information Flow:</strong> SNA (average path length, network diameter, betweenness)</td>
</tr>
<tr>
<td>Facilitation (Brokerage)</td>
<td><strong>Facilitation:</strong> SNA (Eigenvector centrality, betweenness)</td>
</tr>
</tbody>
</table>

ANALYSES OF STRUCTURAL EMBEDDEDNESS WHOLE-NETWORK INDICATORS

Cohesion and Density (High/Medium/Low Density, Small World)

As a baseline measurement of cohesion/collaborative capacity, and small-world conditions, the overall incubator network density and total number of ties were calculated (see Table 7 below). There are 141 relational network ties, out of 3,422 possible ties (derived by calculating $n(n-1)$ nodes), based on 59 nodes in this network. Density of this network—number of ties expressed as a percentage of the number of pairs—is 8% (low density, indicating that 8% of all possible ties are present). This low density of 8% indicates a low level of collaborative capacity. This capacity may be developed by project facilitators over time, but is not currently able to quickly implement the incubator with broad participation. The low density also does not indicate a small-world condition for the network, although other indicators disagree.

Table 7. Overall density of the incubator network.

<table>
<thead>
<tr>
<th>Incubator Network Ties (arts and music)</th>
<th>Density</th>
<th># of Ties</th>
<th>Mean Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.082</td>
<td>141.000</td>
<td>2.682</td>
</tr>
</tbody>
</table>

Geodesic distance, or mean degree, represents the shortest path (i.e., smallest number of ties) between pairs of nodes in a network and can also be used to discern potential small world, or Watts-Strogatz, network conditions. The mean geodesic distance across this network is 2.7
short paths). This measure of geodesic distance demonstrates potential for a small-world network condition.

Watts and Strogatz (1998) identified three key elements related to small-world networks: sparseness, dense clusters, and short path lengths (geodesic distance). Sparseness, described earlier in this paper, will have a mean degree—the number of network ties for each actor—that is much smaller than the total size of the network. The mean degree of 2.7 is, in fact, small in relation to the rest of the network. Clusters, as measured by the average clustering coefficient, will have a high density reflecting the cliques in network neighborhoods, or the probability that any two of an actor’s ties will also have a tie between them. The small-world phenomenon is observed in such a network when there is a relatively short average path length (geodesic distance) connecting any two actors through intermediaries.

Table 8 below shows the densities of neighborhoods around particular actors (clustering coefficients) in the complete arts and music network. Each actor is listed according to their identifying label, primary network sector (arts (A), music (M), or both (AM)), organization, and individual clustering coefficient. The average clustering coefficient of 66% (medium density) applies across all actor neighborhoods in the complete network. The most highly connected actors will usually have the lowest clustering coefficients. In Table 8, the 14 actor coefficients that are smaller than the average are the most significant (except when zero). There are 24 actors with clustering coefficients of zero (1 from the arts cluster, 23 from music), meaning that each is only connected to one other actor. These outliers, discussed later, have been deleted from this table. The three actors who bridge the arts and music clusters—BDW (18%), BB (34%), and CR (46%)—are among the top 11 with significant clustering coefficients. The average clustering coefficient results for individual actors will be explained in more detail in the following Embeddedness section of this chapter.
Table 8. Clustering coefficients of 35 actor neighborhoods (complete arts/music network) May 2017.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
<th>Org</th>
<th>Cluster Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK</td>
<td>M</td>
<td>PS</td>
<td>0.109090909</td>
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<tr>
<td>EW</td>
<td>M</td>
<td>RK</td>
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<tr>
<td>BDW</td>
<td>AM</td>
<td>SO</td>
<td>0.183006536</td>
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<tr>
<td>GG</td>
<td>M</td>
<td>ST</td>
<td>0.192307692</td>
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<tr>
<td>JW</td>
<td>M</td>
<td>SO</td>
<td>0.194805195</td>
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<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>0.258333333</td>
</tr>
<tr>
<td>CH</td>
<td>A</td>
<td>TF</td>
<td>0.340659341</td>
</tr>
<tr>
<td>BB</td>
<td>AM</td>
<td>CD</td>
<td>0.341666667</td>
</tr>
<tr>
<td>MF</td>
<td>M</td>
<td>MF</td>
<td>0.363636364</td>
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<td>EB</td>
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<td>MW-G</td>
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<td>MR</td>
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<td>JJ</td>
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<td>CD</td>
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<tr>
<td>AL</td>
<td>A</td>
<td>AS</td>
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</tbody>
</table>

Average clustering coefficient (complete network): 0.66
Table 9 below summarizes the tests for small-world conditions using Watts-Strogatz measures of sparseness, dense clusters, and short path lengths (geodesic distance). Based on these results, the incubator network does not exhibit small-world conditions.

Table 9. Small-world condition summary.

<table>
<thead>
<tr>
<th>Meets Small-World Condition?</th>
<th>High-Density Cluster Neighborhoods (Clustering Coefficient)?</th>
<th>Short Geodesic Distance Small-World Potential?</th>
<th>Sparseness (Small Mean Degree Relative to Network)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

While the small-world condition related to high density of clusters is not present in the community data that were collected, it is possible that a small-world pattern would be more evident if the community data were compared to a broader sample of network activity. With this study’s focus on direct network interactions related to the community and the incubator planning group, it is possible that the medium-density clustering coefficient is a result of sampling an activity started with the intent of being a multi-program collaborative. As such, the data may well be representative of a more innovative sparse network operating within a broader environment of dense clusters in programs that were not sampled. Future work would therefore interrogate any complementary local arts initiatives that do not directly participate in the SOMO community effort.

Degree Centrality (Cohesion and Network Change)

The degree centrality measure determines the number of direct connections (degrees) an actor has with all other actors in the network. In a large network, a high degree-centrality value for an actor could imply a high level of influence when, in fact, this may not be the case. An example might be a Facebook network where a typical user has hundreds of friends listed, although they may rarely interact, or have any ability to influence, these friends. Actors with high
degree centrality may also be experts or managers that everyone must interact with to do their jobs or accomplish a task, but they could also be relational obstructions or information bottlenecks. An actor who has many ties may have access to more network resources through alternative routes, giving them a higher potential for power. Degree centrality is generally used in combination with other measures to determine the nature of an actor’s relationships and whether or not they have any influence in the network.
Figure 16. Circular layout of the complete (59 nodes) network with actors ranked according to degree centrality after 16 months (May 2017). Yellow nodes are actors who bridge the arts and music clusters, red nodes are actors in the arts cluster, purple nodes are in the music cluster.

In Figure 16 above, node size indicates the total number of ties (degree centrality), where JW has the greatest number (22) in the network, and CS through CC have the least (1). Also see Table 10 below. Combined with the density measure in this study, degree centrality is also an indicator for social cohesion and collaborative capacity. As we have seen, the complete
network is sparse and degree centrality only supports the conclusion that there is limited cohesion and collaborative capacity evident in these results.

Table 10. Degree centrality values for 34 of the 59 nodes in the complete network as of May 2017. The remaining 15 actors each have a degree of one.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
<th>Org</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>JW</td>
<td>M</td>
<td>SO</td>
<td>22</td>
</tr>
<tr>
<td>BDW</td>
<td>AM</td>
<td>SO</td>
<td>18</td>
</tr>
<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>16</td>
</tr>
<tr>
<td>BB</td>
<td>AM</td>
<td>CD</td>
<td>16</td>
</tr>
<tr>
<td>CH</td>
<td>A</td>
<td>TF</td>
<td>14</td>
</tr>
<tr>
<td>GG</td>
<td>M</td>
<td>ST</td>
<td>13</td>
</tr>
<tr>
<td>MF</td>
<td>M</td>
<td>MF</td>
<td>11</td>
</tr>
<tr>
<td>MK</td>
<td>M</td>
<td>PS</td>
<td>11</td>
</tr>
<tr>
<td>EW</td>
<td>M</td>
<td>RK</td>
<td>10</td>
</tr>
<tr>
<td>AS</td>
<td>A</td>
<td>SN</td>
<td>9</td>
</tr>
<tr>
<td>TM</td>
<td>A</td>
<td>CD</td>
<td>9</td>
</tr>
<tr>
<td>CR</td>
<td>AM</td>
<td>HS</td>
<td>8</td>
</tr>
<tr>
<td>KM</td>
<td>M</td>
<td>CS</td>
<td>7</td>
</tr>
<tr>
<td>EB</td>
<td>M</td>
<td>TF</td>
<td>7</td>
</tr>
<tr>
<td>KS</td>
<td>A</td>
<td>CD</td>
<td>7</td>
</tr>
<tr>
<td>AP</td>
<td>A</td>
<td>CD</td>
<td>7</td>
</tr>
<tr>
<td>IG</td>
<td>M</td>
<td>SO</td>
<td>6</td>
</tr>
<tr>
<td>JJ</td>
<td>M</td>
<td>LB</td>
<td>6</td>
</tr>
<tr>
<td>CV</td>
<td>A</td>
<td>VF</td>
<td>6</td>
</tr>
<tr>
<td>DG</td>
<td>A</td>
<td>CD</td>
<td>6</td>
</tr>
<tr>
<td>SS</td>
<td>M</td>
<td>SO</td>
<td>5</td>
</tr>
<tr>
<td>BG</td>
<td>M</td>
<td>KR</td>
<td>5</td>
</tr>
<tr>
<td>MR</td>
<td>A</td>
<td>HS</td>
<td>5</td>
</tr>
<tr>
<td>MW-G</td>
<td>M</td>
<td>RA</td>
<td>4</td>
</tr>
<tr>
<td>JS</td>
<td>A</td>
<td>HS</td>
<td>4</td>
</tr>
<tr>
<td>DB</td>
<td>M</td>
<td>HO</td>
<td>4</td>
</tr>
<tr>
<td>SA</td>
<td>M</td>
<td>BB</td>
<td>3</td>
</tr>
<tr>
<td>SR</td>
<td>A</td>
<td>AS</td>
<td>3</td>
</tr>
<tr>
<td>RW</td>
<td>A</td>
<td>HS</td>
<td>3</td>
</tr>
<tr>
<td>SK</td>
<td>M</td>
<td>CS</td>
<td>2</td>
</tr>
<tr>
<td>EO</td>
<td>A</td>
<td>AS</td>
<td>2</td>
</tr>
<tr>
<td>AL</td>
<td>A</td>
<td>AS</td>
<td>2</td>
</tr>
<tr>
<td>JD</td>
<td>M</td>
<td>NC</td>
<td>2</td>
</tr>
<tr>
<td>SG</td>
<td>M</td>
<td>NT</td>
<td>2</td>
</tr>
</tbody>
</table>
The degree centrality measure provides a baseline for understanding a network actor’s relational ties and potential influence within a network. Used by itself as a longitudinal measure, degree centrality makes growth, decline, or stasis visible in a network. Network growth over time using the degree centrality measure will be discussed later in this chapter in the Longitudinal Network Change section. In the next section, I build on the degree centrality baseline information about individual ties by examining how actors interact and form groups.

**Embeddedness and the Average Clustering Coefficient (High, Medium, Low)**

As noted earlier, the *average clustering coefficient* (Aldenderfer & Blashfield, 1984) can be used as a measure of structural embeddedness. Clustering statistics are useful in understanding how individual actors interact and form groups, or cliques. This measure is based on the examination of sets of three actors, known as triplets, connected by two or three ties. If three actors are all linked by three ties, a closed triplet is formed. A closed triplet can also be referred to as a triangle or a clique of three. An open triplet is when only two ties exist between the three actors. Results are applied at the whole-network scale as the average clustering coefficient, but this statistic can also be applied at the local level to discern the influence of a single actor within their own neighborhood (Cherven, 2015). This can be thought of as the degree to which an actor’s friends are friends with each other, and this is most common in smaller groups that are cohesive.

Scores have an inverse correlation with other types of centrality calculations. Looking at the influence of a single actor in their own neighborhood, a high score of 1.0 indicates that all possible relational ties have been made. Low clustering coefficients (closer to zero) are often associated with high scores on centrality measures because actors who know a lot of people are more likely connected to other actors who are not so highly connected (not all of their friends know each other). In this study, where much of the activity is driven by a small number of
actors, the clustering coefficient is important for understanding the impact of the incubator initiative on network behaviors over time.

This is another measure that is most useful in combination with additional data to indicate what the result actually means. Quantitative results in this study are also informed by context and other qualitative elements derived from the informant interviews.

Referring back to *Table 8* in the previous section, we see that the average clustering coefficient for the complete network of 59 nodes as of May 2017 is 66% (moderate embeddedness) and may indicate the presence of structural holes (determined later in this chapter using the measures for information flow and facilitation). A year earlier, after four months of startup planning, the average clustering coefficient is 68%, which makes sense since the complete network is only 27 nodes and more of the actors know each other. The map of the 14 most significant actors in the final network in *Figure 17* provides an indication of neighborhood ties for each actor and where improvements can be made in creating bridges for increased community engagement. As an example, actor BDW forms an open triplet with EW and AS, where a structural hole exists. If BDW were to introduce AS to EW, the closed triplet would bridge the structural hole and create a new tie between the music and arts clusters.
Figure 17. The 14 most significant actors by clustering coefficient (complete arts and music network) as of May 2017 (after 16 months of network development). BDW, BB, and CR (yellow nodes) bridge the arts and music clusters. Red nodes are actors in the arts cluster; purple nodes are actors in the music cluster.

Table 11 below shows the densities of neighborhoods around particular actors (clustering coefficients) at the startup stage of arts and music network development (end of month 4). Each actor is listed according to their identifying label, primary network sector (arts (A), music (M), or both (AM)), organization, and individual clustering coefficient. The average clustering coefficient of 68% (medium density) applies across all actor neighborhoods at this early stage of network development. The most highly connected actors will usually have the lowest clustering coefficients. In Table 11, the eight actor coefficients that are smaller than the average are the
most significant (except when zero). There are 12 actors with clustering coefficients of zero (all from the music cluster), meaning that each is only connected to one other actor. These outliers have been deleted from the table below to improve clarity. The two actors who bridge the arts and music clusters—BDW (17%), BB (50%)—are among the top eight with significant (smaller) clustering coefficients in this table.

Table 11. Clustering coefficients of 15 actor neighborhoods (initial arts/music network) May 1, 2016.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
<th>Org</th>
<th>Cluster Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>JW</td>
<td>M</td>
<td>SO</td>
<td>0.166666667</td>
</tr>
<tr>
<td>BDW</td>
<td>AM</td>
<td>SO</td>
<td>0.166666667</td>
</tr>
<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>0.242424242</td>
</tr>
<tr>
<td>KM</td>
<td>M</td>
<td>CS</td>
<td>0.5</td>
</tr>
<tr>
<td>BB</td>
<td>AM</td>
<td>CD</td>
<td>0.5</td>
</tr>
<tr>
<td>MF</td>
<td>M</td>
<td>MF</td>
<td>0.6</td>
</tr>
<tr>
<td>MW-G</td>
<td>M</td>
<td>RA</td>
<td>0.666666667</td>
</tr>
<tr>
<td>AS</td>
<td>A</td>
<td>SN</td>
<td>0.666666667</td>
</tr>
<tr>
<td>SS</td>
<td>M</td>
<td>SO</td>
<td>0.8</td>
</tr>
<tr>
<td>IG</td>
<td>M</td>
<td>SO</td>
<td>0.9</td>
</tr>
<tr>
<td>SK</td>
<td>M</td>
<td>CS</td>
<td>1</td>
</tr>
<tr>
<td>BG</td>
<td>M</td>
<td>KR</td>
<td>1</td>
</tr>
<tr>
<td>CH</td>
<td>A</td>
<td>TF</td>
<td>1</td>
</tr>
<tr>
<td>DB</td>
<td>M</td>
<td>HO</td>
<td>1</td>
</tr>
<tr>
<td>CS</td>
<td>M</td>
<td>BN</td>
<td>1</td>
</tr>
</tbody>
</table>

At this initial stage of network development, we can see how two key actors (CH in the arts cluster and MF in the music cluster) begin the process of community embeddedness. CH and MF are interesting to compare because CH is a long-term resident of the area with existing art connections while MF is new to Sonoma County and has no pre-existing relationships in the study area. CH is the primary developer for the arts incubator program and MF is the primary developer for the music incubator, meaning that both perform leadership tasks. In Table 11 above, CH and MF have started the embedding process with the initial contacts in their respective networks over the first four months. CH is only directly linked to two other actors at this point, they all know each other, and one of them is bridging actor BB, so the clustering
coefficient for CH is one. This is compared to a coefficient of 34% for CH at the end stage of the network study 12 months later in May 2017. The 34% coefficient for CH is an improvement because his network of ties is larger with more structural holes and a mix of open and closed triplets. The links to all 27 actors in the low-density startup network can be seen in Figure 18 below. In the initial music network, MF is linked to five actors (two bridges—BB and BDW) who are not all connected, so the clustering coefficient for MF at this stage is 60%. This is compared to an improved coefficient of 36% for MF at the end stage of the network study 12 months later in May 2017.

Figure 18. The 27 actors in the complete arts and music network after four months (May 1, 2016). BDW and BB (yellow nodes) bridge the arts and music clusters. Red nodes are actors in the arts cluster; purple nodes are actors in the music cluster.

Patterns of clustering behavior, or the lack of them, are a guide to small group behaviors within the larger network. As an indication of embeddedness, the average clustering coefficient
is useful in determining existing or potential patterns of collaboration based on who knows whom. A longitudinal view of embeddedness helps to determine whether new initiatives, and the significant actors who are developing them, are making progress in terms of network growth and community engagement. As we have seen in this section, CH (arts) and MF (music), as the respective leaders of their incubator programs, provide an interesting longitudinal comparison in terms of the embedding process. This measure has also given us an indication of the actors who may be significant due to their proximity to structural holes in the network, and we will look at these actors in more detail in the Facilitation and Power section of this chapter.

**Information Flow (Average Path Length, Network Diameter, Betweenness)**

*Average path length* is used as a measure in this study along with *network diameter* and *betweenness centrality* to evaluate the nature of information flow within the arts and music incubator network.

Network diameter is a distance measure of the shortest path (geodesic distance) connecting the two most distant nodes/actors in the network (Knoke & Yang, 2008). However, an efficient communication network with a diameter of six might have thousands of nodes and many clusters, while another inefficient network with a diameter of six might only have 100 nodes (Cherven, 2015). As of May 2017, the diameter of the complete arts and music network is 4 with 59 actors in the network.

Average path length is a distance measure of the shortest paths between all actors in the network (Cherven, 2015). If the average path length is close to the network diameter, it may be a network with many clusters that add friction and inefficiency to communications. Actors who act as bridges between clusters become very important to information flow in this type of network, and communications may be overly dependent on a few bridges. As of May 2017, the average path length of the complete arts and music network is 2.7, indicating some inefficiency
in communications between actors (where a value of 4, equal to the network diameter, would be maximally inefficient). While some of this is the result of there being two separate programs, there is an overreliance on a small number of actors with bridging ties across the clusters. We can learn more about the flow of information and bridging relationships with the betweenness centrality measure.

Betweenness centrality measures the potential for individual actors to control or mediate flows of information or resources between indirectly connected dyads (Freeman, 1978). Betweenness sets a value on the importance of individuals in facilitating or brokering connections across the network. An actor with a high betweenness score may appear unimportant to network information flow using other types of centrality calculations. Betweenness can be compared to average path length as an indicator of whether bridging actors in a network that appears to be efficient (short paths) are actually responsible for inefficient information silos. As described later in this section, eigenvector centrality is also used in this study to locate actors with the most powerful connections, which may overlap with the actor ranking derived from the betweenness calculation. Betweenness is also compared to density to look for structural holes (Burt, 2004).
Table 12. Betweenness centrality of 24 most significant actors in the complete arts and music network as of May 1, 2017. The 35 actors with zero betweenness scores have been deleted.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
<th>Org</th>
<th>Betweenness</th>
</tr>
</thead>
<tbody>
<tr>
<td>JW</td>
<td>M</td>
<td>SO</td>
<td>445.17805</td>
</tr>
<tr>
<td>BB</td>
<td>AM</td>
<td>CD</td>
<td>341.295882</td>
</tr>
<tr>
<td>MK</td>
<td>M</td>
<td>PS</td>
<td>330.320635</td>
</tr>
<tr>
<td>BDW</td>
<td>AM</td>
<td>SO</td>
<td>312.228175</td>
</tr>
<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>293.086874</td>
</tr>
<tr>
<td>GG</td>
<td>M</td>
<td>ST</td>
<td>253.813312</td>
</tr>
<tr>
<td>EW</td>
<td>M</td>
<td>RK</td>
<td>212.694841</td>
</tr>
<tr>
<td>MF</td>
<td>M</td>
<td>MF</td>
<td>198.220127</td>
</tr>
<tr>
<td>CH</td>
<td>A</td>
<td>TF</td>
<td>159.281188</td>
</tr>
<tr>
<td>EB</td>
<td>M</td>
<td>TF</td>
<td>118.239993</td>
</tr>
<tr>
<td>CR</td>
<td>AM</td>
<td>HS</td>
<td>76.2335442</td>
</tr>
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<td>AS</td>
<td>A</td>
<td>SN</td>
<td>39.7522589</td>
</tr>
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<td>TM</td>
<td>A</td>
<td>CD</td>
<td>32.9691198</td>
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<td>KM</td>
<td>M</td>
<td>CS</td>
<td>19.6344628</td>
</tr>
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<td>DB</td>
<td>M</td>
<td>HO</td>
<td>16.75</td>
</tr>
<tr>
<td>MR</td>
<td>A</td>
<td>HS</td>
<td>15.9158231</td>
</tr>
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<td>JJ</td>
<td>M</td>
<td>LB</td>
<td>2.88333333</td>
</tr>
<tr>
<td>JD</td>
<td>M</td>
<td>NC</td>
<td>2.66666667</td>
</tr>
<tr>
<td>SS</td>
<td>M</td>
<td>SO</td>
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<tr>
<td>JS</td>
<td>A</td>
<td>HS</td>
<td>1.95238095</td>
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<td>MW-G</td>
<td>M</td>
<td>RA</td>
<td>1.38333333</td>
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<td>M</td>
<td>SO</td>
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</tr>
<tr>
<td>KS</td>
<td>A</td>
<td>CD</td>
<td>0.4</td>
</tr>
<tr>
<td>AP</td>
<td>A</td>
<td>CD</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Table 12 shows the betweenness centrality for the 24 actors (41% of the total) who have non-zero scores. Scores of zero (59% of the total) indicate actors who are peripheral to the network with only one or two connections to others. A high betweenness centrality score identifies actors in the network who exert influence over network communications and resources because others have to go through them to get things done. The betweenness scores range from 445 (JW, who also had the highest degree centrality score) to 0.4 (AP). The arts and music bridge actors are BB (341), BDW (312), and CR (76), and much of the network information flow has to pass through them. CH (159, arts) and MF (198, music) are among the top ten in importance. We can see this visually in Figure 19 below, which shows the betweenness
centrality scores for all 59 actors in the network after 16 months. In a larger network, there could be many paths that an actor could use to reach another actor, but this arts and music network is sparse and fragile, concentrating power in a few key actors.

Figure 19. Circular layout of the complete (59 nodes) network with actors ranked according to betweenness centrality after 16 months (May 2017). BB, BDW, and CR (yellow nodes) bridge the arts and music clusters. Red nodes are actors in the arts cluster; purple nodes are actors in the music cluster.
The largest circles in the diagram have the highest betweenness centrality scores after 16 months of arts and music incubator program development. The left half of the circle shows the actors with the lowest betweenness scores who have the least influence on the flow of information and resources. After about 16 months, CH (159, arts) and MF (198, music) are about equal in terms of their control over information and resource flows, and we know from the degree centrality analysis that they have a similar number of network ties (CH with 14 and MF with 11) with little overlap. Eigenvector centrality analysis in the next section will provide the strongest indication of which actors are the most influential with direct connections to the most powerful actors.

In summary, based on betweenness centrality, the complete arts and music network as of May 2017 is inefficient and dependent on about ten key actors for connections to information and resources. Both CH and MF are highly ranked in terms of betweenness, reflecting their roles as coordinators of the two incubator programs and their connections to other powerful actors within their networks. As of May 2017, CH and MF had not met or interacted with each other, which would have the potential of creating a powerful link for resource sharing or collaboration between the arts and music networks. From the network diameter of 4 and the average path length of 2.7 as of May 2017, we have confirmation of inefficiency in the information flow between actors (where a value of 4, equal to the network diameter, would be maximally inefficient). While some of this is the result of there being two separate programs, there is an overreliance on a small number of actors with high betweenness and bridging ties who leverage network resources. These betweenness scores also inform the analysis of power through eigenvector centrality in the next section.
Facilitation and Power (Betweenness Centrality, Eigenvector Centrality, Structural Holes)

As networks grow, their overall density tends to decrease, which is a reflection of the social difficulty of not being able to meet or maintain relations with everyone in a large community. Lower network density also means that structural holes are more likely to occur, creating inequalities that can be exploited by individual actors for their benefit (power brokers). On the other hand, structural holes can be opportunities for facilitating actors to make introductions and create new connections, increasing information flow and the potential spread of innovative ideas such as the incubator program. As explained in the previous section, betweenness measures the potential for actors to control or mediate information or resource flows between indirectly connected dyads (Knoke & Yang, 2008). Betweenness is also used with density to locate structural holes (Burt, 2004).

Eigenvector centrality is often used to indicate actors in the network with influential connections (more power). By looking at these influence patterns, we can also see if actors with low influence are primarily connected with their peers. An actor connected to influential people tends to have greater influence themselves (up to a score of 1.0), but the opposite (down to a score of 0) can also be true. As Burt (2004) observes when discussing structural holes, an actor who is next to a network structural opportunity will not necessarily take advantage of it, but we can see if the potential is there. Table 13 below shows betweenness and eigenvector values for the arts and music network four months into the planning phase (May 2016). Actors are ranked by highest to lowest eigenvector scores. This is followed by Table 14 with scores in the same categories after 16 months (May 2017). Actors in the second table are ranked again by highest to lowest eigenvector scores to indicate status changes in power and embeddedness. As an example, CH is ranked last in terms of network influence (eigenvector 0.10) when the planning process started in 2016, but became much more influential a year later (eigenvector 0.57). At
the same time, MF started by establishing ties to more powerful actors during the first four months, achieving an eigenvector score of 0.53 and increasing to 0.69 a year later. This is an indication that MF established embeddedness in the beginning (connecting with influential actors) and maintained that advantage as the network grew in size over the next year. Through association with more influential actors in the startup phase, MF increased his own influence quickly and gave him a head start on the embeddedness process. The arts network was also hampered by slower growth over the 16 months (2 actors in May 2016 increasing to 14 actors in May 2017) compared to the music network (23 actors in May 2016 increasing to 42 actors in May 2017).
Table 13. Betweenness and eigenvector centrality of all 27 actors in the startup phase of the arts and music network as of May 1, 2016. Actors are ranked by highest to lowest eigenvector scores.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
<th>Org</th>
<th>Betweenness</th>
<th>Eigenvector</th>
</tr>
</thead>
<tbody>
<tr>
<td>JW</td>
<td>M</td>
<td>SO</td>
<td>150.3166667</td>
<td>1</td>
</tr>
<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>101.5166667</td>
<td>0.84856794</td>
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<tr>
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</tr>
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<td>PX</td>
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<td>EG</td>
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<td>SM</td>
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<td>CH</td>
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<td>TF</td>
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</tbody>
</table>

In Table 13 above, JW has an eigenvector score of one. This correlates with the high betweenness score to indicate JW shares ties with the strongest influencers in the network and is a powerful network actor himself. This table also shows that the top five eigenvector scores in the startup phase are held by actors in the music network who work for the same organization (SO). Actor BB, a major local source of funding and resources at this location, is ninth in eigenvector rank. At this early stage, MF connected with three of the top five SO actors in this list, along with BB, and began to coordinate efforts to establish the music incubator program.
The music network quickly branched out into other organizations and elements of the community as MF leveraged the SO actor connections. In Table 14 below, one year later, three of the SO actors still hold the top five eigenvector scores, along with very high betweenness scores, while MF also made it into the top five group. BB, a source of funding and resources, is second in eigenvector rank (also see Figure 20 below).

Table 14. Betweenness and eigenvector centrality of 16 most significant actors in the complete arts and music network (59 nodes) as of May 1, 2017. Actors are ranked by highest to lowest eigenvector scores.

<table>
<thead>
<tr>
<th>Label</th>
<th>Type</th>
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<th>Betweenness</th>
<th>Eigenvector</th>
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</tr>
<tr>
<td>BB</td>
<td>AM</td>
<td>CD</td>
<td>341.295882</td>
<td>0.9063699</td>
</tr>
<tr>
<td>MW</td>
<td>M</td>
<td>SO</td>
<td>293.086874</td>
<td>0.8473673</td>
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<tr>
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<td>AM</td>
<td>SO</td>
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<tr>
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<td>MF</td>
<td>198.220127</td>
<td>0.6902397</td>
</tr>
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<td>M</td>
<td>ST</td>
<td>253.813312</td>
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<td>0.574934</td>
</tr>
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<td>M</td>
<td>TF</td>
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<td>A</td>
<td>SN</td>
<td>39.7522589</td>
<td>0.5317518</td>
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<td>CD</td>
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</tr>
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<td>KM</td>
<td>M</td>
<td>CS</td>
<td>19.6344628</td>
<td>0.4061257</td>
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</tbody>
</table>

Actor CH starts at the bottom of the eigenvector scores during the startup phase (also see Figure 20 below), despite a long association with influential bridging actor BB. One year later, CH is seventh in eigenvector rank out of 59 actors in the network (also see Figure 21 below). While the arts network has grown from 4 actors (2 bridges and two arts network actors) to 17 actors (3 bridges and 14 music), it still comprises only about 14% of the total network as of May 2017. As noted in the literature review, this type of sparse network in this context can be good for idea generation, but limits the ability of the group to develop and implement its plans unless
it contains enough powerful actors mixed with strong leadership. These conditions will be discussed further in Chapter 6 (*Relational Embeddedness Results*).

*Figure 20.* Arts and music startup network (27 nodes) after 4 months with actors ranked according to eigenvector centrality (May 2016). Larger circles equal larger eigenvectors. BB, BDW, and CR (yellow nodes) bridge the arts and music clusters. Red nodes are actors in the arts cluster; purple nodes are actors in the music cluster. JW has the highest eigenvector score, closely followed by BB, MW, and BDW.

In *Figure 20* above, the startup network of 27 nodes is sparse and dominated by the music network. This can be explained by the influential positions of the SO organization actors, five of whom (JW, MW, BDW, IG, SS) are at the top of the eigenvector rankings at this stage. MF is also near the center of the map due to his connections with the influential SO actors. CH is only connected to BB (one of the two network bridges) and AS (arts) at this time.
Figure 21 below is a circular map that shows the eigenvector centrality (ranked clockwise from highest to lowest) for all 59 nodes of the complete arts and music incubator network as of May 2017. The size of the circle for each actor is determined by their betweenness score.

Figure 21. Circular layout of the complete (59 nodes) network with actors ranked according to eigenvector centrality after 16 months (May 2017). Circle size is determined by betweenness scores. BB, BDW, and CR (yellow nodes) bridge the arts and music clusters. Red nodes are actors in the arts cluster; purple nodes are actors in the music cluster.
While JW ranks highest in terms of his eigenvector score, this could have been a case where an actor is a power broker who becomes an obstacle to program and network growth. JW also has the highest betweenness score, with the potential to control access to other actors and resources in the network. However, the clustering coefficient for JW started out small (0.17 during startup phase) and remained small one year later (0.19), which correlates with the role of a facilitator instead of a power broker. This conclusion is supported by findings in Chapter 6 (Relational Embeddedness Results) as well. As I use the term here, a facilitator actually gives away positional control of the network by continually introducing actors to each other. The facilitator function can also be compared to Obstfeld’s (2005) tertius iungens actor strategy that I noted previously. Facilitators with the highest scores are also likely to be adjacent to structural holes, since these network locations provide an advantage in detecting and developing opportunities (Burt, 2015).

Leveraging Structural Holes for Embeddedness (Betweenness Centrality and Density)

To reiterate, an absence of connections among individuals or groups in a network is what Burt (1992, 2004) refers to as structural holes. The holes near individuals represent opportunities where unique ties to other individuals or groups could be created to form a bridge that promotes information exchange. An actor seeking network advantage, either as a broker or a facilitator, can increase embeddedness by leveraging bridge actors and/or becoming a bridge themselves (Burt, 2015). In a triad where actor A is connected to B and C, and where B and C are not connected to each other (see Figure 22), A is in a power position where A can broker information or facilitate a new connection between B and C (thereby losing the power position in the triad, as in Figure 23 below).
Figure 22. Actor A is in a controlling broker position because actors B and C depend on A for interaction. In this case, A is not a facilitator as defined in this study because B and C have not been introduced by A. The lack of a tie between B and C is a structural hole.

Figure 23. If A is a facilitator of collaborations, A may introduce B to C, creating a new link as seen here, which can also weaken the influence of A over B and C. This could have a negative impact in a trade or negotiation brokerage situation. In an open collaborative environment, A’s facilitation of interactions between B and C is minimized by their introduction, but freer discussion flow is enabled, access to resources may improve, and A’s cost to maintain these relationships is reduced.

As discussed in the previous section, understanding the nature of bridging actors using SNA measures provides guidance as to whether the bridges are brokers or facilitators. Understanding the positional advantage or disadvantage of actors in relation to structural holes also helps in analyzing the embedding process. Considering the density and betweenness centrality measures together allows us to better understand actors in relation to structural holes in the incubator network. Relational indicators, discussed in the next chapter, fill in the rest of the puzzle in determining the behavioral nature of particular bridges, such as whether a power broker can be converted to a facilitator.

In addition to its other uses in this study, betweenness centrality can be viewed as a count of the structural holes to which an actor has exclusive access (Burt, 2015; Freeman, 1977). Freeman (1977) first developed betweenness as a small-group measure of an actor’s control.
over information flow within a group, making it well suited to its use in this small-network study. Betweenness scores equal an actor’s number of connection opportunities in sparse networks of unconnected contacts. In a group where all of an actor’s connections already know each other, betweenness is zero (and density would be 100%). An actor who knows two unconnected people (density 67%, calculated as two existing ties divided by three possible ties) can facilitate one new tie. An actor who knows four unconnected people (density 40%) can facilitate six new links (for a total of 10 ties).

In a network with many connections between actors, density is high and brokerage opportunities to make new connections are limited. As density increases, contacts are more likely to share information, reducing opportunities to broker information. Contacts in a dense network also have many possible communication paths, so they can enforce behavioral sanctions against individuals who are new to a group or who violate shared norms of behavior (Burt, 2015). This is not the case here. As we have seen with a density of 13.7% after the first four months of planning, the complete incubator network is sparse with a lot of structural holes. Only three bridges span the structural holes among actors in the arts and music clusters. The low-density incubator network has many opportunities for actors such as CH (arts) and MF (music) to make new connections, leverage bridges to expand their networks faster, and become bridges themselves. In this case, understanding whether the bridge actors operate as power brokers or facilitators directly affects the embedding process. Eigenvector and clustering coefficient scores were used to discern the nature of the bridging actors and other structurally significant actors in the previous section.

Table 15 below compares betweenness and degree centrality scores for 27 actors over the course of incubator program development. Allowing for unsynchronized starts of the arts and music incubator initiatives during the first four months of 2016, the table compares betweenness

146
and degree scores over one year starting May 1, 2016 and ending May 1, 2017. Actors MF and CH are highlighted to compare their changes as the network grew from a total of 27 actors to a total of 59. Network density is sparse in the beginning (13.7% in May 2016) and at the end (8.2% in May 2017) as the complete network almost doubled in size (27 actors to 59).
Table 15. Betweenness and degree centrality of 27 actors in May 2016 and May 2017. Actors are ranked by highest to lowest betweenness scores during the startup phase as of May 2016. Actors MF (music) and CH (arts) are highlighted for comparison of status change over one year.

<table>
<thead>
<tr>
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<th>Degree May 2016</th>
<th>Degree May 2017</th>
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<tbody>
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</table>

Over one year of working to develop the music incubator program, the betweenness score for MF went from 9.2 (with 5 ties) to 198.2 (with 11 ties). So, in the initial network of 27 actors, MF had access to 9 structural holes, and 198 holes at the end of the study. Similarly, CH went from a May 2016 betweenness score of zero (connected to 2 people who already knew each other) to 159.2 (with 12 additional ties). As we can see from Table 15, there are also 15 actors from the original 27 in 2016 who remain connected to only one other actor within the network.
after a year, so they persist as unused assets at the end of the study in 2017. In effect, these isolated nodes of the complete network lie on the other side of structural holes that could be closed by bridging actors to engage them in program development. However, considering how both MF and CH have managed to increase their community embeddedness over the first year by working through existing bridge actors, it is possible that their focus on making higher-value actor connections during this period was a good choice. Based on the key informant interviews, many of these isolated actors at the edge of the network provide specific resources, such as performance space or donations, and will become more engaged as the incubator programs evolve. Further network mapping of the isolated actors might also discover additional advantages for creating new ties with them. Although it does not appear to be the case from the eigenvector (power) or betweenness analyses, relational embeddedness factors might find that these isolates are excluded from the network for other reasons, such as reciprocity failures.

Although several of the previous sections have touched on elements of change over time with regard to structural embeddedness measures of the incubator network, the next section focuses on specific findings that are seen more clearly with longitudinal maps.

LONGITUDINAL NETWORK CHANGE

In this section, the arts and music incubator network is discussed in terms of its evolution over 16 months. As in previous sections, the startup phase during the first four months of 2016, ending May 1, 2016, is used as the starting point for comparison with the completed network at the end of the study as of May 1, 2017.

Longitudinal Change in Degree Centrality

In Table 15 in the previous section, we can see the changes in betweenness and degree centrality over one year for the 27 actors who were part of the network as of May 2016. Used by itself as a longitudinal measure, degree centrality can indicate growth, decline, or stasis in a
network—as we see in the following series of figures. In this section, the arts and music
incubator network is discussed in terms of its evolution over 16 months through examination of
degree centrality. As in previous sections, the startup phase is during the first four months of
2016, ending May 1, 2016. The final map represents the completed network at the end of the
study as of May 1, 2017.

The size of each circle represents relative importance of each actor based on its degree
centrality during the first month of planning (January 2016), so larger circles equal higher
degree centrality. By maintaining the actor node size, we can focus on network dynamics visible
as changes to relational ties. In general, higher-scoring actors mostly appear in the center of the
map, and the lowest-scoring actors will be on the outer edges. Red circles (nodes) represent
arts network actors, purple circles represent music network actors, and yellow circles represent
actors who bridge the music and arts networks. Darker lines represent stronger trust ties
between actors (described in more detail in Chapter 6 (Relational Embeddedness Results).
Only months showing significant network change are displayed as part of the series.

As of month 1 (ending February 1, 2016), there are 7 actor nodes (5 music, 1 arts, 1 bridge
between both networks) as seen in Figure 24 below. These actors are connected by 7 ties
representing 5% of the total ties (141) in the final network of May 1, 2017. At this stage of
network development, actor BB (SOMO campus developer/owner) is the only bridge between
the music and arts networks.
Figure 24. Month 1 (January 2016) arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.

MW (concert promotion company owner) and BB are responsible for getting the music incubator concept started in January 2016. Early discussions between BB and AS (employee of BB) are responsible for starting the arts incubator concept, although CH will soon arrive to change the concept during the first quarter of 2016. Actor CH is intended to coordinate development of the arts network. CH does not work for anyone else in this network but has known some of them, such as BB, for years as a long-term resident of the area.
Figure 25. Month 3 arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.

In Figure 25 above, JW is a new employee of MW who gets the music incubator planning started and will remain instrumental in developing the network. CH, a local artist/engineer located on the SOMO campus, volunteers to help BB develop the arts incubator. There are now 13 actor nodes (10 music, 2 arts, and 1 bridge between both networks) representing 22% of the
total 59 actors in the final network of May 1, 2017. These actors are connected by 16 ties representing 11% of the total ties (141) in the final network of May 1, 2017.

Figure 26. Month 4 arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.
Month 4 completes what I refer to as the startup phase of planning and development for both the music and arts networks (see *Figure 26*). MF, a referral who will coordinate development of the music incubator, first appears this month. MF is a musician and an outsider to this network who does not work for anyone else, but begins by meeting MW, JW, BDW, BB (all located at the SOMO campus). This is a strong starting point to begin the embedding process. Later in the month, MF meets KM (county government) via a referral from JW. There are now 25 actor nodes (21 music, 2 arts, and 2 bridges between both networks) representing 42% of the total 59 actors in the final network of May 1, 2017. These actors are connected by 44 ties representing 31% of the total ties (141) in the final network of May 1, 2017.
Figure 27. Month 6 arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.

At month 6, a financial sponsor (JJ) joins the music network. MF also creates a weak tie to JC, becoming a bridge from the music to the arts network (see Figure 27). There are now 27 actor nodes (22 music, 3 arts, and 2 bridges between both networks) representing 46% of the
total 59 actors in the final network of May 1, 2017. These actors are connected by 51 ties representing 36% of the total ties (141) in the final network of May 1, 2017.

Figure 28. Month 12 arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.
At month 12, financial sponsor EB joins the music network via referrals from BB and MW (see Figure 28). An arts planning meeting by BB and CH occurs for the first time, prompting a big jump in arts network membership. A local arts high school also moves to the SOMO campus and their executive director becomes the third bridge between the arts and music networks. There are now 38 actor nodes (23 music, 12 arts, and 3 bridges between both networks) representing 64% of the total 59 actors in the final network of May 1, 2017. These actors are connected by 97 ties representing 69% of the total ties (141) in the final network of May 1, 2017.
At month 14, CH connects with two new arts actors. GG joins the music network and brings in 4 new music actors by referral (see Figure 29). GG is located near the center of the map with high degree centrality (13) that is comparable to CH (14), MW (16), and BB (16). There are now
45 actor nodes (28 music, 14 arts, and 3 bridges between both networks) representing 76% of the total 59 actors in the final network of May 1, 2017. These actors are connected by 112 ties representing 79% of the total ties (141) in the final network of May 1, 2017.

*Figure 30.* Month 16 complete arts and music incubator network map. Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.
At month 16, the study period is complete as of May 1, 2017 (see Figure 30). Some of the activities planned for the music incubator are starting to be implemented as events to build awareness of the incubator program at SOMO. This results in a significant increase in music subnetwork membership that is comparable to the recent month 12 jump in arts subnetwork membership from the meeting coordinated by CH and BB. In April, MF attends a morning coffee event hosted by JW for musicians to network. MF and JW plan to share hosting of these bi-monthly coffee meetings for musicians to develop awareness of the music incubator programs at the SOMO campus. Connections at this event create ties to the last of the high-scoring degree centrality actors, MK (11) and EW (10), who bring along 14 new music actors. EW is trying to coordinate a segment of local musicians, but also now plans to share this monthly activity with MF as part of the music incubator program. In the final network, there are now 59 actor nodes (42 music, 14 arts, and 3 bridges between both networks). These actors are connected by 141 ties. Since MF is gradually increasing coordination and leadership activities for the local music network, assuming hosting duties from JW and EW, there is potential at this stage to quickly consolidate and increase tie density within the network. The nature of trust strength reflected in these network ties, as well as more of the social context, will be examined in greater detail in the following Chapter 6 (Relational Embeddedness Results).

Based on this sequence of maps reflecting network change through growth and degree centrality analysis, we can see that key actors are becoming more apparent for the expansion and coordination of the network. These actors include JW, BDW, MW, BB, MF, and CH, now with the addition of GG and EW who bring new and more diverse music subnetwork ties into the incubator network. These actors will be examined in more detail in the next section on embeddedness and power.
As in the earlier discussion of betweenness compared to degree centrality, there are also 15 actors from the original 27 in the startup phase of 2016 who remain connected to only one other actor within the network after a year, so they persist as unused assets at the end of the study in 2017. In effect, these isolated nodes of the complete network lie on the other side of structural holes that could be closed by bridging actors to engage them in program development or other incubator activities. While the music subnetwork is now 71% of the overall network, it appears that more attention now needs to be focused inward to increase interactions and create new ties between existing music members. As noted in the Social Networks section of Chapter 2, Burt (2004) and others are proponents of higher-density ties, and the bridging of structural holes, within networks when program implementation takes priority over the novel idea generation characteristic of sparse networks.

**Longitudinal Change in Embeddedness and Facilitation/Power**

In addition to baseline measurement of network growth by degree centrality, I also need to understand longitudinal change in embeddedness as it relates to functional network roles of facilitation or power. This tells us something about embeddedness as it relates to the incubator planning process while also helping us locate actors who facilitate growth of the support network for the incubator. Earlier sections considered the average clustering coefficient as an indicator for embeddedness and betweenness centrality (combined with degree centrality) as indicators for power and facilitation. In this section, the arts and music incubator network is discussed in terms of its evolution over 16 months through examination of betweenness centrality and growth in relation to facilitating or powerful actors. As in previous sections, the startup phase is during the first four months of 2016, ending May 1, 2016. The final maps represent the completed network at the end of the study as of May 1, 2017.
The following sequence of maps shows network change (betweenness, growth) resulting from incubator program planning for months 3-16. Only months with significant network change are displayed as part of the series. The size of each actor node (circle and label) represents relative importance of each actor based on its betweenness centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties between actors (described in more detail in Chapter 6 (Relational Embeddedness Results)).

As of month 3 (ending April 1, 2016), there are 13 actor nodes representing 22% of the final network size in May 2017 (see Figure 31 below). These actors are connected by 16 ties representing 11% of the total ties (141) in May 2017. At this stage of network development, actor BB is the only bridge between the music and arts networks. MW and BB are responsible for getting the music incubator concept started in January 2016, although coordination of this activity is being turned over to JW. Discussions between BB and CH are responsible for starting the arts incubator concept during the first quarter of 2016, and there are only two arts network actors at this stage. Actor CH is intended to coordinate development of the arts network. CH does not work for anyone else in this network but has known some of them for years as a long-term resident of the area.
Figure 31. As of month 3 (April 1, 2016), there are 13 actor nodes representing 22% of the final network size in May 2017. These actors are connected by 16 ties representing 11% of the total ties (141) in May 2017. The size of each actor node (circle and label) represents relative importance of each actor based on their betweenness centrality. Red circles are actors in the arts network. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks.

BB is a powerful resource (betweenness score 341 in May 2017) who intends to provide space and funding for both activities at the SOMO campus in Rohnert Park. MW (betweenness score 293 in May 2017) is the prominent owner of a concert promotion business, and JW (betweenness score 445 in May 2017) is a new employee of MW who is well-connected with the local music scene. These three actors are important drivers of the incubator network startup phase and remain prominent throughout the network growth sequence.
As of month 4 (May 1, 2016), there are 25 actor nodes representing 42% of the final network size in May 2017. These actors are connected by 44 ties representing 31% of the total ties (141) in May 2017. The size of each actor node (circle and label) represents relative importance of each actor based on their betweenness centrality. Red circles are actors in the arts network. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks.

MF (betweenness score 198 in May 2017) is introduced to the music network in April 2016 (Figure 32 above) and starts to assume coordination responsibility with help from JW. MF is an outsider to everyone in this network and will assume primary responsibility for coordinating the music network over the following months. MF is independent and is not employed by anyone else in this network. Despite being an outsider, MF quickly begins to be embedded in the music network through ties for referrals from JW, MW, BB, and BDW (another employee of MW introduced during month 4 who becomes an important facilitator). MF also now connects to
Sonoma County government through a new tie with KM. In contrast, the arts network shows no change due to CH activities between months 3 and 4.

Figure 33. As of month 9 (October 1, 2016), there are 27 actor nodes representing 46% of the final network size in May 2017. These actors are connected by 51 ties representing 36% of the total ties (141) in May 2017. The size of each actor node (circle and label) represents relative importance of each actor based on their betweenness centrality. Red circles are actors in the arts network. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks.

After 5 additional months (October 1, 2016), 2 new actors (JC and JJ) are added along with 7 new ties facilitated by MW and BDW (Figure 33 above). MF has added a bridging tie to the one new actor (JC) in the arts network.
As of month 12 (January 1, 2017), there are 40 actor nodes representing 68% of the final network size in May 2017. These actors are connected by 100 ties representing 71% of the total ties (141) in May 2017. Red circles are actors in the arts network. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks.

At month 12 (January 1, 2017), significant growth occurs in the arts network with 12 new actors while one financial sponsor (EB) is added to the music network (Figure 34 above). This growth in the arts network occurs as a result of a coordinating meeting called by BB and CH. A new facilitating bridge actor (CR) also appears here. CR (betweenness score of 76 as of May 2017) is the executive director of a local arts-oriented high school that is in the process of moving to the SOMO campus in Rohnert Park.
Figure 35. Complete network. As of month 16 (May 1, 2017), there are 59 actor nodes and 141 ties between those actors. The size of each actor node (circle and label) represents relative importance of each actor based on their betweenness centrality. Red circles are actors in the arts network. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks. (Note: JM links to MK through a low-trust tie, so the line weight is hard to see in this map.)

Figure 35 above is the complete network of 59 actors and 141 relational ties as of May 1, 2017. EW meets MF in April 2017 and becomes a significant facilitator (betweenness score of 213 as of May 1, 2017). EW, a local musician, knows 5 existing actors and brings 5 new actors into the network. GG (betweenness score 254) and MK (betweenness score 330) also enter the network in the first quarter of 2017 through the efforts of MF. MF was referred to GG, a restaurant operator at SOMO, through BDW and JW. MF was referred to MK, a recording studio owner, through JW. All three of these actors (EW, GG, MK) are long-term residents of the area with significant embeddedness in the local music scene. By making these connections through...
trusted referrals, MF gains credibility while also becoming more embedded in the network (see additional Figure 36 and Figure 37 below).

Figure 36. Music subnetwork as of month 16 (May 1, 2017). There are 42 music actors and 3 bridge actors. The size of each actor node (circle and label) represents relative importance of each actor based on their betweenness centrality. Purple circles are actors in the music network. Yellow circles are actors who serve as bridges between both networks. (Note: JM links to MK through a low-trust tie, so the line weight is hard to see in this map.)

The music subnetwork (Figure 36 above) comprises 71% of the complete network as of May 1, 2017 with 42 actors. The 3 actors who bridge the networks comprise 5% of the complete network. Over one year of working to develop the music incubator program, the betweenness score for MF went from 9 (with 5 ties) to 198 (with 11 ties), placing him near the center of this map in May 2017. This can be compared to the arts subnetwork in Figure 37 below.
The arts subnetwork (Figure 37 above) comprises 24% of the complete network as of May 1, 2017 with 14 actors. The 3 actors who bridge the networks comprise 5% of the complete network. Over one year of developing the arts network, CH went from a May 2016 betweenness score of zero (connected to 2 people who already knew each other) to 159 (with 12 additional ties) in May 2017.

Reviewing the last three figures showing the completed network, there is a wide spread in betweenness centrality from 0 to 445 (JW), which is also reflective of embeddedness. Actors
with the lowest betweenness scores are located around the perimeter of the network, meaning that nobody has to go through these low-power actors to reach other actors. Influential actors with the highest betweenness scores are scattered around the middle of the map.

Earlier, I presented findings using the average clustering coefficient as a structural embeddedness indicator. This measure evaluates the density of ties among connected triplets of actors (cliques of 3) relative to the number of all possible actor triplets. This can be thought of as the degree to which an actor’s friends are friends with each other. In a network map, high embeddedness scores often correlate with close physical proximity (short average path lengths, or geodesics) among similar actors. Comparing the music and arts subnetworks, the actors with the most significant clustering coefficients are highly correlated with those having the highest betweenness centrality scores. As is evident in the longitudinal map comparisons, most of these actors are also in close proximity to each other at the center of the maps. However, actors such as EW and EB have high betweenness while being located away from the center, making network communication more efficient because they are more accessible to actors farther from the center. If all actors with high betweenness were in the center of the map, redundancy could create inefficiencies in access and communications. The nature of trust strength reflected in these network ties, as well as more of the social context, will be examined in more detail in the following Chapter 6 (Relational Embeddedness Results).

Based on this sequence of maps reflecting network change through growth and betweenness centrality analysis, we can see more evidence that many of the same key actors are necessary for the expansion and coordination of the network. These actors include JW, BDW, MW, BB, MF, and CH, along with the later-stage additions of EB, GG, and EW. While the amount of facilitation provided by each actor varies, their betweenness and eigenvector scores show that eight of the highest-scoring actors, with the exception of EB, are oriented toward
facilitation rather than controlling brokerage. The result for EB may just indicate an asset that has not been used as much for facilitation because he is a newer entry to the network. The longitudinal comparison of betweenness centrality in this sequence also provides support for the results in other measures indicating that local influence of key actors can be leveraged for network growth by new entrants to the network (CH and MF).

STRUCTURAL EMBEDDEDNESS RESULTS SUMMARY

This chapter examined various aspects of network integration along with functional characteristics of individual network actor connectivity, power, and influence. Highlights of these findings include:

- **Network cohesion/density** was analyzed to create a general picture of the incubator network and its potential for small-world conditions. With 59 actors in the overall network having 141 relational ties, out of a possible 3,422 ties, the incubator network density is a low 8%. This low density does not indicate a small-world condition for the overall network. It also indicates a low level of collaborative capacity at present. Low capacity could be addressed by greater efforts at coordination and network bridging by MF and CH.

- **Degree centrality** analysis supports the conclusion that the network is sparse with limited cohesion and low collaborative capacity.

- Geodesic distance (**average path length**) across the overall incubator network is 2.7, indicating moderate paths between actors and potential for a small-world network condition.

- As of May 2017, the **average path length** of 2.7 also indicates some inefficiency in communications between actors (where a value of 4, equal to the network diameter, would be maximally inefficient). While some of this is the result of there being two
separate programs, there is an overreliance on a small number of actors with bridging
ties across the clusters.

- Incubator **cluster density** was examined with a resulting **average clustering**
  coefficient of 66%—the average of all neighborhood clusters. This is a moderate level
  of embeddedness and may indicate the presence of structural holes in the network.
  Only 34% of clusters are of higher density than the mean, so most clusters are of
  medium density indicating little potential for a small-world condition. Individual
  facilitators need to engage more broadly with the community and coordinate among
  existing network actors.

- Based on data collected for this study, a **small-world condition is not evident** in the
  incubator community network at present.

- It is possible that a **small-world** pattern would be more evident if the community data
  were compared to a broader sample of network activity. With this study’s focus on direct
  network interactions related to the community and the incubator planning group, it is
  possible that the medium-density clustering coefficient is a result of sampling an activity
  started with the intent of being a multi-program collaborative. As such, the data may
  well be representative of a more innovative sparse network operating within a broader
  environment of dense clusters in programs that were not sampled.

- Based only on **degree centrality** results for May 1, 2017, JW (22) and BDW (18) are
  the most central and connected actors in the incubator network. They are ranked just
  above MW (16), BB (16), CH (14), GG (13), and MF (11). With a degree centrality range
  from 0 to 22 (JW), positional advantages for power are unequally distributed within the
  network.

- Longitudinal analysis of **degree centrality** and **network growth** presents additional
  results indicating the importance of key actors JW, BDW, MW, BB, CH, MF, GG, and
EW to recruiting new actors. An arts planning event hosted by CH and BB in December created a significant increase in arts subnetwork membership. A comparable social event in April 2017, hosted by JW with MF, created a comparable increase in music subnetwork membership. The increased network membership and resulting low network density could now be coordinated and consolidated by MF and CH. As noted by Burt (2004) and other researchers, increasing the number of relational ties to form a higher-density network could also increase collaboration for implementation and continued development of incubator programs.

- The **average clustering coefficient** was used as a measure of structural embeddedness. Results for the whole network indicate moderate embeddedness and the presence of many advantageous structural holes.

- Individual results for the **average clustering coefficient** during the *startup phase* indicate that JW (0.17) and BDW (0.17) are the most embedded actors, followed by MW (0.24), KM (0.5), BB (0.5), and MF (0.6). Arts coordinator CH (1.0) is among the least embedded actors. At the *end of the study* (May 1, 2017), the most embedded actors (where smaller values are better) are MK (0.11), EW (0.18), BDW (0.18), GG (0.19), and JW (0.19), followed by MW (0.25), CH (0.34), BB (0.34), MF (0.36). Note that embeddedness scores improved for MF (from 0.6 to 0.34) and CH (from 1.0 to 0.34), which is an indication that their new relational ties and coordination of the planning process has improved their embeddedness in the community.

- Comparing **betweenness centrality** results for May 1, 2016 versus May 1, 2017, JW (150 to 445) remains at the top of the ranking of important facilitators (or brokers) of relational ties across the network. JW is followed by other significant facilitator/brokers: BDW (125 to 312), MW (101 to 293), and BB (24 to 341). In a larger network, there could be many paths that an actor could use to reach another actor, but this arts and
music network is sparse and fragile, concentrating power in a few key actors who have access to information and resources.

- Over one year of working to develop the music incubator program, the **betweenness** score for MF went from 9.2 (with 5 ties) to 198.2 (with 11 ties). So, in the initial network of 27 actors, MF had access to 9 structural holes, and 198 holes at the end of the study. Similarly for the arts incubator program, CH went from a May 2016 betweenness score of zero (connected to 2 people who already knew each other) to 159.2 (with 12 additional ties). Again, this is evidence of increasing embeddedness over 16 months of incubator planning and development by CH and MF.

- **Eigenvector centrality** analysis provides the strongest indication of which actors are the most influential with direct connections to the most powerful actors. Examining these influence patterns, we can also see that actors with low influence are primarily connected with their peers in this network. As of May 1, 2017, eigenvector results indicate that JW (1.0) shares ties with the strongest influencers in the network and is a powerful network actor himself. JW maintained this top ranking throughout the study. JW is followed by BB (0.9), MW (0.8), BDW (0.8), MF (0.7), GG (0.7), and CH (0.6).

- While JW ranks highest in terms of his **eigenvector** score, this could have been a case where an actor is a power broker who becomes an obstacle to program and network growth. JW also has the highest betweenness score, with the potential to control access to other actors and resources in the network. However, the clustering coefficient for JW started out small (0.17 during startup phase) and remained small one year later (0.19), which correlates with the role of a facilitator instead of a power broker.

- CH is ranked last in terms of network influence (**eigenvector** 0.1) at the start of the planning process in 2016, despite a long-term association with BB, but is much more influential a year later (eigenvector 0.6). At the same time, MF starts by establishing ties
to three of the five most powerful actors during the first four months, achieving an eigenvector score of 0.5 and increasing to 0.7 a year later (matching the score of long-term resident GG). MF quickly increases his embeddedness and influence in the beginning, and then maintains that advantage as the network grows in size over the next year.

- Comparing **longitudinal** change results based on **growth and betweenness centrality** to the degree centrality, eigenvector, and average clustering coefficient results, the same key actors emerge as being important to program growth and implementation. These actors include JW, BDW, MW, BB, MF, and CH, along with the later-stage additions of GG, and EW. While the amount of facilitation provided by each actor varies, the highest-scoring actors in each measure demonstrate facilitation behavior rather than controlling brokerage.

- The **longitudinal** comparison of **betweenness centrality** also provides support for the results in other measures indicating that local power of key actors can be leveraged for network growth by new entrants to the network (CH and MF). Trust in relation to this capability is examined in more detail in Chapter 6 (Relational Embeddedness Results).

To summarize, these SNA measures provide a structural picture of the embedding process during the planning phase for an arts incubator. In the first part of this chapter, I considered the potential effects of whole-network density, geodesic distance/path length of the complete incubator network, and the density of network clusters as indicators of potential small-world conditions. Clusters were measured with the average clustering coefficient, which is an indicator of structural embeddedness. The advantage of a small-world network is that there are a sufficient number of bridging actors to optimize novel information flow among clusters of actors who can implement new ideas. Analysis determined that one of the three conditions required for a small-world network is not evident in the incubator planning community. A broader and
lengthier network study of the community might provide evidence of high-density clusters with a greater likelihood of small-world conditions. However, data limitations in the current study prevent drawing such conclusions.

The functional characteristics of individual network actor connectivity, power, and embeddedness were also explored through multiple measures. Cohesion and degree centrality measures indicate low information flow and collaborative capacity. However, increased coordination and management of the music and arts subnetworks could engage more network members as the incubator programs move farther into the implementation stage over the next year. This potential is apparent through analysis of the centrality, eigenvector, and clustering coefficient measures, which indicate that the most influential actors in the network also demonstrate facilitation behaviors rather than controlling brokerage behaviors that could limit collaboration.

Embeddedness measures of network actors over 16 months indicate that actors MF and CH, as coordinators of each incubator program, are leveraging key influential actors for referrals to increase their embeddedness. MF and CH are adjacent to many structural holes in the network, and this provides a variety of opportunities to increase their embeddedness if they continue to intensify tie density. The trust component of this process is examined in Chapter 6 (Relational Embeddedness Results). As of month 16, there are many unused assets at the edges of the network that could be engaged and connected to the active core of high-betweenness actors. However, there is potential for an overreliance on strong ties with the core facilitating actors, such as JW, BDW, and BB that could lead to path-dependency and information redundancy if dense clusters form that are dominated by too few of these actors.

Quantitative analysis of the structural embeddedness and other descriptive characteristics provided a detailed picture of incubator network change during the 16-month planning and early
implementation process. Individual actors who appear to be influential in establishing a capable support network for incubator program activities have been identified, along with network bridges and other structural indicators that could be leveraged for efficient growth and coordination. However, structural analysis does not provide a complete picture for understanding network processes. Context provided by qualitative analysis of the informant interviews, as well as quantitative analysis of trust indicators, will be examined in the following Chapter 6 (Relational Embeddedness Results). This will provide additional evidence for integrated conclusions in the Blended Analysis chapter as all of these findings relate directly to the research questions.
CHAPTER 6: RELATIONAL EMBEDDEDNESS RESULTS

INTRODUCTION: INDICATORS FOR RELATIONAL EMBEDDEDNESS (DYADIC)

This chapter presents results from informant responses intended to measure elements of trust and behavioral norms as they relate to the incubator community. Findings from this section also inform the analysis of trust measures in relation to part of the first research question: “Can the planning and implementation process for a rural arts business incubator foster community embeddedness as evidenced through increased trust, improved information flow, and social network growth?” While the answer to this research question will be addressed in more detail in the Blended Analysis chapter, the analysis of individual trust indicators here is intended to supply additional contextual evidence as to its effects on embeddedness.

Trust in embeddedness structures manifests as interpersonal trust in relational embeddedness or as impersonal reputational trust in structural embeddedness (Ozdemir et al., 2016; Raub & Weesie, 1990). Interpersonal trust is when an entrepreneur is viewed as trustworthy in a dyadic relationship. Reputational trust is when an entrepreneur’s behavior is expected to be governed by the mutual norms and reciprocity among their web of local connections.

A total of 13 research participants were recruited from arts and music incubator planning groups to participate in the research. As part of the face-to-face interview, participants also provided verbal responses to social network analysis survey questions in which they were asked to characterize attributes of 10 individuals they identified as being key individuals in the local arts and music community. Out of a potential 130 network data points, only 59 actor nodes were identified because some participants named less than ten relational ties with other actors. Participants were either part of the incubator planning groups or otherwise directly connected to development of incubator program concepts. As is evident in the previous network maps, these
130 data points translated to 59 actor nodes and 141 relational ties, out of 3,422 possible ties (derived by calculating \( n(n-1) \) nodes). For similar reasons, trust analysis of responses to the survey translates to 187 dyadic combinations (instead of 242). In a full-census style survey of the incubator network population, two-way directionality would provide confirmation of responses from both actors in all possible dyads, resulting in an averaged strength of response for each question. This is a limitation of the unidirectional method used in this study.

Respondents were asked to characterize aspects of ten of their relationships. These relationship characteristics include frequency of contact, length of time known, frequency of informal social interaction, reliability, and level of trust. While there is some overlap here with characteristics of tie strength as discussed by Granovetter (1973)—length of time known, emotional intensity, intimacy/confiding, and reciprocal services—the measures used in this chapter are specifically aimed at trust relationships. The open-ended component of the interviews focused on elements of local culture and behavioral norms to learn more about the how and why of embedding behaviors, power-related barriers, or potential support for collaborative activities.

Data Presentation

Bivariate cross-tabulations were used with Spearman’s rho coefficients to look for correlations between trust-related variables and to test significance. Simple bivariate tests were most appropriate due to the small sample size that would not produce meaningful results from multivariate analysis techniques. Contingency tables are followed by written descriptions of the results.

In the first set of results, respondents were asked to characterize their relationships with the ten actors they identified, as noted above. Response frequencies were then cross-tabulated to compare trust strength with frequency of contact. The second set of results follows the same
format comparing trust strength to length of time known, the third table compares trust strength to frequency of informal socialization, the fourth table compares trust strength to perceived interest in facilitating collaborations, and the fifth table compares trust strength to perceived reliability (see Figure 38).

![Figure 38. Relational Embeddedness portion of study model.](image-url)

In the second set of results, behavioral norm indicators (reciprocity, path dependency, and power) are examined through analysis of responses to the semi-structured interviews.

**ANALYSES OF RELATIONAL EMBEDDEDNESS DYADIC INDICATORS**

**Trust Strength/Strength of Ties**

Granovetter (1973) noted that people tend to cluster in groups with strong within-group ties, and this creates a high velocity of redundant information flow within the group, so new ideas must come from the weak ties connecting separate groups. These weak ties—a form of Putnam's bridging social capital (Luloff & Bridger, 2003)—are important for the creation of interpersonal linkages across otherwise isolated social networks to facilitate novel information transfer. Strong ties reflect close bonds between actors, engendering trust, social cohesion, and
willingness to collaborate within the group, but these close bonds can also lead to groupthink. Bridger and Alter (2006) have observed that these tie strength concepts depend on stable relationships leading to bonds of trust and norms of reciprocity, and these are often lacking in modern communities where social instability has become the norm.

Based on the informant interviews, respondents were most likely to have very strong trust (36.4%) in those individuals they collaborated with for incubator planning activities, followed by moderate trust (32.1%), strong trust (26.7%), and some trust (3.7%), with 1.1% stating “don’t know” (see Table 16 below.) In this chapter, these trust levels are dichotomized into the two Granovetter (1973) categories of strong ties (combining the very strong and strong responses for 63.1% of the total) and weak ties (combining the lower trust level responses, excluding the don’t know category, for 35.8% of the total). These dichotomized ties are used in the accompanying network diagrams. While Granovetter’s notion of tie strength is more nuanced, including properties such as length of relationship, emotional intensity, intimacy, and reciprocity, the use of tie strength in this chapter is intended to rely on the trust dimension as the key indicator for tie strength, so I refer to it as trust strength. Following Granovetter, the stronger the tie between actors A and B, the more likely they are to have overlapping social circles—friends in common—so bridges to other groups with fewer relationships in common will be weak ties.

Tie strength (trust) is used here as a starting point for mapping links between actor dyads within the incubator community network (see Table 16 below).

Table 16. Levels of trust strength dichotomized as tie strength in the incubator community network.

<table>
<thead>
<tr>
<th>Trust Strength</th>
<th>Frequency</th>
<th>Percent</th>
<th>Tie Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Strong</td>
<td>68</td>
<td>36.4</td>
<td>Strong</td>
</tr>
<tr>
<td>Strong</td>
<td>50</td>
<td>26.7</td>
<td>Strong</td>
</tr>
<tr>
<td>Moderate</td>
<td>60</td>
<td>32.1</td>
<td>Weak</td>
</tr>
<tr>
<td>Some</td>
<td>7</td>
<td>3.7</td>
<td>Weak</td>
</tr>
<tr>
<td>Don’t Know or No</td>
<td>2</td>
<td>1.1</td>
<td>Weak</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>187</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>
Figure 39 below is a map of the complete incubator relational network indicating trust levels revealed by informant interviews, which were then translated into tie strength between actor dyads (Table 16 above). Following the map, additional trust indicators (predictor variables) are examined as they relate to trust strength (criterion variable). As this is intended to be a complete network diagram representing all ties, pendants connected to only one other node are shown. As the network continues to grow, these pendants could represent unused resources or links into social fields beyond the incubator core community.
Figure 39. Complete incubator (arts and music) network at 16 months showing strong and weak trust ties. Tie strength based on trust, where dark lines indicate strong trust ties and lighter lines indicate weak trust ties. Strong ties link 63% of the incubator community network.

Trust Strength Correlations

Respondents were asked to characterize their relationships with ten individuals they identified as being significant for arts or music incubator planning and development. These relationship characteristics included:
- Level of trust in other actors in relation to frequency of social contact
- Level of trust in relation to length of relationship (time known)
- Level of trust in relation to frequency of informal social interaction
- Level of trust in relation to other actors’ perceived interest in facilitating collaboration
- Level of trust in relation to perceived reliability

Cross-tabulation was used to determine the frequency of responses for each of these characteristics by level of trust strength (criterion variable). A Spearman’s rho correlation coefficient was used to determine if the respondent’s level of trust in the individuals that they identified had a statistically significant relationship to any of the characteristic predictor variables (contact frequency, time known, social frequency, facilitation, or reliability) at the p < 0.05 level.

*Table 17* below compares trust strength to frequency of contact. Also see the related bar chart (*Figure 40*).

*Table 17. Trust strength in relation to frequency of contact (SPSS).*

<table>
<thead>
<tr>
<th>Trust Strength</th>
<th>Don't know</th>
<th>Count</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some trust</td>
<td>Count</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>14.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>14.3%</td>
<td>71.4%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate trust</td>
<td>Count</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>26</td>
<td>26</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>6.7%</td>
<td>0.0%</td>
<td>5.0%</td>
<td>3.7%</td>
<td>43.3%</td>
<td>43.3%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong trust</td>
<td>Count</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>15</td>
<td>15</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>16.0%</td>
<td>4.0%</td>
<td>4.0%</td>
<td>16.0%</td>
<td>30.0%</td>
<td>30.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very strong trust</td>
<td>Count</td>
<td>25</td>
<td>3</td>
<td>18</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>36.8%</td>
<td>4.4%</td>
<td>26.5%</td>
<td>7.4%</td>
<td>14.7%</td>
<td>10.3%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>37</td>
<td>6</td>
<td>23</td>
<td>14</td>
<td>52</td>
<td>55</td>
<td>187</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>19.8%</td>
<td>3.2%</td>
<td>12.3%</td>
<td>7.5%</td>
<td>27.8%</td>
<td>28.4%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Correlations between trust strength and contact frequency were not statistically significant (p=0.165) because p > 0.05, and there is a very weak positive relationship (0.102) between these two variables. Overall, respondents indicated that they perceived relationships with very strong trust as being most common among those individuals they saw on a daily basis (36.8%).
followed by those they saw weekly (26.5%) or monthly (14.7%). The daily result may be reflective of work-related relationships between employees or companies located at SOMO. Strong trust was most common among individuals they saw monthly (30%) or quarterly or less (30%). This result may be due to the number of network contacts who have known each other a long time but don’t see each other frequently, which I will examine further in the next Table 18. Quarterly or less was also the most common response (29.4%) for contact frequency. Moderate trust was most common among individuals they saw monthly (43.3%) or quarterly (43.3%). The don’t know response was used as a proxy for a no trust response due to the unlikelihood of its use by respondents, even though they knew that individual identities would remain anonymous.

Figure 40. Trust strength in relation to frequency of contact (SPSS).
Longer-term relationships may account for some of the higher levels of trust that respondents specified for individuals in the monthly or quarterly or less categories (Table 17 above). In Table 18 below, 19.8% of the relational ties are between individuals who have known each other for more than 6 years. The largest category (31%) is for relationships 3-5 years in length, although this is closely followed by new relationships of less than 1 year (29.4%). From this perspective, there appears to be a balance of new and established relationships.

Table 18. Trust strength in relation to number of years known (SPSS).

<table>
<thead>
<tr>
<th>Trust Strength</th>
<th>Less than 1 year</th>
<th>1-2 years</th>
<th>3-5 years</th>
<th>6-10 years</th>
<th>Over 10 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>50.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Some trust</td>
<td>Count</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>42.9%</td>
<td>42.9%</td>
<td>0.0%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Moderate trust</td>
<td>Count</td>
<td>21</td>
<td>8</td>
<td>21</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>% within Trust Strength</td>
<td>35.0%</td>
<td>13.3%</td>
<td>35.0%</td>
<td>11.7%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Strong trust</td>
<td>Count</td>
<td>21</td>
<td>7</td>
<td>15</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>% within Trust Strength</td>
<td>42.0%</td>
<td>14.0%</td>
<td>30.0%</td>
<td>10.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Very strong trust</td>
<td>Count</td>
<td>13</td>
<td>18</td>
<td>19</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% within Trust Strength</td>
<td>19.1%</td>
<td>26.5%</td>
<td>27.9%</td>
<td>16.2%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>55</td>
<td>37</td>
<td>58</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>% within Trust Strength</td>
<td>29.4%</td>
<td>19.6%</td>
<td>31.0%</td>
<td>12.3%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Correlations between trust strength and years known were not statistically significant (p=0.33) because p > 0.05, and there is a very weak positive relationship (0.072) between these two variables. In comparing trust strength to number of years known, the most common response was very strong trust, and this was most evident in the 3-5 year (27.9%) and 1-2 year (26.5%) categories. Strong trust was most apparent in those who knew each other for less than 1 year (42%) or for 3-5 years (30%). After the 4-month startup phase, incubator development occurred over another 12 months, so there may be an association between new relational ties created as the result of incubator planning and the 29.4% of participants who fall into the less
than 1 year relationship category. Trust levels during the first year may reflect optimism for the new incubator effort (very strong 19.1%, strong 42%, moderate 35%), as will be discussed later in this chapter. See *Figure 41* below.

![Figure 41. Trust strength in relation to number of years known (SPSS).](image)

*Table 19* below compares trust strength to frequency of informal socialization, so project lunches or other planning activities at SOMO were not included. Also see the related bar chart in *Figure 42*. As noted previously in the literature review, informal social contact is often an important driver in establishing trusting relationships that can help improve collaborative capacity and accelerate embeddedness. This topic will be examined further in the results from the informant interviews later in this chapter.
Correlations between trust strength and frequency of informal socialization were not statistically significant (p=0.165) because p > 0.05, and there is a very weak positive relationship (0.102) between these two variables. Respondents who reported that they never socialize with other actors in this network were the largest group (36.4%), followed by the quarterly or less group (24.1%) and the weekly group (17.1%). However, lack of socialization did not prevent trusting relationships, with 53.3% of the moderate trust group never socializing, along with 40% of the strong trust group and 19.1% of the very strong trust group. Since this question related to informal socialization outside of employment-oriented relationships, excluding things like lunches with co-workers, it is possible that co-workers involved with the incubator planning see each other enough that they do not socialize outside of work situations. This was the case in my related previous research (Balfour, 2016a; Balfour, 2013). Later research on these music and arts incubators would benefit from re-evaluation of this measure, along with other trust indicators used in this study, to determine if consolidation and increasing density of ties in this network prompt a positive change in trust values after the planning phase.
Figure 42. Trust strength in relation to frequency of informal socialization (SPSS).

Table 20 below compares trust strength to the respondent’s perception of an actor’s demonstrated behaviors toward facilitating collaboration, such as introducing people who have common interests and seeking opportunities for new collaborations. Also see the related bar chart in Figure 43.
Table 20. Trust strength in relation to perceived actor interest in facilitating collaboration (SPSS).

<table>
<thead>
<tr>
<th>Trust Strength</th>
<th>Don't know</th>
<th>Low interest</th>
<th>Some interest</th>
<th>Average interest</th>
<th>Strong interest</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>50.0%</td>
<td>0.0%</td>
<td>50.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Some trust</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>85.7%</td>
<td>14.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Moderate trust</td>
<td>0</td>
<td>11</td>
<td>25</td>
<td>10</td>
<td>14</td>
<td>60</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>18.3%</td>
<td>41.7%</td>
<td>16.7%</td>
<td>23.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Strong trust</td>
<td>0</td>
<td>4</td>
<td>18</td>
<td>14</td>
<td>14</td>
<td>50</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>8.0%</td>
<td>36.0%</td>
<td>28.0%</td>
<td>26.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Very strong trust</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>19</td>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>2.0%</td>
<td>39.7%</td>
<td>27.9%</td>
<td>29.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>23</td>
<td>72</td>
<td>43</td>
<td>46</td>
<td>187</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.5%</td>
<td>12.3%</td>
<td>38.5%</td>
<td>23.0%</td>
<td>25.7%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Correlations between trust strength and interest in facilitation were statistically significant (p=0.000), and there is a weak positive relationship (0.268) between these two variables. Overall, respondents indicated that the actors they identified as having some interest in collaborative facilitation were also those in which they had moderate trust (41.7%), very strong trust (39.7%), or strong trust (36%). While there appears to be some correlation between stronger trust levels in actors perceived to be facilitators, it is not clear as to why the highest trust levels are not associated with actors who are perceived to have the strongest interest in facilitation. It is possible that facilitator traits are associated more with those actors exhibiting a greater number of weak ties in the network, in which case trust levels may be lower due to a lower frequency of contact or length of relationship with facilitating actors. Another possibility is that actors participating in the planning phase of incubator development have not had enough of a chance to evaluate follow-through on collaborations with those actors they identify as having facilitator characteristics. If respondents have not known the facilitators for a long enough period, they may not have had enough time to evaluate credibility, although I will examine a related reliability indicator in the next section.
Figure 43. Trust strength in relation to actor interest in facilitating collaboration (SPSS).

Table 21 below compares trust strength to the respondent’s perceived trust in each actor’s reliability as a provider of credible expertise. The reliability indicator provides another measure related to trust, allowing for a different perspective on the strength of relational ties. Reliability is also a less time-sensitive indicator because the respondent is asked to evaluate their trust in another actor’s quality of information and expertise. Also see the related bar chart in Figure 44.
Table 21. Trust strength in relation to perceived reliability (SPSS).

<table>
<thead>
<tr>
<th>Trust Strength</th>
<th>Don't know</th>
<th>Some trust</th>
<th>Moderate trust</th>
<th>Strong trust</th>
<th>Very strong trust</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Count</td>
<td>Count</td>
<td>Count</td>
<td>Count</td>
<td>Count</td>
</tr>
<tr>
<td>Don't know</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>100.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Some trust</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>95.7%</td>
<td>14.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Moderate trust</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Strong trust</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>100.0%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Very strong trust</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.5%</td>
<td>0.0%</td>
<td>98.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>6</td>
<td>62</td>
<td>50</td>
<td>67</td>
<td>187</td>
</tr>
<tr>
<td>% within Trust Strength</td>
<td>1.1%</td>
<td>3.2%</td>
<td>33.2%</td>
<td>26.7%</td>
<td>35.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Correlations between trust strength and perception of actor reliability were statistically significant (p=0.000), and there is a very strong positive relationship (0.986) between these two variables. Of the relational indicators used in this study, perceptions of trust in an actor’s reliability and expertise appear to be the most useful in evaluating the strength of trust ties.

Respondents indicated that the actors they had very strong trust in (98.5%) were the actors they perceived as being the most reliable in their areas of expertise (35.8%). The second ranked category was moderate reliability (33.2%), and they had moderate trust (100%) in these actors. Actors they had strong trust in (100%) were actors perceived as being strongly reliable (26.7%). Overall, high scores for trust correlated with high scores for reliability. Since many of the actors in this network have significant expertise in music or the arts that relate to the special needs of incubator program development, these trust and reliability correlations are reflective of their importance. In essence, knowledge is power. In the discussion of the face-to-face interview results later in this chapter, the importance of this expertise and how it relates to the actors with the highest structural embeddedness scores will also be apparent.
In this chapter so far, I have compared levels of trust strength (criterion variable) to the predictor variables: frequency of social contact, length of relationship, frequency of informal socialization, interest in facilitating collaboration, and reliability. Of these predictor variables, the most significant and very strongly correlated result indicated that respondents had the most trust in those they perceived as being reliable experts in the incubator planning community. The facilitator variable was statistically significant, but only correlated with a weak positive relationship between trust and actors perceived as facilitators interested in seeking and establishing collaborative ties. However, while the facilitator scores may imply that trusted individuals are those who play facilitating roles in the community, there is also a demonstrated propensity to trust individuals in the community whether or not they were perceived as being
facilitators, as indicated by the high score for moderate trust. Since the incubator program is new, these moderate to high levels of trust may be reflective of novelty and positive attitudes toward the concept of the new program.

Correlations for the other predictor variables (contact frequency, informal socialization, and length of relationship) were not statistically significant and showed only very weak positive relationships to the trust strength criterion variable. These predictor variables may be more useful at a later stage of incubator program development. Future research into outcomes of the implementation stage of incubator development could be more indicative of trust levels based on actual experience. Since the current research is focused on network and embeddedness changes over the course of the startup, planning, and early implementation phases of incubator development, these trust indicators establish a reasonable baseline for future comparison studies.

In the next section, I will examine a small set of behavioral norm indicator results to consider their effect on relational embeddedness in the incubator community. These indicators provide additional data for interpreting community behaviors in relation to the structural embeddedness findings.

**BEHAVIORAL NORM INDICATORS (RECIPROCITY, PATH DEPENDENCY, POWER)**

The structural embeddedness results raise some key points about the incubator network and the embedding process. Embeddedness measures of network actors over 16 months indicate that actors MF and CH, as coordinators of each incubator program, are leveraging influential actors to increase their embeddedness. MF and CH are adjacent to many structural holes in the network, and this provides a variety of opportunities to increase their embeddedness if they continue to intensify tie density through introductions. There are many unused assets at the edges of the network that could be engaged and connected to the active
core of high-betweenness actors. However, there is potential for an overreliance on strong ties with the core facilitating actors, such as JW, BDW, and BB that could lead to path dependency and information redundancy if dense clusters form that are dominated by too few of these powerful actors.

This section examines the behavioral norms of reciprocity, path dependency, and power through qualitative analysis of face-to-face interview responses with some references back to pertinent structural embeddedness results in the previous chapter 5. Using a semi-structured interview protocol allows respondents the freedom to discuss their views on local interactional norms, processes, and contextual considerations without the restrictions of the survey format. Narratives are analyzed to look for common themes and key ideas, and findings presented here are organized according to behavioral norm topics. The Blended Analysis chapter will then pull all of the structural and relational embeddedness findings together to directly address the research questions. To get a better understanding of processes and embedding in the incubator community, it is helpful to consider the nature of behavioral norms in this network that present interactional barriers or facilitate collaboration toward program goals. First to be examined is the nature of reciprocity.

Reciprocity and Relational Embeddedness

As noted earlier, reciprocity can either be viewed as a community attribute at the whole network level to understand resource exchange (e.g., Burt, 1992; Coleman, 1990), or as pairwise exchanges of resources between dyads. At the dyad level, individual indicators such as trust and power play a role in the strength of a tie and the frequency of resource exchanges (Moran, 2005; Nahapiet & Ghoshal, 1998). Many interview respondents talked about barriers to collaboration, including reciprocity failures, and attempts that have been made to overcome these challenges. Among the group of respondents, the arts and music incubator programs are
seen as more coordinated long-term attempts at creating change on a broader scale compared to previous one-shot efforts driven by individuals. With plans for regular, consistent meetings of musicians and artists, the incubator programs are also viewed as means to engage and build the community directly through information and resource sharing, as opposed to annual or sporadic events sponsored by Sonoma County.

At the other end of the interactional scale, the county’s recent Creative Sonoma program is cited by some of the respondents as being too broad and vague in purpose, with funding that is too limited to have much of an effect on the lives of individual artists and musicians in the county. Being a county program with the often-seen bias toward larger population centers, most of the attention from the Creative Sonoma program is focused on the county seat of Santa Rosa, which has the largest population in the county—175,155 as of 2016 (US Census Bureau, 2016). Some of the respondents suggest that Creative Sonoma is a young county program managed by a new resident who has to focus her investments on Santa Rosa for political visibility. In terms of embeddedness, Creative Sonoma anecdotally appears to be a high-level component of the social structure in Santa Rosa without providing financial or other kinds of support to the much larger number of small communities distributed across the county. This is an important aspect of reciprocity at the whole-network level that also affects interactions among actors in the incubator network. In some cases, smaller arts or music events fail to get off the ground because there is a sense that the county has no interest in supporting or noticing them. Others perceive that the county has an interest in their success and that they should wait to act until the Creative Sonoma program gets more funding to help them.

However, within the music portion of the incubator network, there are actors such as JW, BDW, and EW with a persistent interest in finding and maintaining collaborative relationships for a variety of projects. They attend shows, volunteer, and find other means to support their
networks, and their networks support them in turn. These actors have managed to build small efforts such as music festivals into successful events with notable community impact. JW, for example, obtained sponsors to support a small annual music festival with free admission that initially drew a few hundred attendees in its first year. JW used his own network of local musicians and bands to provide the festival entertainment and volunteer support. Now in its fifth year, admission to the event is still free and attracted over 8,000 attendees in 2017. Sponsors increased each year as they recognized the impact of all the foot traffic on bars, restaurants, markets, and other convenience businesses around the small downtown area. The local performers appreciate the opportunity to attract new audiences who may pay to see them perform in smaller venues later on. Creative Sonoma has never been a sponsor of this event. As is true of most of the financial supporters, the SOMO campus in Rohnert Park is a sponsor of this annual festival even though they are not located anywhere near it. As we saw earlier in examination of the incubator network, JW is based at SOMO where BB is the developer involved in the earlier small business incubator program aimed at technology companies. Key actors such as BDW and MW also have strong connections to BB and are located at the SOMO campus.

As a regular collaborator and organizer of smaller events for the last three years, EW commented:

Even though I rarely get any money from staying community oriented and organizing shows, I do get the benefit of having my name out there. Then sometimes people ask my band to play with theirs when they get a gig.

EW is a long-term resident of Sonoma County with well-developed trust relationships, but does not depend on established relational ties for collaboration. As a facilitator, her network keeps expanding through links to new actors who appreciate her interest in collaboration, and this creates opportunities to raise awareness of her music and her band with booking agents.
and the public. Her embeddedness increases through connections with other actors, borrowing their credibility and expanding her network through referrals. As coordinator for the music incubator program, MF followed this same embedding process as a new entrant to the local network, gaining credibility through early connections to established and trusted actors. During the planning phase of the incubator, MF also demonstrated reciprocity with new connections by attending their shows or facilitating introductions among new acquaintances in the network that could help them. This is uncommon behavior for the area, as noted by MK, a recording studio owner:

In Portland, Oregon, the musicians all go to each other’s shows and support each other, and a lot of people here don’t do that. I don’t because I’m old and I want to go to bed, but I did that all the time when I was younger.

Several of the actors along the fringe of the network in this study may have a primary focus on themselves and finding more work without participating in any collaborative activities or ties, weakening their chances for reciprocal benefits. As musician BDW noted:

You see a lot of newer musicians who live here but mainly want to perform somewhere else because they think they’ll get bigger audiences. They don’t bother helping other bands or going to local shows. Then, after they get some experience doing their own thing touring and don’t do very well, they come back here and start getting involved in the local scene. It’s kind of like a farmer who moves to a new place and wants to plant corn, even if corn won’t grow there, and he won’t listen to anybody else. Then after he fails a few times, he starts sharing with other farmers, and they tell him what will grow there, and he figures out how to grow things in a way that will make him some money. The scene here is too small to burn people and make enemies if you want to get gigs.

Within the arts incubator subnetwork, there are many strong trust ties and reciprocal relationships between a smaller set of actors (compared to the music subnetwork). At this planning stage, most of the arts actors have reciprocal resource ties (financial or space-related) to the powerful actor BB. This could change if CH continues to expand the network through ties
that are not connected to BB, especially if CH can bridge to external support and appropriate actors in the larger music network. MF has started to make bridge inroads to arts actors that link to the music subnetwork, and this has potential to expand resource flows beyond the actors with close ties to BB, but no connection has yet been made between CH and MF, the coordinators of the two programs. The functional positioning of BB and his effects on the network are also discussed below in terms of path dependency and power obstacles.

**Path Dependency and Relational Embeddedness**

Path-dependent behaviors are of interest in this research because they demonstrate a type of inertial obstacle that can limit embedding processes and network change. While path dependency is more characteristic of dense network clusters, these self-reinforcing patterns of behavior can also appear in sparse clusters. Historical precedents for programs or ideas affect attitudes about new concepts that might change the status quo, particularly if those programs failed or had little impact on the targeted beneficiaries. An existing concept or process could also be perceived as “good enough” in the local social structure, limiting any inclination to improve or expand on what has been done before.

Institutional power structures can also create or reinforce path dependencies limiting network change. These institutional norms of behavior need to be considered as part of the social context affecting embeddedness (Ghezzi & Mingione, 2007). Institutional and individual decision makers, or the actors who influence them, may also exert direct or indirect control to maintain path dependencies that benefit the powerful (Marsden, 1983, 1981). Recent research supports the notion that social network benefits for creative sector employment are contingent on organizational and historical contexts (Foster, Borgatti, & Jones, 2011; Mizruchi et al., 2006; Rowley et al., 2000). In the Sonoma County music community, path-dependency barriers are evident at several levels that affect social network development.
One perceived barrier due to path dependency relates to the lack of opportunity for local performers to play original music. There are only a few bars and small venues in Sonoma County, and these places rarely allow performers to play original music. This market is mostly for cover bands playing classic songs that beer-drinking crowds will recognize. Original music is a big part of what makes a band unique, and an area that promotes original music is more attractive to musicians. Cover bands may work consistently in bars on weekends, but it’s hard for them to get noticed or break out of that status. Bar and small venue owners have no interest in changing due to their path-dependent mentality. As JW commented:

Bands that just play gigs in bars are really just there to sell beer. Clubs need some kind of entertainment to help draw crowds, but bands that just get locked into playing at those places are in a kind of a beer spiral. There are few booking agents here and a lot of gig bands, so the bookers hold all the cards. If you don’t follow orders and you try to play something original, they won’t use you again.

Recent research by Foster, Borgatti, and Jones (2011) reports an interesting finding from rock music talent buyers in Boston music venues. Venues dependent on cover bands only work with a small number of bands and rarely share information with other music venues, limiting their markets. Venues that prefer original music provide greater opportunity because they employ a greater number of bands and reduce risk by sharing information about those bands with other venues. If Sonoma County venues were to break their path dependency preference for cover bands, they could broaden their markets while employing more musicians and developing the local music scene.

Other than random events like fundraisers, at present there are only a couple of options for musicians in Sonoma County who want to play live, original music: house parties and music festivals. House parties are hard to find and have small audiences, while most music festivals are big business.
A prominent topic in planning for incubator program activities in Rohnert Park is the idea of an annual arts and music festival on the SOMO campus. The intent is to create a small annual event that will draw attention to music and arts programs at SOMO while also drawing attention to the incubator programs.

Music festivals in Northern California tend to be either very large—organized by Big Music interests—or comparatively small with little in between. Outside Lands in San Francisco, operating since 2008, drew an audience of about 210,000 with 60 bands over one weekend in August 2017 (Vaziri, 2017). As noted earlier, the smaller Railroad Square Music Festival in Santa Rosa drew over 8,000 attendees with 25 bands in its fifth year of operation in July 2017, while other music festivals in Sonoma County may draw only a few hundred people. Small art festivals are somewhat unusual in the region. The largest art festival in Northern California is the annual Sausalito Art Festival, now in its 65th year, which draws over 30,000 visitors and includes music. While big festivals draw a lot of attention and receive support from local tourism boards, cities, and big corporate sponsors, they also depend on celebrity musicians and bands to justify big ticket prices. In terms of path dependency and barriers, big music festivals create two entrenched effects that came up repeatedly in the interviews: access for local bands and venue performance contracts that limit work availability. This is also an example of power, which will be examined more in the next section.

The big music festivals draw both domestic and international attendees to see well-known brand names, leaving no opportunity for regional performers with lesser status. MW, an established concert promoter and talent manager, observes that a very talented band that works hard may have some chance at establishing a national audience after 10-15 years of touring and building its brand through the development of regional fans. Fifteen years ago, it was still possible to cut five years from that development timeline by getting a song played on the radio,
but that is no longer an option due to so many new channels of distribution in the music business. Now, the easiest way for newer bands to reach big audiences is through local music festivals. Small festivals accept local musicians, and the pooling of many local bands in one event can draw a crowd even if they’re not well known. Interactions between bands at these small festivals are valuable in finding more work. Interactions between the bands and their new fans help build audiences who might pay to see them perform at a local bar or other venue later on. However, a second obstacle becomes apparent for bands that have started to crack the more competitive market in San Francisco, and that’s the issue of the contractual radius clause.

The radius clause has been part of standard performance contracts for any music venue in San Francisco for about 40 years, and the uncoordinated efforts of musicians have no power to change that. The radius clause specifies that a band cannot perform anywhere within 60 miles of the boundaries of San Francisco for some period of time, from 1 to 2 months before and after their performance in the city. As MW observed, this has limited the growth of new music venues around the San Francisco Bay area. If regional musicians play at a venue in San Francisco in hopes of expanding their audience, they often cannot perform in their home area for four months. Big music festivals in San Francisco have similar radius clauses. However, while this may limit professional advancement for some performers, it could well be an incidental benefit for local musicians were it not for the small numbers of performance venues in Sonoma County. As JW commented:

Smaller festivals are very important to the future of music. It’s a community thing where local bands can play, be seen, and have a good time. There’s a lot of camaraderie, plenty of volunteers, and sharing. Music is a world that thrives on meeting people, sharing songs, and working together. When a festival is free, people can discover new bands and it’s an atmosphere where everyone is there to have a good time.
Within the arts incubator subnetwork, there are many strong trust ties between a smaller set of actors (compared to the music subnetwork). At this stage of development, the arts network has a path-dependent barrier due to the overemphasis on relational trust, with most of the actors having reciprocal resource ties to the powerful actor BB. Excessively closed networks with strong trust ties can make it harder to identify and exploit new ideas because actors favor ideas from familiar sources (Vestrum, 2014; Tsai & Wen, 2009; Uzzi, 1997). This could change if CH continues to expand the network through ties that are not connected to BB, especially if CH can bridge to appropriate actors in the larger music network. There is some question as to whether this can happen effectively due to BB’s favored relationships and control over the SOMO campus where the arts incubator is located. In this way, the SOMO community (and the Sonoma County music and arts communities) can also be viewed as network actors with influence over access to opportunities and resources (e.g., Watts, Wood, & Wardle, 2006). This “community as network actor” concept will be explored further below.

Power and Relational Embeddedness

Just as the SOMO and Sonoma County communities can be perceived as network actors, so can the music community in San Francisco, which has more power in many aspects. This could be construed as the power of place, which is also a social construct that impacts embeddedness. Operating in the shadow of the San Francisco music scene creates power-related barriers for Sonoma County musicians and artists. These network power structures can have a direct effect on network dynamics as well as the careers of people in music and arts businesses (this will be explored here, but also in terms of integrated structural and relational embeddedness relating to Research Question 3 in the Blended Analysis chapter).
One power-related barrier relates to regional band identity, where the San Francisco name carries more weight than a North Bay or Sonoma County band. This is harmful to the image of the Sonoma County music and arts scenes. As JW commented:

Most bands say they're from San Francisco, even if they live up here [in Sonoma County] and work here. For the arts in general, Charles Schulz is the only artist I can think of who said he lived in the North Bay, and he was proud of it. This area is more associated with wine tasting, brew pubs, and maybe designer weed in the near future, but the arts are something else.

The long-standing radius clause in San Francisco music venue contracts, previously discussed in terms of path dependency, also exerts control over career and location choices in the Bay Area music business. MW began his career as a concert promoter in Sonoma County in the late 1970s, leasing a theater where he booked bands to perform. After doing this for a few years, he found that he could not book bands or grow his business beyond a certain size because San Francisco rock concert promoter Bill Graham controlled the market in the region (as he did until his death in 1991). Bands that were booked by Bill Graham were not allowed to perform elsewhere in the Bay Area for a set period of time. Finally, MW gave up on his own business and went to work for Bill Graham so that he could make progress in his chosen career. He worked for Bill Graham until Graham’s death, after which the business was sold and MW took a new job as the general manager for A&M Records. MW started his new regional concert promotion and talent management business in Sonoma County just a few years ago. While he has excellent connections from his 40 years in the music business, his company still has to work around the radius clause used by venues in San Francisco, prompting him to focus on developing local bands. While this could be viewed as a benefit to local musicians, the radius clause also prevents the booking of big-name acts in local venues where developing bands could play as openers to get more attention.
Due to a low level of public support for the arts in Sonoma County, wealthy donors such as BB have a lot of control over what gets funded. As is common in many creative fields, artists and musicians interviewed for this research commented on the difficulty of earning a living in the arts without a day job to pay the bills. JW commented on Canada’s general support of musicians and artists. Other respondents also observed the generally higher level of public support for the arts in Europe. EW noted that Creative Sonoma and other government agencies have little or no money to support the arts, and everyone in Sonoma County has to keep trying to get grants or donations from the same set of philanthropists, family foundations, or the small number of corporate sponsors. MW said:

I hope the arts incubator can be an organizing influence to get more support for the arts. Historically, rich patrons supported artists, so maybe we need some Medicis to support the local scene. You’d think some of the big-name artists here in the county would help support their communities, but they mainly live here to hide and be anonymous, so they don’t. Sometimes you see big projects like the Green Music Center [a performing arts center at Sonoma State University] get tens of millions of dollars to get built, and then 90% of the people don’t go there because they can’t afford a ticket. But those projects suck up all the money from the big donors. In the meantime, musicians here can’t pay their rent.

Referring to the same issue, JW and BDW both commented on a flow of musicians they have seen migrating from Sonoma County to Texas, where rent is cheaper and there are more music venues where they can perform.

As noted in the previous section, most of the actors in the arts incubator subnetwork have reciprocal resource ties (financial or space-related) to the powerful actor BB, but this is also true of key actors in the music subnetwork who often get event donations from BB. These relationships in and around SOMO and Rohnert Park benefit from BB’s resources, but the impact of BB on the network can also be restrictive if proposed incubator programming does not provide some kind of benefit to the SOMO campus. This is most evident in the smaller arts
subnetwork, but BB is also a bridge to the music subnetwork, where MW, JW, and BDW have business relationships with BB to produce and promote the annual summer concert series at SOMO. As program leader for the arts incubator, CH is dependent on BB for introductions to other potential donors in the community, as well as high-profile artists who may participate in incubator workshops or develop artwork for the SOMO campus. In effect, the arts incubator subnetwork is a small cluster with strong relational trust ties focused on BB, which we also saw in the structural embeddedness results of the previous chapter 5. The clustering coefficient for BB is a neutral 50%, indicating the BB is seen as a facilitator half the time and as a controlling broker half the time. As a member of the local growth machine (Molotch, 1976), it makes sense for BB to focus on beneficial relationships that support the SOMO campus and growth of the surrounding area in Rohnert Park. However, it appears that BB is in a position to make or break the arts incubator programs unless enough of a support network is developed off the SOMO campus, presumably through new ties created by MF and CH. In effect, despite his neutral clustering coefficient score, BB has a dominant broker effect on the arts subnetwork.

The next section summarizes behavioral norm barriers identified in the informant interviews.

**BEHAVIORAL NORM RESULTS SUMMARY**

As identified during the informant interviews, behavioral norms related to reciprocity, path dependency, and power present some benefits for incubator program development, but there is also evidence of barriers that affect relational embeddedness (noted as *positive* or *negative* impacts below).

**Reciprocity**

- *(Positive and Negative)* Reciprocity at the community level is affected by the presence of the Creative Sonoma program, which is intended to support the county’s creative community through workshops and events. While some respondents appreciate the
early efforts of this program, others see its primary focus on the city of Santa Rosa as a barrier to getting support for projects in other communities. Operating on a smaller scale, plans for the arts/music incubator programs in Rohnert Park are generally viewed as being more directly beneficial to individual artists and musicians through regular meetings and activities that promote information and resource sharing.

- **(Positive)** Critical actors in the music incubator subnetwork, such as JW, BDW, and EW are often praised for building reciprocal relationships by supporting others in their networks (volunteering, attending shows, sharing event sponsors, creating events that help other local musicians, facilitating introductions). Embeddedness is very high for these actors (correlating well with the structural embeddedness results).

- **(Negative)** Some network fringe actors are simply unused resources at this time, while others are not seen as collaborative or interested in reciprocal relationships with the rest of the local network. Embeddedness is very low for these actors (correlating well with the structural embeddedness results).

- **(Negative)** In the arts incubator subnetwork, there are many strong trust ties and reciprocal relationships between a smaller set of actors with BB as the focal point. Despite his neutral clustering coefficient score, BB has a dominant broker effect on the arts subnetwork. BB is the main source of financial or space-related resources in the arts subnetwork, limiting the expansion of reciprocal ties. This effect could be minimized by new relational ties with external actors built by CH or MF (the two program coordinators).

**Path Dependency**

- **(Negative)** Bar and music venue owners only want cover bands (providing background music to sell beer), not those who play original music. Original music is a big part of what makes a band unique, and an area that promotes original music is more attractive
to musicians. Musicians who play original music have limited opportunities to perform, and this slows their ability to develop professionally. Embeddedness and network growth are both limited by this mentality.

- (Positive/Negative) Local musicians have created small music festivals where original live music is performed that can create greater awareness of developing bands. These are viewed as community-oriented events that are popular for all ages and families. Small festivals are staffed by volunteers and the performers are not usually paid unless there are enough sponsorship donations. However, large music festivals are common in the region, and they do not use local musicians or bands unless they are well-known brand names. In terms of embeddedness and network growth, there may be a balance between the effects of the small festivals versus the big festivals in the region.

- (Negative) Being in the shadow of the San Francisco music scene impacts professional development for musicians, venue development in communities, creative talent migration, and career choices, as evidenced by the 60-miles radius clause in San Francisco performance contracts. This is also an institutional power issue.

- (Positive/Negative) In the arts incubator subnetwork, there is an overreliance on actor BB, who controls financial and space resources. While this is helpful in the early phases of projects started with BB’s support—particularly those that benefit the SOMO campus—strong trust ties in excessively closed networks limit the identification and exploitation of new ideas.

Power

- (Positive/Negative) There are a few powerful actors in the network overall, although structural embeddedness measures indicate that most of them have a facilitator orientation rather than being brokers who control access to others. This is not the case...
with BB, whose clustering coefficient scores place him in the center of the scale. Informants describe BB in positive terms, but also acknowledge his control over local resources. Along with high levels of trust in BB, his position can limit the growth of the arts subnetwork because he is essentially treated as a connective broker.

- **(Negative)** Effects from San Francisco radius clauses in performance contracts were noted previously, so I will just reiterate here that this is also a power issue.

- **(Negative)** Considering the idea of the San Francisco arts/music scene as a community actor in relation to the Sonoma County arts/music scene, the powerful identity of the big city dominates regional identities. This power of place effect is evident in Sonoma County bands identifying themselves as San Francisco bands. Informants stated that Sonoma County is more associated with wine tasting and brew pubs, not the arts.

- **(Negative)** In general, informants note a lack of public funding support for the arts and a limited pool of wealthy donors in Sonoma County. Big donors therefore have a lot of control over which projects get funded. Big performing arts facilities get built, but this also reduces interest and available funds from large donors for smaller arts and music initiatives. The presence of Creative Sonoma has not helped with this issue.

- **(Negative)** Several informants observe that the high cost of housing, lack of public funding for the arts, and limited opportunities to perform original music prompt musicians to migrate out of the Bay Area (with some going to Texas, according to two informants). While similar observations were not made with regard to artists, these community power issues are likely to affect them as well. This could indicate a “creative brain drain” for Sonoma County.

The next section completes the summarization of this chapter through inclusion of the trust analysis results in the context of relational embeddedness.
RELATIONAL EMBEDDEDNESS RESULTS SUMMARY

In the first part of this chapter, I analyzed trust strength in terms of its correlation to five predictor variables: frequency of social contact, length of relationship, frequency of informal socialization, interest in facilitating collaboration, and reliability. Of these predictor variables for trust:

- The most significant and very strongly correlated result indicated that respondents had the most trust in those they perceived as being reliable experts in the incubator planning community.
- The facilitator variable was statistically significant, but only correlated with a weak positive relationship between trust and actors perceived as facilitators interested in seeking and establishing collaborative ties.
- While the facilitator scores may imply that trusted individuals are those who play facilitating roles in the community, there is also a demonstrated propensity to trust individuals in the community whether or not they were perceived as being facilitators, as indicated by the high score for moderate trust.
- Since the incubator program is new, these moderate to high levels of trust may be reflective of positive attitudes toward the new program concept. Outcomes of the implementation stage of incubator development could be more indicative of trust levels based on actual experience.
- Correlations for three of the predictor variables (contact frequency, informal socialization, and length of relationship) were not statistically significant and showed only very weak positive relationships to the trust strength criterion variable.

In the second part of this chapter, results from informant interviews related to norms of behavior were explored, and barriers to embeddedness identified along with positive effects.
Whether at the community, institutional, or individual level, reciprocity is seen as important for establishing and maintaining embeddedness. Reciprocity failures weaken social ties, and this is also seen in the low structural embeddedness results for relatively isolated actors along the network fringe (along with the institutions they work for if they had been mapped in parallel). Some of these reciprocity failures could be addressed through increased interaction with the rest of the network, presumably through the facilitation mechanism provided by CH and MF as the incubator program coordinators. The trust findings imply that most actors in this network are likely to have positive inclinations toward others connected with the new incubator program, at least during the early stages, so greater efforts toward inclusion of these fringe actors could benefit the rest of the network.

A recurring theme in the relational embeddedness findings correlates with findings from the structural embeddedness results, and that is the systemic impact of powerful individuals on the network. Results of the informant interviews related to reciprocity, path dependency, and power point to actors such as BB, JW, BDW, and a few others who were also identified as key actors in the structural embeddedness measures. While these actors are deeply embedded in this community and incubator program activities, they are also trusted actors who are potential obstacles to network and incubator program development. On the negative side, combined with his high trust scores, the overreliance on BB for resources is a path dependency that can limit support for the incubator programs and their ability to grow, even though this does not appear to be the intent of BB, who is generally seen in positive terms by the community. Adjacency to strong facilitators such as JW, BDW, EW, and MW may offset some of these negative impacts on network growth, but the BB influence is strong and these facilitators are focused on the music portion of the network. If the two program leaders, CH and MF, increase efforts at expanding and consolidating network ties over the next year, they could have more success at de-embedding (Vestrum, 2014) the strength of the BB effect to move the incubator programs
forward. De-embedding will be examined further in the next chapter in the context of the complete embedding process.

The next chapter provides a blended analysis of the community profile with the findings from the structural and relational embeddedness chapters. These results are placed in the context of the three research questions with an orientation toward understanding impacts of the incubator planning process on network dynamics and the community embedding process.
CHAPTER 7: BLENDED ANALYSIS

INTRODUCTION

This mixed-method case study was conducted to better understand social interaction processes and network influences on community behaviors resulting from the planning and implementation of a new arts/music business incubator. The co-evolution of the arts and music subnetworks over 16 months provides an additional lens for comparison of embedding processes. The quantification of network structure and embeddedness changes, at both the whole network and dyadic levels of interaction, is informed by qualitative analysis of context provided by key informant interviews, a survey, and community profiling. The dependent variables in this study are structural embeddedness (for the whole network) and relational embeddedness (for dyadic relationships).

This blended analysis is intended to systematically discern patterns across different types of data to understand the extent to which the study findings address the research questions presented in Chapter 1. So far, results have been presented based on:

- Community profiles that used primary and secondary data sources
- Ethnographic participant-observer notes that informed the community profile and qualitative analyses in the results chapters
- Quantitative analysis of verbal responses to survey questions conducted as part of the face-to-face interviews
- Qualitative analysis of face-to-face interview responses

This chapter revisits the research questions in relation to the key findings from the community profile and the embeddedness analyses in chapters 5 and 6, integrating the results.
for clarity. Pertinent theory from the literature review is used to demonstrate contrast or alignment with previous research. Findings related to the process of embedding are also discussed in this chapter.

The conceptual diagram for this study is revisited here (Figure 45) as an overall reference to the major study components and variable relationships:

![Conceptual diagram of variable relationships leading to community embeddedness.](image)

*Figure 45. Conceptual diagram of variable relationships leading to community embeddedness.*

To briefly summarize the approach to this study, these components were examined through quantitative and qualitative analysis:
1. SNA of the arts incubator planning group/community to determine the overall network structure and characteristics of structural embeddedness (density/cohesion, embeddedness, information flow, and facilitation/power) along with relational embeddedness indicators.

2. Qualitative analysis of informant interviews and ethnographic observations for analysis of relational embeddedness and context for structural embeddedness.

3. Statistical and qualitative analyses of relational embeddedness indicators affecting trust and behavioral norms in the context of network structures and processes.

4. Longitudinal analysis of social network evolution resulting from the planning and implementation of the arts incubator.

5. Qualitative analysis of community profile to provide a basis for understanding the historical, socioeconomic, and cultural context for local arts-based development.

6. Blended analysis to cross-correlate findings in direct relation to the research questions.

The next section provides a map to the findings in relation to the research questions, after which there is a more detailed discussion of the blended findings to address each research question individually.

MAPPING THE RESEARCH QUESTIONS TO THE FINDINGS

The following Table 22 consolidates all of the research findings detailed in the previous chapters and maps them against the three research questions. Findings from the Community Profile chapter provide background and context for all three questions, so they are noted as “context” in the table. This table is intended for reference in the discussion that follows.

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Table 22. Findings mapped to the Research Questions

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<td>2 Arts community coordination lacking</td>
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<td>3 Minimal public funding for arts/music</td>
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<td>4 Limited multicultural representation in arts sector</td>
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<td>5 Younger artists choose Sonoma County over SF Bay</td>
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<td>6 Low public awareness of arts economic impact</td>
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<tr>
<td>7 SOMO campus as arts/music destination supports arts incubator</td>
<td>CP4 Profile</td>
<td>Context</td>
<td>Context</td>
<td>Context</td>
</tr>
<tr>
<td>8 Network is not a Small World</td>
<td>SE5 SNA</td>
<td>No advantage. Not enough bridging actors.</td>
<td>No advantage. Not enough bridging actors.</td>
<td>n/a</td>
</tr>
<tr>
<td>9 Low/sparse network cohesion &amp; density</td>
<td>SE5 SNA</td>
<td>Low info flow &amp; collaborative capacity</td>
<td>Overall cohesion lowered by expansion, but music network higher potential</td>
<td>n/a</td>
</tr>
<tr>
<td>10 Degree centrality low but improving with network growth</td>
<td>SE5 SNA</td>
<td>Low info flow &amp; collaborative capacity</td>
<td>Most key actors in music network; big social meetings triggered greater expansion both networks</td>
<td>Power unequally distributed in overall network</td>
</tr>
<tr>
<td>11 Inefficient path lengths between actors</td>
<td>SE5 SNA</td>
<td>Inefficient info flow; overreliance on few bridging actors</td>
<td>More bridge actors in music, but higher embeddedness arts</td>
<td>n/a</td>
</tr>
<tr>
<td>12 Moderate clustering &amp; embeddedness; many structural holes</td>
<td>SE5 SNA</td>
<td>Planning process fosters growth &amp; embeddedness</td>
<td>Overall clustering lowered by growth, music network embeddedness high with key actors new &amp; old</td>
<td>n/a</td>
</tr>
<tr>
<td>13 Betweenness indicates increasing embeddedness among key actors</td>
<td>SE5 SNA</td>
<td>Planning process fosters growth &amp; embeddedness</td>
<td>Structural holes increased through growth as embeddedness increased with key actors new &amp; old</td>
<td>Power may be concentrated in key actors</td>
</tr>
<tr>
<td>14 Eigenvectors indicate influencers, facilitators, power brokers</td>
<td>SE5 SNA</td>
<td>Most influential actors are facilitators</td>
<td>One influential bridge actor in arts network shows facilitator &amp; broker traits</td>
<td>Key actors mainly facilitators who distribute power</td>
</tr>
<tr>
<td></td>
<td>Eigenvectors indicate new program leaders increased embeddedness (and small group meetings)</td>
<td>SE5 SNA</td>
<td>Program leaders foster community &amp; own embeddedness through influential referrals</td>
<td>Big improvements in new program leader embeddedness over time through influential referrals</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>15</td>
<td>Highest-scoring actors in structural measures demonstrate facilitation versus brokerage</td>
<td>SE5 SNA</td>
<td>Key actors facilitate ties to increase info flow, network growth, &amp; embeddedness</td>
<td>Facilitators dominate larger music network; lacking in smaller arts network</td>
</tr>
<tr>
<td>16</td>
<td>New actors leverage powerful actors to support network growth &amp; embeddedness</td>
<td>SE5 SNA</td>
<td>New program leaders facilitate info flow &amp; network growth via influential referrals</td>
<td>New program leaders facilitate embeddedness in both networks at different rates over time</td>
</tr>
<tr>
<td>17</td>
<td>Strongest trust ties correlate with reliable experts</td>
<td>RE6 Stats</td>
<td>Actors viewed as reliable experts in music &amp; arts are also most trusted</td>
<td>Reliable experts in music &amp; arts most trusted in both networks over time</td>
</tr>
<tr>
<td>18</td>
<td>Moderate to high trust scores correlate with facilitator behaviors</td>
<td>RE6 Stats</td>
<td>Trusted facilitators foster embeddedness</td>
<td>Trusted actors facilitate embeddedness in both networks over time</td>
</tr>
<tr>
<td>19</td>
<td>Incubator program plans seen as more beneficial to musicians &amp; artists than county government program</td>
<td>RE6 Interviews</td>
<td>Incubator planning &amp; regular meetings promote info flow &amp; embeddedness</td>
<td>Positive incubator impact in both networks; indications of negative impact from county</td>
</tr>
<tr>
<td>20</td>
<td>Trust predictor variables for contact frequency, informal socialization, length of relationship not significant</td>
<td>RE6 Stats</td>
<td>No measurable impact</td>
<td>No measurable impact</td>
</tr>
<tr>
<td>21</td>
<td>High embeddedness actors seen as most supportive &amp; reciprocal</td>
<td>RE6 Interviews SNA</td>
<td>High levels of reciprocity &amp; support foster embeddedness</td>
<td>Positive impact on network from reciprocity &amp; support more evident in music network</td>
</tr>
<tr>
<td>22</td>
<td>Network fringe actors associated with low reciprocity &amp; embeddedness</td>
<td>RE6 Interviews SNA</td>
<td>Low levels of reciprocity create barriers to embeddedness</td>
<td>Negative impact on network from low reciprocity evident over complete study period</td>
</tr>
<tr>
<td>23</td>
<td>Overreliance (path dependency) on one key arts network actor limits expansion of reciprocal ties</td>
<td>RE6 Interviews SNA</td>
<td>Growth of reciprocal ties in small arts network is limited</td>
<td>Negative impact on smaller arts network embeddedness</td>
</tr>
<tr>
<td>24</td>
<td>Path dependency limits performance &amp; development opportunities for original musicians</td>
<td>RE6 Interviews</td>
<td>Path dependency limits embeddedness &amp; network growth</td>
<td>Negative impact on music network embeddedness</td>
</tr>
</tbody>
</table>

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The following is a more detailed discussion of the blended findings to address each research question from a mixed-methods perspective.

**RESEARCH QUESTION 1 BLENDED ANALYSIS**

**RQ1:** Can the planning and implementation process for a rural arts business incubator foster community embeddedness as evidenced through increased trust, improved information flow, and social network growth?

Within this section, I summarize the blended findings related to RQ1, with reference numbers keyed to *Table 22* above for each summary statement. Understanding the process of embedding the incubator program in the community is also an important factor in this research,

<table>
<thead>
<tr>
<th></th>
<th>Regional music festival opportunities may balance negative path dependency effects of big festivals/venues</th>
<th>RE6 Interviews</th>
<th>Regional festivals foster inclusion &amp; embeddedness; big festivals do not</th>
<th>Positive impact on music network from small festivals may offset negatives of big festival path dependencies</th>
<th>Path dependency &amp; institutional power impede embeddedness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long shadow of SF music scene/scenes limits regional opportunities for musicians</td>
<td>RE6 Interviews</td>
<td>Path dependencies limit embeddedness &amp; network growth</td>
<td>Negative impact on music network embeddedness</td>
<td>Path dependency &amp; institutional power impede embeddedness</td>
</tr>
<tr>
<td></td>
<td>Most of the powerful network actors are facilitators, but one actor dominates the arts network</td>
<td>RE6 Interviews</td>
<td>Network growth &amp; embeddedness in arts network limited by one actor</td>
<td>Facilitators dominate larger music network; lacking in smaller arts network</td>
<td>One powerful actor impedes embedding in arts network</td>
</tr>
<tr>
<td></td>
<td>SF &quot;power of place&quot; identity dominates over regional music scenes</td>
<td>RE6 Interviews</td>
<td>Music network embeddedness limited by identity of powerful city in region</td>
<td>Negative impact on music network embeddedness</td>
<td>Institutional power impedes embeddedness</td>
</tr>
<tr>
<td></td>
<td>Wealthy private donors dominate in county that lacks public funding support for arts/music</td>
<td>RE6 Interviews</td>
<td>Music &amp; arts network embeddedness limited by lack of public support &amp; big donor preferences</td>
<td>Private donor support for big performing arts facilities limits embeddedness in both networks</td>
<td>Community power preference for big projects impedes embeddedness</td>
</tr>
<tr>
<td></td>
<td>High housing costs, lack of public support, &amp; limited performance opportunities prompt creative out-migration</td>
<td>RE6 Interviews</td>
<td>Creative brain drain may limit network growth &amp; embeddedness</td>
<td>Creative brain drain may limit embeddedness in both networks</td>
<td>Community power limits embeddedness</td>
</tr>
</tbody>
</table>

*CP4 = Community Profile chap. 4, SE5 = Structural Embeddedness chap. 5, RE6 = Relational Embeddedness chap. 6*
so the blended finding summaries are followed with a description of the process itself and observations about network measures that can be used to optimize network growth toward achieving program goals.

**RQ1 Blended Findings (Trust)**

The arts/music incubator planning process provides a platform for trusted facilitators to build community embeddedness (15, 18, 19). Reliable music/arts experts involved in the planning process are the most trusted network actors (18). Trusted facilitators foster embeddedness (19). The program leaders for the arts and music incubator programs foster embeddedness through trusted influential referrals and small group meetings (15). Frequency of social contact, informal socialization, and relationship length were not significant trust predictors (20).

These findings suggest that the arts incubator planning process is effective at fostering community embeddedness through trusted relationships. This finding correlates well with the research literature. The program leaders leverage their connections with influential actors who are already embedded in the local network, gaining credibility that enables them to quickly establish relational ties for the new community venture (Vestrum, 2014; Partzsch & Ziegler, 2011; Johannisson, 1990). For this process to work well, the influential actors need to be trusted facilitators who are not afraid of losing brokerage power by closing structural holes (Burt, 2002). With the incubator focus on arts and music, it does not seem unusual that reliable experts are the most trusted among network actors. Both of the program leaders benefit from this perception because both have professional experience developing their own independent careers and businesses in these fields.

Several researchers have noted that frequency of interaction, duration of contact, and the strength of relational ties are important for building trust and maintaining relational
embeddedness (e.g., Greve et al., 2010). However, these are not significant trust predictors in this study, where respondents place the most trust in experts who are reliable and demonstrate facilitator characteristics. Since the incubator program is new, this trust in experts may be reflective of novelty and positive attitudes toward the concept of the new program. Another explanation is offered in recent work by social psychologists (e.g., Cialdini, 2016; Smith, DeHouwer, & Nosek, 2013), stating that a credible authority, or trusted expert, has the two qualities that are most effective at influencing the decisions of others. Being a legitimate expert or a trusted individual are both valuable traits for influencing decisions, particularly if arguments are presented in an honest and impartial fashion. However, someone viewed as both—a credible authority—can persuade most easily, and can override audience reasoning processes in many cases. My findings approach this observation from a different direction, vesting reliable experts with the most trust, although my survey did not differentiate between those who were already trusted experts and those who were seen as the most trustworthy because they were experts.

Future research into outcomes of the implementation stage of incubator development may be more indicative of trust levels based on actual experience. Since the current research is focused on network and embeddedness changes over the course of the startup, planning, and early implementation stages of incubator development, these trust indicators do establish a reasonable baseline for future comparison studies.

*Figure 46* below is a map of the complete incubator relational network after 16 months of planning. Key informant interview results were translated into strong and weak trust ties between actor dyads.
Figure 46. Complete incubator (arts and music) network at 16 months showing strong and weak trust ties. Tie strength is based on trust, where dark lines indicate strong trust ties and lighter lines indicate weak trust ties. Strong ties link 63% of the incubator community network. CH is the program lead for the arts network (red circles) and MF is the program lead for the music network (purple circles). Larger circles indicate higher ranking of importance in terms of betweenness centrality.

In Figure 46, the most trusted actors with the highest betweenness centrality scores cluster around the core of the map. As will be discussed more below, bridging actor BB exhibits a problematic overembeddedness condition in the arts component of the incubator network.
RQ1 Blended Findings (Information Flow)

Key actors use the planning process and regular meetings to facilitate relational ties that increase information flow, network growth, and embeddedness (12, 16, 21). There is low information flow and collaborative capacity in the sparse arts/music network (9, 10). This is complicated by too few bridging actors and a lack of coordination in the arts community (2, 9, 10, 11).

These findings suggest that key actors engage in planning process activities that do increase information flow and embeddedness. However, the network is sparse, impeding information flow. As noted in the literature review, sparse networks, with many structural holes, are good to generate new ideas, but there is no connection between idea generation and useful implementation of new ideas in these environments (Burt, 2004). Implementation can be difficult because the sparse, unconnected people around structural holes, with their diverse interests and perspectives, are inherently more difficult to coordinate (Obstfeld, 2005). Actors who bridge the holes in social network structures can link those with new ideas to those who can implement them (Burt, 2004), but there are too few bridging actors in this arts/music network.

RQ1 Blended Findings (Network Growth)

Network growth and embeddedness are limited due to lack of public support for the arts, high housing costs, and limited performance opportunities (25, 31). These barriers prompt creative brain drain/out-migration (31). There is evidence that younger artists choose Sonoma County over San Francisco when housing costs and aesthetics are considered (5). Despite these barriers, the incubator planning process allows key actors to facilitate ties that support network growth and embeddedness (12, 13, 16).

These findings suggest that there are a variety of barriers to network growth and embeddedness in the study community and the broader region. These larger environmental
factors may have a negative effect on implementation and growth of the incubator program because of their impacts on the community context. This context, environmental barriers, and the embedding process are discussed further below.

**Embedding Process**

As detailed in the Chapter 2 *Literature Review*, a community and its networks of relations create a frame for social action, resource exchange, agency, and development. This frame is the community context, created through a history of social interactions and processes. The community context has a direct effect on local perceptions of new opportunities or programs, such as the arts/music incubator in this study. The social embeddedness of individual actors, such as community entrepreneurs, and their congruency with the structure of local society, is a major determinant of their ability to draw on social and economic resources (Jack & Anderson, 2002). Resources could include financial capital, facilities, marketing, status, referrals, labor, ideas, and advice (Ozdemir et al., 2016). The social community context shapes entrepreneurial outcomes, and embedding is the mechanism that allows an entrepreneur to become part of the local social structure (Jack & Anderson, 2002). Embeddedness in a positive community context helps an actor to identify social resources that can support a new business (Jack & Anderson, 2002; Hansen, 1995), program, or idea. However, a negative community context can also make overembeddedness a liability, as when the local society constrains an actor’s behavior and takes precedence over economic imperatives (Uzzi, 1997). Vestrum (2014) suggests that de-embedding problematic actors can be a solution to overembeddedness.

An example of overembeddedness in this study is the SOMO campus developer, BB, and his strong ties to the local cluster of actors planning the arts incubator program (see *Figure 46* above). These strong cluster ties constrain the actions of the arts program coordinator, CH, because BB is an obstacle to continued network development. In the structural embeddedness
analysis, BB does not have a clear facilitator or broker orientation toward relational connectivity, but essentially functions as a broker. BB remains an obstacle due to his decision-making power and resources, although he does not appear to have the intent of limiting network change. BB may therefore need to be de-embedded from the network to loosen the constraints on CH. This can occur through increased efforts by CH (or MF) to expand and consolidate network ties over the next year during the implementation phase. Adding enough new actors with weak ties, the arts incubator program could progress by weakening the control effect of BB, although he will still be a source of funding and space for the program.

Embeddedness requires an understanding of the local social structure, forging new ties within the structure, and maintaining the structure. For the community entrepreneur, this involves developing enough contextual knowledge of how business is conducted while performing social actions that increase the credibility of the entrepreneur, thereby extending their capacity to access resources and recognize appropriate opportunities. Entrepreneurial embedding creates a bridge between the economic and social spheres of a community. A successful process of embedding in a positive community context provides enough information and resources to compensate for environmental barriers to success (Chell & Baines, 2000). As the social structure is changed through embedding of the entrepreneur, the entrepreneur’s actions are shaped and directed by the social structure (McKeever et al., 2014; Vestrum, 2014; Jack & Anderson, 2002). As noted by Vestrum (2014), a new community venture may push the boundaries of local structures, norms, and resources while changing the role and characteristics of the local community. This also means that local resource holders with goals of their own can influence or alter the activities of a community venture (Morris et al., 2011; Peredo & Chrisman, 2006).
In this research, the two program leaders for development of the arts and music programs of the incubator—MF for the music network and CH for the arts network—are the community entrepreneurs seeking to embed themselves in the local structure. Both coordinators were able to leverage access to key actors with knowledge of the community context for credible referrals to other significant actors in the local social structure. While campus developer BB is the source of several referrals that established the arts network over the first year, CH has now established enough embeddedness that he should be able to work with actors other than BB in expanding the network. CH is a long-term resident of the area and should be able to draw on his own established ties to enhance the network and the arts program. MF, on the other hand, is new to the area, but quickly established an embedded position in the music community. Not having closer ties to BB and his network has been an advantage for MF, as he has relied on referrals through other established actors who act as facilitators in the music network and has therefore not been constrained to referrals from BB.

Little research has been done on the embedding process of community ventures, particularly in relation to network structures. However, recent work by Vestrum (2014) examined the embedding process of a rural community music festival (without network analysis). Vestrum identified four strategies used to increase embeddedness, and one to de-embed when faced with community constraints on the festival. *Table 23* below details Vestrum’s embedding process, which I have extended with my own process model as observed during the course of this research. Findings from my structural embeddedness research associated with the incubator planning process are also noted as a means to optimize network development. Blending the quantitative and qualitative findings provides support for these conclusions regarding the embedding outcomes of the incubator initiative.
Table 23. Embedding Process Model Comparison with Associated Network Process Findings

<table>
<thead>
<tr>
<th>VESTRUM EMBEDDING PROCESS</th>
<th>ARTS INCUBATOR EMBEDDING PROCESS (Balfour)</th>
<th>ASSOCIATED NETWORK PROCESS FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Build on common interests with local and external actors (to create trust for collective action).</td>
<td>1. Identify and engage initial set of key actors (or affinity groups) with related goals, expertise, &amp; resources. 2. Identify types of actors who are “missing” (non-standard resources excluded or overlooked).</td>
<td>To expedite embedding, the project initiator should seek out clusters of local actors engaged in related activity that they can join (an informal group may add connective diversity), then choose key actors to engage while also seeking overlooked actors.</td>
</tr>
<tr>
<td>2. Use embedded actors as a link (for trusted referrals and understanding of norms to build network).</td>
<td>3. Use trusted and embedded actors with understanding of norms for credible referrals to establish new relational ties. 4. Also seek to establish inclusive contacts with non-standard resources.</td>
<td>From the initial set of key actors, identify trusted/embedded actors (and trusted experts) by reputation to help with referrals for new relational ties to standard/non-standard resources. SNA contact survey can assist in this process.</td>
</tr>
<tr>
<td>3. Involve stakeholders in decision making (to build knowledge, networks, trust).</td>
<td>5. Agree with Vestrum, but also set co-created goals in group meetings for achievable near-term and long-term results that also fill network needs (bridging structural holes, adding new actors with resources, or increasing tie density to improve collaborative capacity).</td>
<td>As network density increases, SNA betweenness and eigenvector methods can identify facilitators (or brokers) and influencers to optimize network development.</td>
</tr>
<tr>
<td>4. Iterate activities using same actors (to increase trust and collaborative capacity).</td>
<td>6. Consolidate network ties through continuing introductions and have regular meetings/activities that build trust relationships and capacity.</td>
<td>SNA betweenness and actor clustering coefficients can be used to measure and optimize network expansion. Regular meetings and activities then build trust and collaborative capacity, which could be measured via tie strength/trust survey.</td>
</tr>
<tr>
<td>5. Involve new external actors (to decrease excessive embeddedness and develop new ideas).</td>
<td>7. Increase weak ties and bridging of structural holes as needed to increase information flow and novelty if stagnation is a problem. 8. Determine if de-embedding is restricting interaction/program activity, then expand network or remove overembedded actors.</td>
<td>SNA clustering coefficients for each actor can be used to infer proximity to structural holes and identify where weak tie bridges could increase community engagement or access to resources. If powerful actors restrict interaction or program activity (overembeddedness identified by eigenvectors or betweenness), remove them or expand the network to access alternate routes to resources and decision making.</td>
</tr>
<tr>
<td>Repeat sequence</td>
<td>9. Repeat sequence with refined new set of key actor targets</td>
<td>Repeat sequence</td>
</tr>
</tbody>
</table>
A major point about the above table is that network measures can be used to optimize embedding processes. The initial step of identifying and engaging an affinity group with related interests or goals can occur by connecting with a social group (informal or formal) or perhaps with an established team in an organization. In the case of the arts incubator program, actor BB assembled a group of interested actors from a variety of organizations, and this added momentum as well as a platform for CH to increase his embeddedness. In the case of the music incubator program, MF attended a new, informal, monthly breakfast meeting of Sonoma County musicians and business owners that quickly expanded his network and embeddedness in the local music scene.

With an initial set of key actors established, network measures can be employed to optimize the next steps toward increasing individual embeddedness and reaching program goals. While results of these network measures could not be used to guide program development during this study, the embedding process model in Table 23, with its associated network tools, could be deployed in future efforts. As soon as connections are made with an initial affinity group (or groups to increase diversity), and a basic understanding of trusted and embedded actors is established by reputation, network mapping can start with a simple contact survey. Betweenness centrality and eigenvector methods can identify facilitators or influencers to increase embeddedness through referrals and make information flow more efficient. These measures are also helpful for identifying resourceful actors who might otherwise remain hidden, such as emergent leaders who typically operate in the background. Facilitators are also likely sources of new contacts to lesser-used resources.

As the network continues to grow, actors can be engaged through decision making and goal setting to build trust and collaborative capacity. Co-creation of goals with a group also
builds group identity and behavioral norms that support collaboration. At this point, other network needs can be identified and filled. For example, clustering coefficients for each actor can be used to infer proximity to structural holes and identify where weak tie bridges could increase engagement or access to resources. Betweenness can again be used to make information flow more efficient, increasing collaborative capacity as the density of the network increases. One goal at this stage would be to start merging and consolidating ties between existing network actors so that more triplets could be closed (using the clustering coefficient measure, for example) and network density can increase, making it easier for collaboration and implementation to occur.

If one or more actors (possibly brokers) are restricting necessary network expansion, information flow, or reducing intended program activity, an overembeddedness condition may be present. Eigenvector and betweenness measures in combination can help to determine if this is the case, along with knowledge of the context and local behavioral norms. If de-embedding of one or more actors is necessary and they cannot be removed from the network, then network expansion may be necessary to establish alternate routes to resources and information. An entire network located within one organization might find such a course of action impossible if the problem actor is a senior manager with a lot of control over work teams, although a larger organization may well have multiple alternate routes to decision making and resources, some of which may be informal ties. In this study, the network is trying to establish an incubator program in and around the SOMO campus, but most of the network is not housed there or under the formal control of one actor, despite the direct and indirect control that overembedded BB has on development of the arts program.

As the network develops and sufficient density has been achieved toward actual implementation of its goals, continued growth may be necessary to achieve stability for a longer-
term program. At this stage, new resources, individuals, and clusters may be needed, so the cycle could begin again with the first step of the model.

In the next section, the blended findings for RQ2 are presented. These findings relate to the longitudinal development of the two subnetworks that form the complete arts incubator network.

**RESEARCH QUESTION 2 BLENDED ANALYSIS**

**RQ2**: Within the incubator initiative, how do the music and arts networks compare in terms of their co-evolution and structural embeddedness during their planning and early implementation phases?

Within this section, I summarize the blended findings related to RQ2. Reference numbers are keyed to Table 22 above for each summary statement.

**RQ2 Blended Findings**

The arts/music incubator initiative fosters embeddedness in the community structure, but outcomes vary over time in the arts and music subnetworks based on whether brokers or facilitators dominate access to relational ties and other resources (8, 11, 15, 16, 24, 28).

*Complete network*: The arts/music incubator network does not exhibit small-world characteristics (8). However, the program leaders foster embeddedness by creating new ties through influential referrals and group meetings (15).

*Arts subnetwork*: There is higher embeddedness in the arts subnetwork (11). However, brokers dominate the arts subnetwork, and path dependency associated with one actor exhibits an overembeddedness condition, limiting network growth (11, 16).

*Music subnetwork*: Facilitators dominate the music subnetwork, and there are more bridge actors, making it much easier to create relational ties/embeddedness for the music incubator
program (11, 16). At present, regional music network embeddedness is also limited by the dominant power of place identity and narrative of San Francisco’s music scene (29).

The arts and music incubator network is discussed here in terms of its evolution over 16 months. As in previous sections, the startup phase during the first four months of 2016, ending May 1, 2016, is used as the starting point for comparison with the completed network at the end of the study as of May 1, 2017. In Figure 47 below, the four maps reflect change in network growth and degree centrality starting from month 3 of the startup phase, with red circles denoting arts network actors and purple circles denoting music network actors. Yellow circles are actors who bridge the arts and music subnetworks.

Month 3 arts and music incubator network map during the startup phase. CH enters the network here as the volunteer arts program leader.

13 actor nodes (22% complete)
10 music, 2 arts
16 relational ties (11% complete)
1 bridge actor (BB)
Month 9 arts and music incubator network map. MF entered the network at month 4 as the volunteer music program leader.

27 actor nodes (46% complete)
   22 music, 3 arts
51 relational ties (36% complete)
2 bridge actors (BB, BDW)

Month 12 arts and music incubator network map.

38 actor nodes (64% complete)
   23 music, 12 arts
97 relational ties (69% complete)
3 bridge actors (BB, BDW, CR)
BB overembedded in arts subnetwork
Month 16 arts and music incubator network map.

59 actor nodes (100% complete)
- 42 music, 14 arts
141 relational ties (100% complete)
3 bridge actors (BB, BDW, CR)

BB overembedded in arts subnetwork

Figure 47. Music/Arts Incubator Network Co-Evolution. These four maps reflect network change (growth and degree centrality) from the startup phase (Month 3) through the end of the study at Month 16 (as of May 1, 2017). Actor nodes are sized according to total number of connections (degree centrality), so larger circles equal higher degree centrality. Red circles (nodes) represent arts network actors, purple circles represent music network actors, and yellow circles represent actors who bridge the music and arts networks. Darker lines represent stronger trust ties.

Figure 47 above illustrates the dynamics of the arts/music network over the 16-month period of this study. Embeddedness and growth in the network is aided by facilitators and limited by brokers, as is evident in the dominant effects apparent in the two subnetworks. The music subnetwork grew much faster because it is dominated by facilitators, while the reverse is true of the arts subnetwork where one broker controls most of the access to resources and trusted referrals.

The growth of the network was detailed in Chapter 5 (Structural Embeddedness Results), but it is worth repeating that two group meetings made a big difference in terms of network growth. One of those meetings was the new and informal breakfast meeting for musicians and
business owners that accelerated the embeddedness of MF into the local music scene. As noted earlier, an actor seeking network advantage, either as a broker or a facilitator, can increase embeddedness by leveraging bridge actors and/or becoming a bridge themselves (Burt, 2015). In this case, MF was told about the meeting by a bridge actor in Month 13, and was then able to enhance his own role as a facilitator among the breakfast meeting attendees, allowing him increased access to structural holes in the network. The change in the embeddedness of MF is evident in comparing the Month 9 map in **Figure 47** above to the Month 16 map, while the change in music actor density went from 22 in Month 9 to 42 in Month 16.

Actor CH and the arts subnetwork benefited from a group meeting called by bridge actor BB during Month 11, growing the cluster from 3 arts actors in Month 9 to 12 actors by Month 12. CH went from a May 2016 betweenness score of zero (connected to 2 people who already knew each other) to 159.2 (with 12 additional ties). However, this cluster is dominated by BB, limiting growth of the subnetwork due to an overembeddedness condition, despite some additional ties added by CH.

The corresponding change in betweenness centrality for MF before and after the breakfast meeting is also instructive. Betweenness centrality can be viewed as a count of the structural holes to which an actor has exclusive access (Burt, 2015). Freeman (1977) first developed betweenness as a small-group measure of an actor’s control over information flow within a group, making it well suited to its use in this small-network study. Betweenness scores equal an actor’s number of connection opportunities in sparse networks of unconnected contacts, as well as being one indicator for embeddedness. The betweenness score for MF went from 9.2 to 198.2. So, in the startup phase network of 27 actors, MF had access to 9 structural holes, and 198 holes at the end of the study. MF also has a facilitator orientation, so this increase in his
betweenness score also represents an enhanced capability for information flow in the music subnetwork.

The advantage of the two group meetings for network and incubator program development also represents a benefit of working in small groups to increase embeddedness. As noted earlier, small groups, as meaningful social units, socialize individuals in the value systems and behavioral norms of society, using group dynamics to embed citizens in communities, associations, and institutions (Fine, 2012; Harrington & Fine, 2000, Putnam, 2000). Meeting in public venues for social attachment, small groups become the intermediary between the individual and society at large. In this bounded civic space outside the close circle of family and friends, a person's identity merges with those of interaction partners to form a modified public identity in which responsibilities for community well-being may be shared and collective action can be organized (Boyte, 2004; Walzer, 1992; Back & Polisar, 1983; Arendt, 1972). Norms are established and reinforced through small groups that develop a shared vision and engage in collective action, prompting a stronger sense of community and trust (Mandarano, 2009; Flora & Flora, 2003).

In the next section, the blended findings for RQ3 are presented. Power and behavioral norms are considered in relation to the arts incubator network.

**RESEARCH QUESTION 3 BLENDED ANALYSIS**

**RQ3**: What is the role of power in the combined incubator network (arts and music)? Are community power structures or behavioral norms present that impede or facilitate embeddedness?

Within this section, I summarize the blended findings related to RQ3, with reference numbers keyed to *Table 22* above for each summary statement.
RQ3 Blended Findings (Norms/Embeddedness)

The planning process facilitates embeddedness and network growth by providing a platform for the program leaders to use influential referrals and small group meetings to establish new relational ties (12, 13, 15).

In terms of behavioral norms, high levels of reciprocity facilitate embeddedness in the arts/music incubator network (22). Conversely, a low level of reciprocity among some actors creates embeddedness barriers that isolate them along the network fringe (23). Path dependency is evident in the arts subnetwork, where overreliance on one powerful actor impedes the formation of reciprocal ties that could otherwise foster embeddedness and network growth (24, 28). Path dependency is also evident in the limited performance opportunities for musicians and limited multicultural representation in the arts sector that impedes embeddedness and network growth (4, 25). While Rohnert Park has no downtown and Cotati is viewed as the closest creative area (path dependency), the SOMO campus supports the arts incubator and is becoming an arts destination that could foster embeddedness (1, 7).

Trusted actors are more likely to bring resources into reciprocal exchange relationships when their willingness to trust is supported through repeated cycles of interaction, mutual exchange, shared risk, and successful fulfillment of expectations (Rousseau, Sitkin, Burt & Camerer, 1998). Results from the informant interviews in this study correlate well with those of the research literature, reinforcing a need for reciprocity to build trust and embeddedness. Reciprocity failures weaken social ties, and this is also seen in the low structural embeddedness results for relatively isolated actors along the arts/music network fringe. Increased interaction with these fringe actors facilitated by CH and MF, as the program leaders, could address these failures.
As noted in the previous section, co-creation of the arts and music programs through goal-setting and interaction in regular group meetings can help to build a group identity for enhanced trust and embeddedness (Fine, 2012; Mandarano, 2009; Boyte, 2004; Flora & Flora, 2003; Pfeffer & Cialdini, 1998). The arts incubator program made a good start in establishing an arts committee to engage in group goal-setting in Month 12, but has not followed up with regular meetings after that, thereby losing some momentum. CH has also not built enough new relational ties since that meeting to overcome path dependencies and the overembeddedness barrier presented by BB that impedes reciprocity in the arts subnetwork.

Results of the informant interviews related to reciprocity, path dependency, and power point to the systemic impact of powerful actors such as BB, JW, BDW, and a few others who were also identified as key actors in the structural embeddedness measures. While these actors are deeply embedded in this community and incubator program activities, they are also trusted actors who are potential obstacles to network and incubator program development. The next section summarizes the blended findings related to power and embeddedness.

RQ3 Blended Findings (Power/Embeddedness)

*Both individual and institutional power structures are evident in the arts/music community that either directly, or indirectly, shape outcomes associated with embeddedness and network change (14, 16, 17, 18, 24, 25, 26, 27, 28, 29, 30).*

*In the complete network, the key individual actors are mainly facilitators who distribute power through introductions rather than controlling access to resources (14, 16). If facilitators continue to dominate the network as it evolves, bridging ties between the arts and music subnetworks could offset path dependency barriers due to broker domination in the arts subnetwork (14, 16, 24, 28). The facilitators are proximal to powerful influencers and structural hole opportunities that also enhance their own capacity for power as they increase*
embeddedness for themselves and others in the community (17). The incubator community views knowledge as power in the sense that actors perceived to be arts/music experts are the most trusted, so facilitators with this trait are the most successful at increasing embeddedness during the planning phase (14, 16, 18).

On a larger scale, institutional power impedes embeddedness in the arts/music community (26, 27, 29). Big music festivals and the long shadow of San Francisco performance venues act as institutional/environmental barriers through path dependencies that limit professional opportunities in Sonoma County (25, 26, 27, 29). Small regional festivals mitigate some of this impact by creating community and professional opportunities that foster inclusion and embeddedness (26). Path dependencies also impede embeddedness in the arts community through a lack of public funding support for the arts and a preference of wealthy donors for big projects, such as building performing arts centers (3, 30). Lack of public support could also be associated with low public awareness of arts impact on the economy (6).

The blended findings indicate that power structures are evident in the arts/music community that either directly, or indirectly, shape outcomes associated with embeddedness and network change. If we consider decision-making power as a form of social control that influences the behavior of others toward specific outcomes, it is helpful to understand how decisions are made and whether the resulting outcomes were intended or unintended. Typical retroactive perspectives and research on decision making identify leaders associated with an outcome, including those studies that use SNA (e.g., Mandarano, 2009; Sharp, Flora & Killacky, 2003; Sharp, 2001; Mintz & Schwartz, 1981). However, beyond the person(s) identified with making the decision, the decision shapers who influence the decision makers with their opinions and attitudes can be overlooked (Marsden, 1983; Marsden, 1981; Mott, 1970). In effect, decision shapers can affect outcomes indirectly by influencing the goals or interests of other actors.
(Marsden, 1981). This is evident in the arts subnetwork of the incubator program (see Figure 48 below).

The arts cluster is dominated by BB, limiting growth of the subnetwork due to his overembeddedness, despite some actors recruited by CH. Strong arts cluster ties constrain the actions of program leader CH because BB is needed for key referrals and access to resources. As stated earlier, if one or more actors (possibly brokers) are restricting necessary network expansion, information flow, or reducing intended program activity, an overembeddedness condition may be present. Actor BB is described by interview informants as being supportive through introductions and access to resources, but the arts subnetwork of the incubator program is too dependent on BB. The network analysis findings support this conclusion. Indirect effects from BB’s position in the network are evident in limitations on the actions of CH and other arts actors who are dependent on BB for support. At present, the arts network is still small, amplifying the influence effects from BB. Bridge actors CR and BDW are in facilitator positions where interests of the music subnetwork can be tied to interests of the arts program as the incubator develops, lessening the influence of BB on
program development. CH is in a position, as the arts program lead, to expand weak ties to external actors for increased arts subnetwork density. Increased density could alter arts subnetwork power dynamics by reducing the BB influence, improving access to resources, increasing information flow for new ideas, building trust among a broader array of actors, and increasing collaborative capacity. Since the facilitators have access to structural holes and other influential actors, they can also benefit themselves through increased relational power and embeddedness. Assuming the facilitators continue to make introductions and consolidate existing ties, they distribute structural power across the network, reducing the potential for controlling brokers to reappear with too much power over decision making.

Institutional power structures are also part of the community context, creating or reinforcing path dependencies that limit opportunities for network expansion. Financial support for the arts is one example. Public arts funding from public agencies is very limited. This is exacerbated by a preference of local elites for donating to big building construction, such as performing arts centers they can put their names on, rather than supporting small community programs. Some of this issue could be addressed through greater public awareness of value in the local arts economy. Another challenge is limitations on professional opportunity in the Sonoma County music scene because it operates in the shadow of Big Music interests in San Francisco. The presence of small regional music festivals in Sonoma County provides opportunity and fosters embeddedness for local musicians, mitigating some of the San Francisco shadow effects. The music incubator program could also be used to address some of these community barriers.

Wilkinson (1991) directly addressed the idea of barriers in his definition of community development as an interactive network of community members with the capacity to overcome obstacles collectively and purposively for the benefit of the entire community. Community ventures such as the arts incubator are tools for community development. As noted earlier, a
successful process of community embedding for a community venture provides enough information and resources to compensate for environmental barriers to success (Chell & Baines, 2000). A new community venture can push the boundaries of local structures, norms, and resources while changing the role and characteristics of the local community (Vestrum, 2014). Facilitators in the arts/music network are critical for creating the relational ties that can engage collective action for community change and mitigate power imbalances. These results correlate with those of other studies that suggest identifying facilitators and supporting their activities to expand networks and increase collaborative capacity (Coakes & Smith, 2007; Lesser & Storck, 2001; Howell, 2005; Glynn, 1996).

This chapter has integrated the findings from the community profile and informant interviews with results from the structural and relational embeddedness chapters. The blended analysis has also placed these findings in the context of the research questions to understand impacts of the incubator planning process on network dynamics and the community embedding process.

The next chapter presents implications of these findings for researchers and practitioners. Limitations of this study and ideas for future research are also discussed.
CHAPTER 8:
BRIDGES AND HOLES:
IMPLICATIONS AND FUTURE RESEARCH

INTRODUCTION

This chapter describes implications of the study’s research findings for researchers or practitioners interested in the process of community embedding and network influences on community behaviors. This work is intended to contribute to community embeddedness theory, social network theory, and practical evaluation of network change resulting from arts-based development planning in a rural context. I have also demonstrated how SNA can be used to evaluate and optimize the embedding process for a new community venture.

Implications for community development and embeddedness research are discussed first. This is followed by my observations about the implications of network measures to evaluate and guide embedding processes for community ventures, managing power, and incubating community with arts incubators. The last part of this chapter discusses limitations of this study and provides suggestions for ongoing research.

IMPLICATIONS FOR COMMUNITY DEVELOPMENT AND EMBEDDEDNESS RESEARCH

New community ventures—typically nonprofit entities or networks—are embedded in local networks with the intent to develop social wealth (Teasdale, 2010). As in this study, community ventures can include new cultural activities intended to enhance economic, social, and cultural capital (Vestrum et al., 2010; Gursoy et al., 2004; Markusen, 2014; Markusen & Schrock, 2006) while increasing quality of life (Anwar-McHenry, 2009; Haugh, 2007; Gibson, 2002). However, as I noted in the literature review, little research has been done on the embedding process of community ventures, particularly in relation to social network structures. From a different perspective, the entrepreneurship literature has examined the structural embeddedness of for-profit businesses and projects, mostly overlooking the community context of social resources.
and relational interdependencies (Welter, 2011). The role of community in entrepreneurship has only recently been considered important, and has therefore not been well studied (Fortunato & Alter, 2017, 2015; McKeever et al., 2014; Lyons, Alter, Audretsch, & Augustine, 2012). Recent network researchers have also started to consider the relational community context, realizing that place and community are not generic and can either enable or constrain entrepreneurial opportunities (McKeever et al., 2014).

Recent work by Vestrum (2014) examined the embedding process of a rural community music festival from a qualitative perspective without network analysis. Vestrum identified four strategies used to increase embeddedness, and one to de-embed when faced with community constraints on the festival. Integrating my qualitative and quantitative findings, I have extended Vestrum’s process with my own process model as observed during the course of this research. Findings from my structural embeddedness research associated with the incubator planning process demonstrate how to visualize and quantify network embedding for community development. Complementary to the process model, I have demonstrated the use of network mapping using SNA visualization to better understand and guide the embedding of new community ventures. This can help practitioners by adding a network perspective on developing relational ties to further the goals of new community programs. Future comparative and longitudinal studies of similar community nonprofit embedding processes using SNA tools may allow further refinement of this process model. The examination of community ventures that fail during the embedding process can also contribute to understanding of the social structural and relational factors required for success with these initiatives.

**Use of Network Measures to Evaluate and Guide the Embedding Process**

Most of the prior research on embeddedness, despite its focus on network concepts and over-reliance on whole network structural configuration, has not used SNA mapping tools for
visualization to clarify the interpretation of network data at either the whole network/structural or dyadic/relational level. One exception was Mandarano (2009), who used SNA to evaluate the effectiveness of collaborative planning in creating social capital between government agency participants. Mandarano examined new interorganizational relationships established during a planning process. Mandarano quantitatively analyzed the whole network as a static snapshot of a multi-agency workgroup that had met together for six years. Mandarano’s results were informed by qualitative evaluation of the collaborative process that helped or hindered new relationship formation between agencies. As Mandarano notes, her study was a first attempt at using SNA to understand collaborative planning in relation to certain elements of Putnam’s (2000) definition of social capital, and how local network structure facilitates or constrains collective action. Since the Mandarano study was bound up with the multi-layered social capital concept and focused on a static look at an established group of collaborating agencies, the study was unable to show longitudinal changes to network structure as the collaboration formed and developed.

Longitudinal analysis of social network change in the present study provides the opportunity to quantify the relational impact and efficacy of an arts-based community initiative as it evolves through its early stages of growth. With an understanding of network change and embedding at the formative stages of a community arts initiative, future research may be able to expand on these findings for more general use of SNA as an interactive tool to guide new community program development. My embedding process model, used with the suggested SNA measures, can also discern the positive and negative aspects of network functionality and power, allowing practitioners to identify facilitators and controlling brokers.
Identifying Facilitators and Brokers to Optimize Community Embedding & Collaboration

This study supports some of the key ideas from the literature regarding social network facilitators who give up brokerage control over relational ties to enable collaboration and sustained network interaction for community benefit. Facilitators develop relational trust leading to positive behavioral changes supporting innovation (Lesser & Storck, 2001), and act as collaborative champions to form and maintain communities of sustained innovation (Coakes & Smith, 2007). As noted in previous chapters, controlling brokers in a network have the opposite viewpoint, focusing on their own beneficial control over access to relationships and resources. While some specialized situations require the presence of a brokerage function, as when a lawyer acts as a broker between a defendant and a judge (Mott, 1970), the more generalized facilitators in a community network enable trusted referrals, access to resources, and improved communication flow to enable collaboration and collective action. These facilitator traits establish a need to identify these actors for efficient guidance and development of new community initiatives. The SNA measures used in this study, as means to identify critical actors with facilitator attributes, suggest an approach that could be generalized to other community research contexts in combination with qualitative confirmation of these roles. Since facilitators may be formally designated leaders, emergent leaders, or informal contacts, their presence in the community may be hidden to new actors who are not already socially embedded. The use of SNA to identify them, along with their critical relationship ties, could be viewed as an efficient means for community development professionals to locate and quantify relational triggers that increase embeddedness and agency.

Managing Power in the Embedding Process

Facilitators are often not in leadership positions, which could alter their perspectives toward brokerage if they have a vested interest in gaining power through the control of access to social, financial, or material resources. As discussed in the Blended Analysis chapter, power structures
are evident in the arts/music community that either directly, or indirectly, shape outcomes associated with embeddedness and network change. Decision makers can be influenced, directly or indirectly, by decision shapers who influence the decision makers with their opinions and attitudes (Marsden, 1983; Marsden, 1981; Mott, 1970). These decision shapers often work in the background, and SNA can be used to identify them.

Leadership and reciprocity can leverage the potential for a collaborative creative group to form and reach its goals. Ekeh (1974) conceptualized generalized norms of reciprocity among multiple actors. Since reciprocity allows the demonstration of trust and positive intentions, overcoming the potential social risks involved in exchange, trust strength can increase among the actors involved in reciprocal relationships (Axelrod & Keohane, 1985; Blau, 1964). However, brokers can cause reciprocity failures in groups. Phrased in network terms, social groups should evolve toward maximum embeddedness, but they do not when brokers seek control through the withholding, filtering, or misrepresentation of information (Simsek, 2003). As demonstrated in this research, identification of these brokers can be done with SNA and verified through qualitative means. Appropriate leadership can create benefits for a group or network to overcome brokerage effects, either by improving information flow or de-embedding problematic actors. If a community venture is, itself, constrained by a community due to overembeddedness, de-embedding of the venture from existing social structures may be necessary (Vestrum, 2014). An example of this might be an arts incubator initiated by a local government that is then hampered by bureaucracy as it develops. If the arts incubator is then spun off as an independent entity managed by a community nonprofit, restraint is loosened and new relational ties are established. In a sense, managing a de-embedding process for a venture is similar to that of reducing reliance on an overembedded broker, bolstering trust and group reciprocity through new relational ties.
In his work examining the collaborative process among creative actors, Farrell (2001) identifies three types of leadership that help groups of artists and writers evolve through support, ideas, and criticism toward a common vision to guide their creative work. Gatekeepers, charismatic leaders, and executive managers guide a group’s evolution at different stages of the process over time. This process can allow marginalized individuals in a common location to form a network of reciprocal exchange among peers who are talented novices. At the earliest stage of informal group formation, the gatekeeper takes action to build a friendship circle out of compatible and ambitious novices in a discipline. This is often done informally by the gatekeeper among marginalized individuals to discuss ideas and strengthen relational ties. The gatekeeper is comparable to the average facilitator in my research. The charismatic leader is often a respected person with more expertise among the group, and this is comparable to the strong trust placed in the respected expert in my research. Actor JW typifies this character type for the music subnetwork of the incubator program. JW is an above-average facilitator, with high levels of reciprocity, who also organizes small music festivals and is respected among his peers. Group attention encourages this type of leader to perform, and they set a high standard of performance for other group members. Farrell’s third leadership type is the executive manager. Charismatic leaders and gatekeepers often form coalitions to ritualize meetings, encourage group work, and establish open norms for reciprocity and experimentation. The executive guides collective action through organization, setting goals, scheduling, coordinating action, budgeting, and delegating tasks. If a charismatic leader does not have these skills, a transfer of power to a new executive leader has to occur for the group to evolve. For the arts/music incubator program, this role may eventually be filled by MF (music) and CH (arts), but would occur well into the implementation stage of the program, which is beyond the scope of this study.
In some cases, attempts to transfer power can also lead to group fragmentation, particularly in cases where there are two charismatic leaders in a creative group. In this case, the group evolution process continues as two separate network clusters, although they will likely be connected in a beneficial manner through one or more bridging actors (Burt, 2004; Farrell, 2001). The bridge actors will then be in positions to detect and develop new ideas while being less restricted to redundant information flow within their home clusters (Burt, 2015, 2004). In the present study, actors MF and CH are both in positions where they could bridge the arts and music subnetworks to benefit the broader network while increasing their own embeddedness.

The networked nature of business incubator programs with physical facilities can also serve a facilitation function that bridges structural holes in a community.

INCUBATING COMMUNITY WITH ARTS BUSINESS INCUBATORS

This study provides evidence of community embeddedness being fostered through the planning process for a rural arts business incubator. If creative business incubator facilities are planned and implemented with a network perspective in mind, creating a home for facilitators and the relational support services they provide, they can become network magnets for creative community development. In effect, the incubator can be a facilitator.

Incubators as Facilitators

Incubators can be homes for facilitators and community facilitation. As noted earlier, arts-based community development initiatives that broadly engage diverse perspectives can increase collaborative capacity through social interaction, network expansion, and trust development while increasing information flow and the potential for innovation (Balfour & Alter, 2016a; Balfour, 2013; Burt, 2004; Wilkinson, 1999). As a nonprofit venture contributing to community goals, an arts or creative incubator has a different motivation for its existence when compared to for-profit business development programs. Cultural business development is, itself,
intended to provide a service to the community rather than a profit-making opportunity focused solely on investors or business owners. Arts incubators that include display and performance spaces for visual artists and musicians can be inclusive public venues for drawing people out of their homes, prompting both social interaction and civic participation that helps build sense of community (Wellman, 2001; Oldenburg, 1989; Wolff, 1981). Several of the respondents interviewed for this study emphasized the high value placed on live performance as a type of interactive event that cannot be fully duplicated in other media. This is an aspect of the music business that has increased in value while other forms of music distribution have lost market value. The economics then engender an environment where musicians who used to be able to succeed in the music business simply by recording CDs can no longer do so, while live performers can do well just from concerts and music festivals. Visual artists also benefit from public events, raising awareness of their work, establishing new ties, and selling more through public interaction at art festivals than they could typically do through traditional gallery channels or online sales. Small performance venues/festivals and art exhibitions/festivals provide space for artists and musicians to engage directly with their audiences and peers, increasing relational ties and structural hole bridging opportunities. Public performances and interactions also increase community well-being (Anwar McHenry, 2011b; McQueen-Thomson et al, 2004). These same events facilitated by the arts incubator can also help to address some environmental path dependencies noted by interview respondents that limit professional development in Sonoma County. Public events in an arts/music incubator can therefore enhance the facility’s impact in the community.

Business incubators are often thought of in simplistic terms as providing business support services for startup companies. However, well-run business incubators are actually networked entities that provide a home for facilitators and facilitating services to leverage networks in support of a professional community. By proactively driving facilitation activities toward a
community vision, creative incubator programs can lead community development to increase collaborative capacity and access to resources. Arts incubators could therefore be considered network magnets where facilitators can foster embeddedness through collective action to alter social structures for community benefit. Employing network measurement in support of incubator management, as demonstrated during the program planning phase in this study, can optimize network change in support of community goals.

LIMITATIONS AND IDEAS FOR ONGOING RESEARCH

The current research has limitations that restrict the generalizability of the findings and suggest possibilities for future studies. Some limitations were already discussed at the end of Chapter 3 (Methods) related to validity and reliability. I have also noted conflicting reports in the literature on the relationship between social capital and embeddedness. Additional limitations are discussed in this section, along with possibilities for future research.

Applying SNA to analyze an arts community network bears some resemblance to problems inherent in the study of a terrorist network. Arts networks are often sparse and uncoordinated, with some actors effectively remaining hidden to the casual community observer. In a terrorist network, operational demands engender a struggle between keeping the network hidden and using it to accomplish objectives (Baker & Faulkner, 1993). Keeping terrorist cell members unknown to each other minimizes network damage if one is captured. Terrorist networks are often subject to conflict among actors, but this may be hidden from the rest of the cell unless a splinter group forms (Perkoski, 2015). Although conflict can be good for innovation, factional conflicts within a creative network may be hidden from the rest of the network while affecting structural ability to achieve collective goals (Farrell, 2001). Bridging actors—a.k.a. transitory shortcuts or cutouts—may be present in the terrorist network, but only make a brief appearance when necessary to collaborate and coordinate collective action (Krebs, 2002). Volunteers and
emergent leaders in an arts network may also act as bridges and appear on a temporary basis to collaborate and coordinate action, then disappear as a goal is reached, they get interested in other things, or they are diverted to different activities. The difference is in the intent—covert networks trade efficiency for secrecy (Krebs, 2002) while nonprofit arts networks trade efficiency for volunteer support. While a terrorist network is an extreme case of a covert network, the same SNA measures can be applied to the identification of hidden actors in arts networks as well as terrorist cells.

SNA has its limitations, particularly if qualitative analysis is not performed to triangulate findings for confirmation of the quantitative results. This is an issue with many published SNA studies that focus solely on structural network characteristics. In addition, without a complete census of a network population, there can always be missing data. Missing actors and their relational ties could alter analysis findings, even when multiple SNA measures are used to study the network. In this study, the incubator planning group members were identified so that a network boundary could be drawn to address the missing data issue, but this may not be possible in a terrorist network. When Krebs (2002) used SNA to examine the 9/11 terrorist network, centrality measures identified several possible leaders among the 19 hijackers, but it was only through verification from a bin Laden videotape, discovered in a deserted house, that the actual cell leader was confirmed to be Mohamed Atta (Krebs, 2002). The same centrality measures were used to identify the significant actors, facilitators, and brokers in the arts/music incubator network, along with additional SNA measures and qualitative evidence analysis.

In terms of the validity threat of reactivity, or reflexivity, in which the researcher may influence the setting or individuals under study (Maxwell, 2013), the author acted primarily as an observer rather than an active participant in the planning meetings. Maxwell (2013) observes that reactivity during interviews is inescapable, but that it is more important to understand how
this affects the validity of inferences drawn from the interview. While there were no stress-inducing questions as part of the interviews, there was potential for altered responses to questions about trust relationships. However, triangulation of responses from other informants should minimize these impacts, along with field notes from observations and awareness of this potential threat when gathering and interpreting data (Bryman, 2012). Checking the validity of interpretations in the findings would have been another means to address reactivity, and could be applied to future studies of this topic, but the findings were not shared with the network members under observation to avoid contamination of data in the ongoing study.

The small-world condition related to high cluster density is not present in the results for this study. However, it is possible that a small-world pattern would be more evident if the community data were compared to a broader sample of network activity. With this study’s focus on direct network interactions related to the community and the arts incubator planning group, it is possible that the medium-density clustering coefficient is a result of sampling an activity started with the intent of being a multi-program collaborative. As such, the data may be representative of a more innovative sparse network operating within a broader environment of dense clusters in programs that were not sampled. This should become evident after the incubator program has been fully implemented as an established presence in the community. A variation on the present research design might be to fully map the arts and music subnetworks, after the two programs have been operating for a year or two, as a means to compare network densities and look for small-world conditions. At that stage, a better design would be to examine the interactions between partner organizations, rather than individuals, to better understand the incubator’s impact on the community network. Network optimization using the same SNA measures could then be performed as an evaluation exercise. Results using organizational data could be compared to those from this study for an updated longitudinal analysis. See Chapter 3
(Methodology) for additional discussion of longitudinal analysis and other limitations to the methods used in examining the incubator network.

The embedding process model I have described, complemented with SNA, has potential as a management tool to guide the embedding process of new community ventures and for researchers to advance theory development. Comparative studies of the embedding process, unrelated to profit-motivated entrepreneurial embedding, could test and refine this model to develop it further, while also refining the SNA approach as an evaluation tool. Refinement of this process model with SNA would also help to develop simpler network analysis tools to make it available to the average practitioner in a community setting. The SNA measures used to study social power structures would be useful in refining mitigation tactics in cases where controlling brokers act as network obstacles to community program embeddedness.

This dissertation is focused on the early stages of an arts-based development program and processes that support or hinder its development in the community. As such, the process model may not translate well to evaluation of a fully implemented community network where early program development data are unavailable. The SNA measures used here can still be employed to guide new program development or to act as a static snapshot of an established program’s network obstacles and management alternatives. Further research to examine larger community program networks would be of interest to refine the model for more efficient planning and development processes. Due to differences in behavior and motivations, this may be most helpful in studies of nonprofit or government programs intending to support local arts-based development for a community rather than profit-oriented organizational development. While an arts incubator is intended to help diverse artists to support themselves in their chosen careers, their businesses and goals benefit communities in ways that traditional entrepreneurs do not.
CONCLUSION: SEEING BRIDGES WHERE OTHERS SEE HOLES

In thinking about community program development and the interactional processes related to embedding, we should remember the social network perspective that structural holes represent opportunity. People group together in community clusters, leaving structural holes where bridges are needed to integrate across clusters. In his research on structural holes, Burt (2004) said that “the creative spark, on which serendipity depends, in short, is to see bridges where others see holes” (p.351). Network facilitators create bridges across holes, fostering beneficial community relationships (see Figure 49).

In conclusion, social structures are only fragments of complex systems. As such, any SNA tools we use to examine these complex systems are necessarily limited in scope, providing only a narrow view of reality. Balancing the use of quantitative tools such as SNA with qualitative methods of investigation is an improvement on single-method approaches of social exploration. However, while establishing an artificially bounded fragment of a social system for examination can provide the opportunity for deeper insight, it necessarily limits the breadth of findings that can be produced by a single study. I hope that my research contributes a worthwhile fragment of knowledge toward understanding this complex puzzle in which I am embedded.
Figure 49. Month 16 complete arts and music incubator network. It’s all about relationships, trust, power, bridges, and the facilitators who foster beneficial community relationships.
REFERENCES


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APPENDIX A: IRB APPROVAL LETTER

The following page contains the IRB approval letter for this study.
**EXEMPTION DETERMINATION**

**Date:** March 23, 2016  
**From:** Courtney Whetzel, IRB Analyst  
**To:** Bruce Belfour

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<tr>
<td>Principal Investigator</td>
<td>Bruce Belfour</td>
</tr>
<tr>
<td>Study ID</td>
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Documents Approved:  
- Belfour interview questions (March 15, 2016), Category: Data Collection Instrument  
- Belfour protocol HRP-591 (022916), Category: IRB Protocol

The Office for Research Protections determined that the proposed activity, as described in the above-referenced submission, does not require formal IRB review because the research met the criteria for exempt research according to the policies of this institution and the provisions of applicable federal regulations.

Continuing Progress Reports are not required for exempt research. Record of this research determined to be exempt will be maintained for five years from the date of this notification. If your research will continue beyond five years, please contact the Office for Research Protections closer to the determination end date.

Changes to exempt research only need to be submitted to the Office for Research Protections in limited circumstances described in the below-referenced Investigator Manual. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office for Research Protections.

Penn State researchers are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within CATS IRB (http://irb.psu.edu).

This correspondence should be maintained with your records.
APPENDIX B: FACE-TO-FACE INTERVIEW PROTOCOL

The following pages contain the face-to-face interview protocol and questions used for the verbally administered survey component.
Study Title:
Incubating Community: Arts-Based Development, Network Structure, and the Embedding Process

Principal Investigator:
Bruce Balfour

Purpose:
This study examines how arts-based community initiatives affect community engagement and relationships as they evolve during planning processes. Questions in this study examine community relationship structures along with formal and informal processes that facilitate or obstruct trust, collaboration, and information flow.

Process:
You will be provided with an Informed Consent form and asked if you would like to be included in this study. Your interview responses will be kept confidential. No personally identifiable information will be shared in any publication or presentation. The interview will take about an hour and will consist of both multiple-choice and open-ended questions.

Part 1

Interviewer: First, I’d like to get some basic data about you.

Name:
Occupation:
Responsibility or job function on this arts/music project:
Employer (or Self-Employed):
Length of residence in this area:

Part 2

Interviewer: This section of the study is about your collaborative relationships related to this arts project. I’ll ask you to identify some of your collaborators (by initials and employer) and then answer a few questions about your relationships with those people.

Step 1:
Please identify up to 10 people you work with in any capacity related to this arts project. Note: please identify these individuals using first and last initials and employer.

Step 2:
For each of the people you listed, please answer the following questions. (Refer to the response code sheet for Part 2.) <INTERVIEWER NOTES RESPONSES>
Q1: Is this the first time you’ve worked with this person?
0 = no
1 = yes

Q2: How often do you interact with this person?
1 = Daily
2 = 2-3 times a week
3 = weekly
4 = a few times a month
5 = monthly
6 = quarterly or less

Q3: How often do you socialize (lunch, dinner, drinks, or other informal activity) with this person?
0 = Never
1 = Daily
2 = 2-3 times a week
3 = weekly
4 = a few times a month
5 = monthly
6 = quarterly or less

Q4: How long have you known this person?
1 = Less than 1 year
2 = 1-2 years
3 = 3-5 years
4 = 6-10 years
5 = Over 10 years

Q5: How have your communications with this person changed as a result of the planning process for this arts project?
1 = increased
2 = remained the same
3 = decreased
4 = no direct communication

Q6: Please indicate the extent to which you consider this person to be influential on this project, whether or not they have formal authority.
1 = no influence
2 = some influence
3 = moderate influence
4 = strong influence
5 = very strong influence
Q7: Please indicate the level of trust you have that this person is reliable and can provide you with the best quality of information in their areas of expertise.
1 = don't know
2 = some trust
3 = moderate trust
4 = strong trust
5 = very strong trust

Q8: Please indicate how you perceive each person in terms of how interested they are in seeking opportunities for collaboration or in introducing people to each other who may have common interests.
1 = don't know
2 = low interest
3 = some interest
4 = average interest
5 = strong interest

Q9: If you have the opportunity, would you like to work with this person again on future projects?
1 = yes
0 = no
Part 3

Interviewer: I’m now going to ask some questions about your interactions with people and organizations connected to this arts/music project or related programs.

1. Does your project share mutual interests or goals with other organizations or initiatives connected with the arts/music or arts-based community development in your area?
   
   (PROBE) For example, these could be arts/music support organizations, schools, local/county government, or businesses.
   
   (FOLLOW-UP) How often do you interact with people in these other organizations?

2. Do you typically work with the same people whenever new arts/music projects come up, or do you often seek out new partners/collaborators?
   
   (FOLLOW-UP) Why / why not?

3. Are there any differences in the types of community partners, collaborators, or sponsors you’re working with on your current arts/music project compared to your previous arts/music projects?
   
   (PROBE) Types of partners might include government, academic, business, or community organizations.
   
   (FOLLOW-UP) If so, what is different about the current project that attracted these new partners?
   
   (FOLLOW-UP) Can you describe the process of how these collaborations were started?

4. Do you socialize with people outside of your organization who are engaged in arts/music-related activities?
   
   (PROBE) Activities might be paid work, volunteering, performances, etc.
   
   (FOLLOW-UP) If so, have these informal contacts ever led to new collaborations?

5. Do you see any barriers to the professional development of artists or arts/music programs in your community?
   
   (FOLLOW-UP: IF BARRIERS) What do you think it would take to overcome these barriers?

6. Was your current arts/music project organized by the same people who typically start this type of project, or are there any differences compared to previous projects?
(FOLLOW-UP) Are there potential leaders (organizations or individuals) of this type of project in the community who are being overlooked?

(FOLLOW-UP: IF OVERLOOKED) If so, why?

7. Was your current arts/music project funded by the same people who typically fund your projects, or are there any differences compared to previous projects?

(FOLLOW-UP) Are there potential funders (organizations or individuals) of this type of project in the community who are being overlooked?

(FOLLOW-UP) If so, why?
FOR INTERVIEWER
Responses to Part 2

NAME:

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<th>First and Last Initials</th>
<th>Employer</th>
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# Vita

**Bruce Balfour**  
Department of Agricultural Economics, Sociology, and Education  
The Pennsylvania State University  
111 Armsby Building, University Park, PA 16802  
bjb5461@psu.edu

## EDUCATION

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<tr>
<th>Institution</th>
<th>Degree</th>
<th>Year</th>
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<tr>
<td>Pennsylvania State University</td>
<td>PhD, Rural Sociology</td>
<td>2017</td>
<td>Dissertation: <em>Incubating Community: Arts-Based Development, Network Structure, and the Embedding Process</em></td>
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<tr>
<td>University of Massachusetts, Amherst</td>
<td>MPS in Community and Economic Development</td>
<td>2013</td>
<td>MPS Thesis: <em>Building an Innovation Community: Network Structure, Social Capital, and the Community Field in a National Laboratory Research Park</em></td>
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<td>Graduate Online Teaching Certificate</td>
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<tr>
<td>Coastline Community College</td>
<td>B.A. in Science Communications (Journalism), with honors</td>
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## ACADEMIC PUBLICATIONS


## PAPERS PRESENTED AT PROFESSIONAL AND TECHNICAL MEETINGS


