1042-2587

Evolutionary Processes and Paths of Relationally Embedded Network Ties in Emerging Entrepreneurial Firms

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Relationally embedded network ties influence the economic decisions of emerging firms and evolve over time. Evolutionary processes and paths of these ties are examined based on two research questions: How do components of social relationships facilitate the evolution of relational embeddedness? What are the different paths to relational embeddedness? Findings from qualitative case study methods suggest three evolutionary processes (network entry, social component leverage and trust facilitation), four evolutionary paths, and the conclusion that ties entering the network through personal relationship may evolve more quickly toward full embeddedness. Strategic implications for emerging firms are suggested regarding entrepreneurial opportunity recognition, resource acquisition and effective governance of relationally embedded ties.

Introduction

The study of entrepreneurial networks informs the field of entrepreneurship by highlighting the role of individual entrepreneurial action on the discovery of opportunities and mobilization of resources (Dubini & Aldrich, 1991; Katz & Gartner, 1988; Shane & Venkataraman, 2000). Study of entrepreneurial networks at the individual level focuses on the relationships or ties of entrepreneurs—as agents of the firm—with other individuals and organizations (Anderson & Miller, 2003; Batjargal, 2003; Shane & Cable, 2002). The network ties of an emerging firm can provide the conduits, bridges and pathways through which the firm can find and access external opportunities and resources. Thus an emerging firm's network ties can facilitate successful firm emergence, growth and performance.

However, the characteristics of these network ties can influence the extent to which opportunities and resources can be identified, accessed, mobilized and exploited. When a network tie is embedded within the social relationship and influences the firm's economic decision making, the tie is called relationally embedded (Granovetter, 1985; Uzzi,

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1996). However, Hite (2003) suggests that these relationally embedded ties may differ based on the different characteristics of the social relationships. In addition, Larson & Starr (1993) and Hite (2003) indicate that network ties may evolve in their degree of relational embeddedness due to an entrepreneur's proactive management. This potential for the evolution of relationally embedded network ties specifically suggests that entrepreneurial action can influence both opportunity discovery and resource mobilization.

Therefore, a critical challenge for emerging entrepreneurial firms is to understand and manage the evolution of their relationally embedded ties and the effects of this evolution on entrepreneurial strategies for opportunity discovery, resource acquisition and firm governance. From the scope of entrepreneurship as firm creation with the entrepreneur as a founder of the firm, this study explores and explains how network ties of an emerging firm might evolve toward increased relational embeddedness, specifically due to individual action. Thus this paper identifies ways that entrepreneurs in emerging firms may influence effective opportunity discovery, and resource acquisition and firm governance.

Background

Emerging entrepreneurial firms, traditionally resource poor due to both liabilities of newness and smallness (Baum, 1996; Stinchcombe, 1965), rely upon their external network ties to provide both opportunities and resources for survival and successful emergence (Jarillo, 1989). Many of their initial opportunities and resources are found within the relationally embedded ties of the entrepreneur's social networks, such as family and close friends (Hite & Hesterly, 2001; Jarillo, 1989; Larson & Starr, 1993). The entrepreneur, as the agent of the firm, can access these network ties as an important avenue for bringing opportunities and resources into the firm. In addition, these early ties influence the economic actions of the firm, as a result of being embedded within the entrepreneur's social relationships (Granovetter, 1985; Uzzi, 1996), and the firm must ensure their effective governance.

Relational Embeddedness

An emerging firm's external network ties exist on a continuum from market-based exchange to relational exchange, depending on the extent to which the tie is embedded within a social relationship (Hennart, 1993). Ties that enable exchange and influence the firm's economic choices on the basis of the relationship are relationally embedded. Relational embeddedness implies that maintaining the social relationship often becomes the most important concern–superseding even economic concerns. Indeed, Staber and Aldrich (1995) indicate that "sociologists now take as axiomatic the proposition that economic action, including entrepreneurial behavior, is embedded in interpersonal social networks" (p. 442). As a result, relationally embedded ties have the potential to influence the economic decision-making of the emerging firm (Granovetter, 1985; Portes & Sensenbrenner, 1993; Uzzi, 1996, 1997; Williamson, 1979). For example, a close friend is more likely to influence an entrepreneur than someone unknown or untrusted. A friend may offer an opportunity or resource which persuades the entrepreneur away from a preferred economic choice. Thus as relational embeddedness can influence a firm's strategic choices, emerging entrepreneurial firms must strategically manage and govern these relationally embedded ties to ensure successful emergence and growth.

Relationally embedded ties are generally governed through informal mechanisms of relational governance such as trust and relational contracting rather than through more formal mechanisms of market governance such as contracts (Granovetter, 1985; Uzzi, 1996, 1997; Williamson, 1979; Zaheer & Venkataraman, 1995). Relational contracting, unlike traditional formal contracting, takes into account the "entire relation as it has developed [through] time" (Williamson, 1985, p. 72), including its history and trust, as informal governance controls (Bradach & Eccles, 1991; MacNeil, 1978; Zaheer & Venkataraman, 1995). Trust thus becomes the cornerstone of effective governance for relationally embedded ties.

Relationally embedded ties provide emerging firms with critical strategic opportunities and resources (Batjargal, 2003; Hite & Hesterly, 2001; Larson, 1992). These ties create a safe platform and a unique vantage point from which to identify, recognize, evaluate and refine new opportunities that may not be known to others (Anderson & Miller, 2003; Shane & Venkataraman, 2000). They provide critical bridges to other individuals, facilitate reciprocal communication and exchange regarding opportunities and resources (Hennart, 1993; Jarillo, 1989; Powell & Smith-Doerr, 1994), and enhance access to critical human and social capital (Anderson & Miller, 2003; Batjargal, 2003; Coleman, 1990; Nahapiet & Ghoshal, 1998). For emerging firms, this exchange through social capital is critical for accessing and mobilizing needed resources that might not otherwise be available, accessible or affordable to the firm under more traditional market exchange (Dubini & Aldrich, 1991; Portes & Sensenbrenner, 1993; Starr & MacMillan, 1990). Use of these network ties to identify opportunities and extract scarce resources can facilitate successful firm emergence (Kodithuwakku & Rosa, 2002). However, networks aren't static; they evolve. Entrepreneurs may better manage this evolution if they are aware of the processes involved.

Evolution of Networks and Network Ties

The literature calls for a more dynamic perspective of entrepreneurial networks and their evolution (Aldrich, Reese, & Dubini, 1990; Hite & Hesterly, 2001; Human & Provan, 2000; Larson & Starr, 1993; McPherson, Popielarz, & Drobnic, 1992; Stinchcombe, 1990; Suitor, Wellman, & Morgan, 1997). Previous research points to this evolution and suggests that networks change as firms search for sufficient resource flows to ensure their emergence or enactment (Gartner, Bird, & Starr, 1992; Hansen, 1991; Hite & Hesterly, 2001; Larson & Starr, 1993; Steier, 2000). Thus the ability to influence these evolutionary processes is likely to be a critical to the firm's success (Galaskiewicz & Zaheer, 1999). The evolution of the emerging firm's network may influence the flow of resources across the firm's boundary and, thereby, the firm's emergence as it attempts to borrow, leverage, influence, and control resources it does not currently own (Hite & Hesterly, 2001; Jarillo, 1989). As an emerging firm's network is composed of dyadic ties, most of which are relationally embedded (Hite, 2003; Hite & Hesterly, 2001), the evolution of these ties may directly impact the evolution of the larger network.

In developing theory of network tie evolution, descriptions and classifications of ties is a critical first step (McKelvey & Aldrich, 1983). Research on relationally embedded network ties has provided theoretical classifications to identify and describe many of their characteristics (de Burca, Brannick, Fynes, & Glynn, 2001; Granovetter, 1985; Hite, 2003; MacLean, 2001; Portes & Sensenbrenner, 1993; Provan, 1993; Rowley, Behrens, & Krackhardt, 2000; Uzzi, 1996, 1997; Uzzi & Gillespie, 2002). Much of this research examines entrepreneurial networks and focuses on why and how firms may select and retain various types of ties (McKelvey & Aldrich, 1983; Weick, 1979). Previous research also

suggests that the characteristics of network ties may change and these changes may affect opportunity discovery, resources access and mobilization (e.g., Hite, 2003; Larson & Starr, 1993; Uzzi & Gillespie, 2002). Specifically, Larson and Starr (1993) examined the evolution of network ties in emerging firms and suggested that even newly established, work-related ties may become evolve to become more relationally-embedded over time as social exchanges are layered over the business relationship, thus increasing the influence of the tie on the firm (Granovetter, 1985; Uzzi, 1996, 1997, 1999; Uzzi & Gillespie, 2002).

This evolution of networks and network ties has important implications for opportunities, resources and governance of emerging firms. For example, many emerging entrepreneurial firms rely initially on close, relationally embedded ties (Hite & Hesterly, 2001) but later, in the search for opportunities and additional resources to support growth (Penrose, 1959), begin to add network ties that are based only upon traditional market exchange (Hite & Hesterly, 2001; Larson & Starr, 1993). As these new ties will likely not be as relationally embedded as the firm's earlier ties, relational governance will not likely provide the necessary controls. Also such new market ties do not have access to relational capital to facilitate external resource exchange and provide unique access to opportunities (Granovetter, 1985; Hite & Hesterly, 2001; Uzzi, 1996, 1997). If the emerging firm relies too heavily on familiar relational governance strategies, assuming these to be sufficient, they may put the successful emergence and early growth of the firm at risk. For example, if an entrepreneur assumes that written or contractual agreements with a supplier are not necessary, he may be assuming higher levels of trust between the parties that do not yet exist. Thus to best access opportunities and resources as well as to determine effective governance mechanisms, entrepreneurs must understand the characteristics and potential evolution of their relationally embedded ties (Hite & Hesterly, 2001; Larson & Starr, 1993; Rowley et al., 2000).

Multi-Dimensional Nature of Relationally Embedded Ties

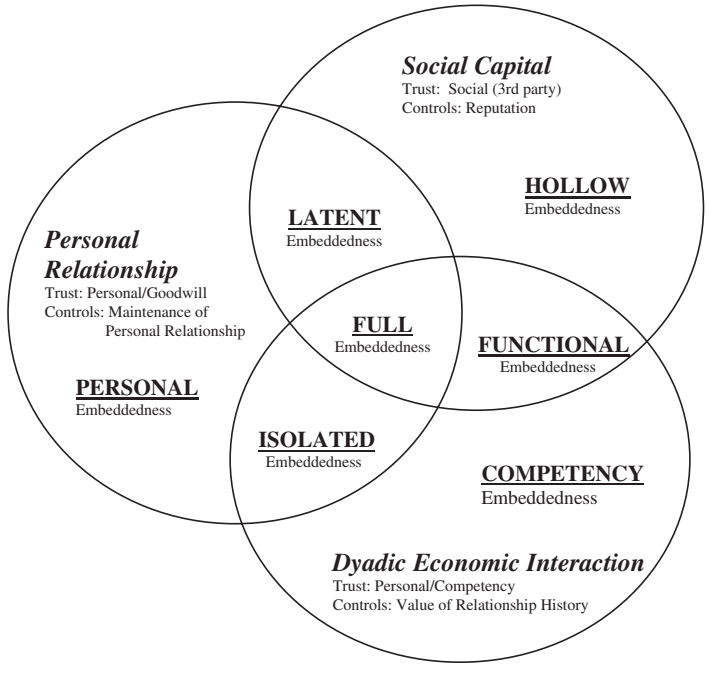
While previous research has approached relational embeddedness as a singular construct, Hite (2003) suggests that relational embeddedness may be multi-dimensional. This perspective allows for dynamic variation within network ties and better informs emerging firms as they make strategic choices regarding their ties. In reality, an either-or perspective—suggesting that ties are either relationally embedded or not—may not adequately reflect the inevitable variation within social relationships.

Figure 1 identifies seven different types of relational embeddedness (Hite, 2003), suggesting that relational embeddedness exists upon a dynamic continuum extending from unembedded to fully embedded. The typology suggests that dyadic ties can entail three different components of social relationships and provides a richer description of network ties than simply saying that a social relationship exists. This typology is built upon different combinations of three components of the social relationship: personal relationship, dyadic economic interaction, and social capital. Each of these social components has several subordinate attributes that further describe and define them (see Table 1), which parallel descriptions in previous literature of relationally embedded network ties. The typology examines the content of ties (Powell & Smith-Doerr, 1994) and suggests that relational embeddedness is defined by the type of social relationship in which the tie is embedded. Basic differences between relationally embedded ties lie in the variation of the social relationships in which they are embedded (Hite, 2003).

This typology of relational embeddedness provides a framework that can facilitate both classification and measurement of relational embeddedness as well as the identifi-

Figure 1

Types of Embeddedness
Source: Hite (2003)



cation of patterns of network tie formation and evolution (Powell & Smith-Doerr, 1994). As the social relationships change, these ties may develop additional characteristics (Hite, 2003; Larson & Starr, 1993) based upon the history of the relationship (Fletcher & Barrett, 2001; Granovetter, 1985; Uzzi, 1996, 1997). Entrepreneurship, strategy and network research should account for these dynamic processes that can transform networks over time (Aldrich & Reese, 1993; Emirbayer & Goodwin, 1994; Human & Provan, 2000). Thus the evolution of network ties, the influence of social relationships on the firm's economic decisions, and the multi-dimensionality of relationally embedded ties are of strategic concern for emerging firms (Dyer & Singh, 1998; Rowley et al., 2000).

Although Hite's (2003) typology of relationally embedded ties alone is insufficient to explain causation in developing network relationships (Scott, 1992), this typology lays the foundation for more rigorous research on relational-embeddedness and its evolution. While this typology suggests network tie evolution, the process of evolution toward full embeddedness has not been demonstrated. Therefore, this study builds upon Hite's (2003) typology of relational embeddedness to explore this evolutionary process.

This research seeks to further unpack the concept of relational embeddedness and contribute to theoretical understanding of its evolution (Hite, 2003; Madhok, 1997; Uzzi, 1996). The heterogeneity of social relationships among relationally embedded network ties suggests that important social and strategic differences may exist between these ties and also between their evolutionary processes and paths (Hite, 2003; Portes &

Table 1

Components, Attributes and Elements of Social Relationships among Embedded Network Ties Source: Hite (2ed)

SOCIAL COMPONENTS	ATTRIBUTES	ELEMENTS
	Personal Knowledge	Identifies with
		Knows personally
Personal Relationship	Affect	Respect
		Loyalty to Tie
		Caring
	Sociality	Knowledge of tie's life and family
		Social activities
	Extent	Frequency
		Amount
		Intensity
		Reciprocal
		Interdependence
		Multiplexity
		Duration
	Effort	Working for Partner
Dyadic Interaction		Education
		Responsiveness
		Helpful
		Problem Solving
	Ease	Proximity
		Technological Compatibility
		Convenience
		Goal Congruence
		Communication Quality
	Quality	Familiarity
		Knowledge of Business Needs
		Working Well Together
		Satisfaction
		Loyalty to Interaction
Social Capital (network level)	Brokering	Introductions to Third Party
	Structural Embeddedness	Connectedness of Dyad's Mutual Ties
	Obligations	Asymmetry
		Expectations
Social Capital (dyadic level)		Norms
	Resource Accessibility	Ability to Access Resources

Sensenbrenner, 1993; Uzzi, 1996). This paper generates testable theoretical propositions to explain various processes through which these ties may evolve from one type of relational embeddedness to another. Understanding entrepreneurial processes is critical to understanding entrepreneurial success (Low & MacMillan, 1988). The following two research questions guided this study:

1. PROCESSES: How do the social components of relational embeddedness (Hite, 2003) facilitate its evolution?
2. PATHS: Based on the social components of relational embeddedness (Hite, 2003), what paths lead to full relational embeddedness?

Methods

This research used case study methods in a post-positivist and grounded theory paradigm (Eisenhardt, 1989; Glaser & Strauss, 1967; Guba & Lincoln, 1994; Miles & Huberman, 1994; Strauss & Corbin, 1994; Yin, 1994). The purpose was to ground theoretical explanations upon thick descriptions (Schein, 1987) of relational embeddedness and its evolution at the dyadic level.

Research Design

Case study methods are frequently used in network research, particularly for early theory development (e.g., Curran, Jarvis, Blackburn, & Black, 1993; Eisenhardt, 1989; Shuman & Buono, 1992; Steier & Greenwood, 1998). Case selection was based on theoretical sampling (Erlandson, Harris, Skipper, & Allen, 1993; Yin, 1994), specifically controlling for location and industry by selecting all 8 cases from emerging firms in the computer industry from the same county of a U.S. western state. This high-tech entrepreneurial context extends research on entrepreneurial networks in high-technology firms and industries (Hansen & Allen, 1992; Saxenian, 1990; Shan, Walker, & Kogut, 1994; Shuman & Buono, 1992; Zhao & Aram, 1995). Emerging firms provide a rich context for studying the evolution of relationally embedded ties, as emerging firms rely heavily on ties generated by social relationships (Larson & Starr, 1993). Recent employment upheaval in the computer industry in this location suggested that the area may be prime for new entrepreneurial firms to emerge to reestablish equilibrium in the local industry. The last sampling criterion was the number of the firm's entrepreneurial founders, which may differ across firms and has been shown to influence firm strategy (Chandler & Hanks, 1998). Given that each partner acts as an agent of the firm, the firm's network is best specified by including all partners' relationally embedded ties.

The identification of an emerging firm was based on a working definition of an entrepreneur as the founder, owner, and manager of a private firm between 18 and 24 months old. Publicly available lists of new business licenses provided the researcher with a pool of firms that were this age at data collection.[1] Of the 982 firms, 80 (8%) were identified as being in the computer industry; these were then screened by telephone to gather preliminary data regarding the industry, the number of founders, and the fit with eligibility and exclusion criteria.[2] Eligible firms were stratified according to the number of founders (1, 2 or 3). Finally, the firms in each stratification were re-contacted in alphabetical order to further inform them about the research, to obtain their verbal agreement to participate in the study, and to arrange for the first interview appointment. Initially, the first 2 firms on each list that were both willing to participate and accessible during the data collection timeframe were selected for the study.

This theoretical sampling process initially provided 6 cases (two for each number of partners). However, while the two firms with only one entrepreneur had similar types of

1. Although license dates often lag behind the start of operations, economic research (Bruderl, Preisendorfer, & Ziegler, 1992; Uzzi, 1996) uses license registration dates to determine organizational age; thus the working definition of organizational age equals the number of months the firm has been in business based on the firm's business license date.

2. Eligibility criteria included founder creation, majority ownership by founder, founder management, age of firm as 18–24 months since business licensure, and classification of the firm as a new business rather than a renamed previous business. Exclusion criteria eliminated firms no longer in business or those with nonprofit licensing, headquarters out of the county, or disconnected phones.

networks and strategies, the firms with two and three entrepreneurs represented more within-group variability. Two additional cases (one with two and one with three partners) were then included for theoretical saturation, which suggests that cases are added until new cases no longer contribute to the discovery of additional themes or patterns (Strauss, 1987). Therefore, the study examined a total of 8 cases, which enabled broader within-case and cross-case comparisons. It has been recommended that research based on qualitative case studies have between four and ten cases, as required to reach theoretical saturation (Eisenhardt, 1989). These 8 cases included 17 individual entrepreneurial partners: 2 firms with solo entrepreneurs, 3 firms with 2 partners, and 3 firms with 3 partners. Table 2 provides comparative information for the cases, making the context for the study more apparent and thereby providing both credibility and dependability to the research and analysis processes (Erlandson et al., 1993; Marshall & Rossman, 1995).

Data Collection

The first phase of data collection consisted of an open-ended interview with each of the 17 entrepreneurs across the 8 case study firms, enabling the collection of individual-level network data regarding external network relationships as well as the capability to aggregate this data into networks of the firms these entrepreneurs represented. During the interview, the researcher sought to understand the firm's history and to identify all of the direct dyadic network tie relationships that the entrepreneur considered to be relevant to the firm's success. The informants described their network history, as well as their experiences and exchanges with these network ties. Each interview continued until the informant had completely described his or her network; most interviews lasted about 2 hours. Based on this initial interview and on concepts of network graph theory, the researcher created a graphical map of each firm's network ties to facilitate visualizing and communicating about its network (see example in Figure 2). These network graphs also enabled the researcher to visualize the potential influence of network-level structural embeddedness on dyadic-level relational embeddedness.

The second phase of data collection consisted of a follow-up interview to further explore the entrepreneur's relationships with network ties, clarify any unclear or ambiguously described relationships, and conduct a member check (Miles & Huberman, 1994). Specifically, during the member checks, informants confirmed the accuracy of the researcher's rendition of the network map and a few informants added additional network members to improve the accuracy of the map. This member check also gave them a second chance to clarify and describe these network relationships. The two interview phases with 17 entrepreneurs yielded 34 interview transcripts (a total of 603 single-spaced pages in 12-point font) that provided qualitative descriptions of their network relationships. The average case transcription was 75 pages (range 30 to 164). The length of the interviews was related to both the number of partners in the firm and the size of the external network.

While descriptions of tie relationships and their evolution relied on the recollections of the entrepreneurial informants, this limitation was addressed by the fact that the relationships had been formed and evolved within the recent past, as firms were less than 18 months old; all of the relationally embedded ties were still current relationships and many of the ties were described by multiple partners. In addition, member checks provided a second opportunity for informants to describe the ties. Although the informant descriptions were based upon the individual's understanding and perceptions of these relationships, these descriptions represented their perception of the reality upon which they

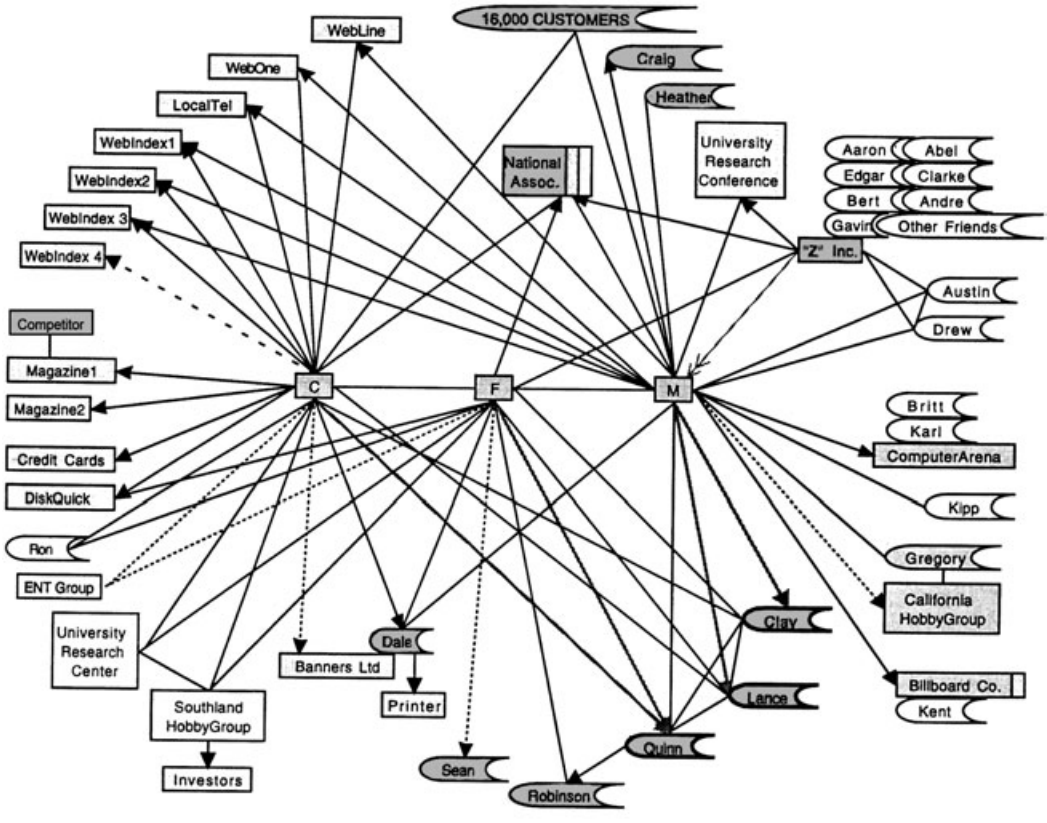
Table 2

Summary of Case Characteristics

	DataNet	LastWord	DataTools	Animators	CustomSoft	CommNet	WebDesign	RamPart
# Partners	3	3	3	2	2	2	1	1
Partner Relations (if any)	2 Spouses 1 Referred	Prev. Wk Assoc	Prev Wk Assoc	Brothers	Spouses	Brothers	—	—
# Embedded Ties/ # Discussed Ties/ # Total Ties	3 / 9 / 36+	6 / 9 / 37+	15 / 39 / 95+	7 / 30 / 39+	8 / 21 / 42+	7 / 14 /30+	7 / 14 / 25+	13 / 24 / 35+
Product	Data Storage & Retrieval (Internet)	Software Development (application)	Custom Programming (application)	Custom Programming (data)	Custom Programming (application)	Software Development (Internet app)	Custom Programming (Internet)	Hardware Retail Sales
Gross Sales 1998 (thousands)	$225	$123	$4,000	$200	$50	$10	$9	$450
Full Time v. Part Time	Full	Full	Full	Full	Part	Full	Part	Full
Office- v. Home-based	Home	Office	Office	Office	Home	Office	Home	Home
Growth (est)	Moderate	Low	High	Moderate	Decline	Moderate	Low	High
Corporate Structure	S-Corp	C-Corp	C-Corp	S-Corp	S-Corp	C-Corp	Sole Prop.	LLC
Board	Partners	Partners	Partners/SrMgt	Partners	Partners	Partners	—	Partners
Capital Structure	Self Credit cards	Self	Self Considering VC	Self	Self Home equity	Prev. Bus Pursuing VC	Self	Self Supplier Credit
Prev. Experience	High 2nd ENT firm in industry	Medium 1st ENT firm; Worked ind. prev.	Medium 1st ENT firm; Worked ind. prev.	None 1st firm in Ind.	Medium 1st ENT firm; Worked ind. prev.	High 2nd firm in Ind.	None 1st firm in Ind.	None 1st firm in Ind.

Figure 2

Sample Network Map for Case C1: DataNet



Network Map:
C1 - DataNet

based the economic and governance decisions for the firm. Ideally, future research should further examine these types of relationships with a longitudinal design.

These qualitative descriptions, as well as demographics collected during the interview, allowed researchers to derive descriptive quantitative data—in the form of counts, percentages and categorical distributions—for use in NVivo descriptive attributes to further analyze and describe both the cases and ties. Analysis used these quantitative attributes and demographics to partition the qualitative data, refine textual searches, and identify patterns and themes.

Data Analysis

Building on Hite's (2003) classification and typology of relationally embedded ties, this study focused on the history and development of each tie relationship. The entre-

preneurs initially identified over 300 dyadic network ties. These tie descriptions were then analyzed to determine whether relational embeddedness could be ascertained based on the available qualitative data; evidence was sought to support or refute two relational embeddedness criteria identified in the literature: (1) evidence of the social relationship's influence on economic actions of the firm (Granovetter, 1992; Uzzi, 1996), and (2) evidence of relational contracting as opposed to traditional market contracting (Dyer & Singh, 1998; Williamson, 1985).

Given these criteria, 160 of the 300 tie descriptions generated sufficient qualitative data to support or refute the tie as being relationally embedded. The remaining 140 tie descriptions did not have sufficient data to make a classification. Most of these 140 ties were alluded to briefly by name or mentioned without sufficient supporting descriptions to enable their identification in terms of relational embeddedness. Of the 160 ties with sufficient qualitative data, 66 (41%) were identified as relationally embedded based on the above two criteria, while 94 were identified as market ties (not relationally embedded). These 66 relationally embedded ties, drawn from across all 8 firm cases, were classified as to type of relational embeddedness based on the Hite's (2003) typology according to the social components strongly demonstrated within the relationship. Each tie represented a unique case in the study of the evolution of relational embeddedness.

To identify convergence of themes and patterns across cases (Huberman & Miles, 1994; Yin, 1994), the data and developing theory were iteratively revisited in a research design that included pattern matching both within and across cases and ties (Denzin & Lincoln, 1994; Miles & Huberman, 1994) and was "spiraling rather than linear in its progression" (Berg, 1995, p. 16). This iterative data analysis incorporated new themes as they emerged from the data (Miles & Huberman, 1994). NVivo ("NVivo," 2000) was used for coding and analyzing interview texts to explore the history and development of the relationally embedded ties. Analyses included iterative textual analysis, categorization, and model building, as well as the creation of tables, timelines, counts, and matrices. Cases were analyzed for social component development, including order and conditions. As patterns and themes emerged to explain the evolution of relational embeddedness, they were compared back to the other tie cases and revised until all tie cases could be included in the final models.

Given the qualitative approach, findings are only generalizable to the cases which provided the data and, based on analytical generalization, to theoretical propositions and models developed for future testing (Gummesson, 1991; King, Keohane, & Verba, 1994; Yin, 1994). Further testing of these models and propositions was outside the scope of this study.

Findings

Findings demonstrated evolutionary processes and paths of relationally embedded network ties in emerging entrepreneurial firms. The data suggested that three processes influenced the evolution of relational embeddedness—network entry, social leverage, and trust facilitation—facilitated by the attributes of each social component (see Table 3). These processes suggest the recursive nature of the development of social components and trust (Bradach & Eccles, 1991) (see Figure 3) and imply that relational embeddedness is a dynamic phenomenon that evolves throughout the history of the social relationship (Granovetter, 1985; Uzzi, 1996, 1997).

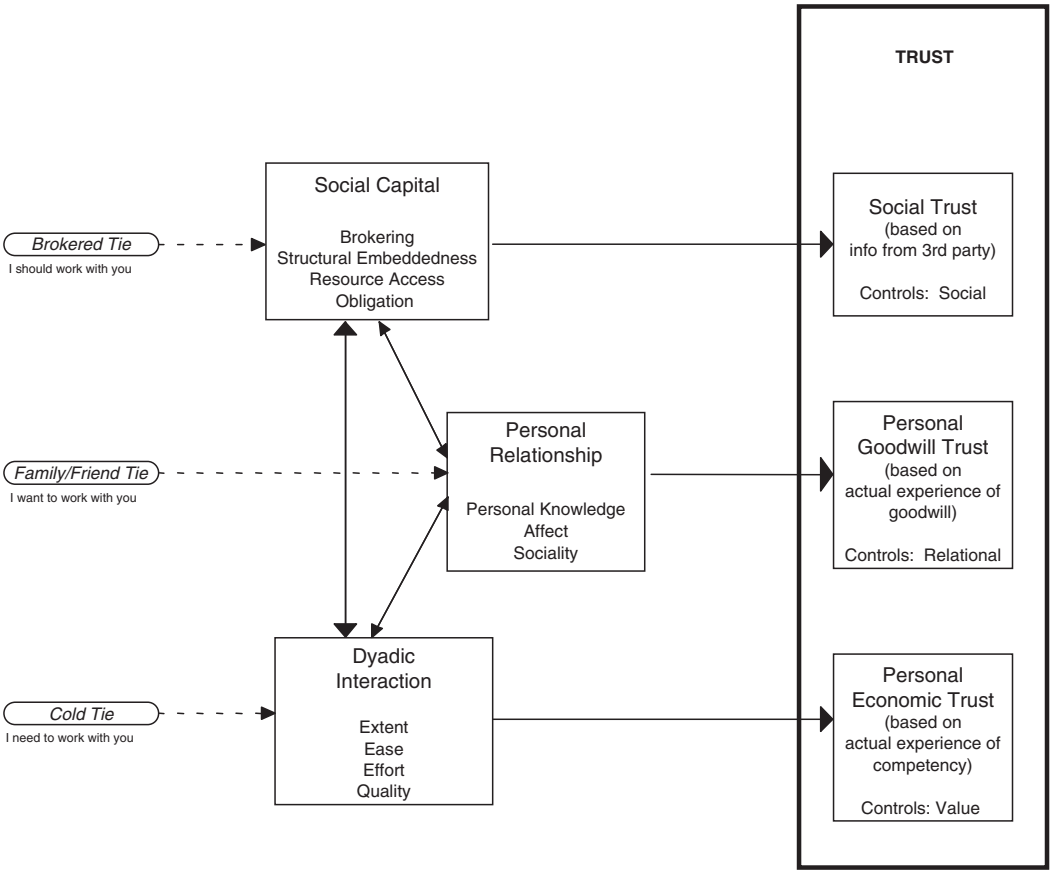
Table 3

Attributes of the Social Components that Facilitated Evolutionary Processes of Relational Embeddedness

Evolutionary Network Processes	Personal Personal	Dyadic Interaction	Social Capital
Network Entry	Personal Knowledge	Extent	Brokering
Social Leverage	Affect	Effort	Obligation
	Sociality	Ease	Brokering
Trust Facilitation	Affect	Quality	Resource Access
		Ease	Structural Embeddedness

Figure 3

Evolutionary Processes of Embedded Network Ties



Network Entry Processes

Network entry processes admitted network ties to the entrepreneurial network. Entry into the emerging firm's network is the first critical step toward the development of a relationally embedded network tie. As the emerging firm seeks and encourages network entry from a variety of types of ties, the firm generates the necessary variation from which to select ties for future retention (McKelvey & Aldrich, 1983). Analysis examined the network entry process for each relationally embedded tie to determine how it initially entered the network and identified three entry processes for ties that were later identified as relationally embedded.

Network Entry through Personal Relationship. Network entry through the social component of personal relationship was demonstrated through the attribute of personal knowledge of the person in 44 (66%) of the ties. Personal knowledge was indicated with the existence of previous social history. For example, Mitch at RamPart contracted with his best friend from high school to be a sales representative. Similarly, Amy from WebDesign explained that "Freddie started out as a personal friend who had an interest in the same thing that I did" (7–1:1245).[3] The high number of ties that entered the network through personal relationship lends credence to the sense that entrepreneurs rely on a close network of friends and family.

Network Entry through Dyadic Economic Interaction. Network entry through the social component of dyadic economic interaction was demonstrated through the attribute of interaction extent in 9 (14%) of the ties. As economic interactions began, typical market relationships were initially established based on contractual trust. Once economic interaction was established, the dyadic interactions with the new network partner often increased over time, facilitating additional interaction and resulting in increased interaction ease, extra effort and interaction quality. Carol at DataNet described network entry through high interaction extent when she insisted the firm use the same graphic designer that she had used in her previous business because she had done so much work with him in the past. Kyle at CommNet brought his previous lawyer into the new business: "[We] know how to work with each other . . . [he] has more knowledge of the background of where we've been and all that" (6–4:3842, 4153).

Network Entry through Social Capital. The social component of social capital provided a third entry point for relationally embedded network ties through the attribute of brokering in 13 (20%) of the ties. In these cases, a common third party acted as a broker to introduce the entrepreneur to a new network partner. Chad at DataTools described an example of network entry through brokering when he began to use a new insurance agent who had been recommended to him by his father. Chad also indicated he had "worked with a guy at Frameworks that worked there and then he told his boss about us" (3–2:4371). As a result, new dyadic relationships were formed that became a part of the firm's network. Given that ties enter the network through social capital, an important role for existing ties may be to attract new ties.

These findings that ties entered the network through one of Hite's (2003) three social components—personal relationship, dyadic economic interaction or social capital—

3. All informant and company names have been changed. References to direct quotes from interview text indicate the case number and network tie number followed by the interview text line. For example (5–8:623) refers to a quote from Case #5 regarding the 8th network tie and can be found on interview text line 623.

supports previous research that network ties of emerging firms derive from a variety of sources (Hite & Hesterly, 2001; Larson, 1992; Larson & Starr, 1993). The finding that network entry was facilitated by the respective attributes of personal knowledge, interaction extent and brokering aligns with research that new ties can be pre-existing social ties, work-related ties, or brokered ties (Aldrich et al., 1990; Hite, 1998, 2003; Larson & Starr, 1993; Marsden, 1982). A majority of the ties (66%) entered the network based on personal knowledge (personal relationship), supporting the idea that entering the network through personal relationship is a common entrepreneurial network strategy (Hite & Hesterly, 2001; Larson & Starr, 1993). This network entry process also corresponds with Larson's (1992) recognition of prior relations as a precondition for exchange, as well as Gulati's (1995) concept of familiarity.

Yet having entered the entrepreneurial firm's network through one of these network entry processes was not enough to suggest that the tie would evolve to full relational embeddedness. The social component that facilitated network entry provided both the initial source of the social relationship and a critical foundation for the development of unidimensional relational embeddedness, wherein the network tie has a strong degree of only one social component (Hite, 2003). These network ties developed personal, competency, or hollow relational embeddedness, depending on the network entry process (see Figure 1) (Hite, 2003). Theoretically, as the initial social component strengthens, the relationship can begin to increase its potential to influence the economic actions of the firm (Granovetter, 1985; Hite, 2003; Uzzi, 1996). Based on these findings, the following propositions are suggested:

Proposition 1a: The greater the reliance upon network entry processes of personal knowledge, interaction extent, or brokering, the greater the likelihood that network entry will result in relational embeddedness.

Proposition 1b: The type of unidimensional relational embeddedness (Hite, 2003) that develops will be related to the type of network entry process.

Social Leveraging Processes

Social leveraging processes enabled network ties to use existing social components to develop attributes of other social components. Specific attributes of each social component provided the primary social leverage toward bridging to a second social component (see Table 4). While the primary leverage process added a second component to the relationship, a secondary leverage process often added a third social component. These social leveraging processes occurred both through the natural course of events over time through intentional management by the entrepreneur. Figure 4 illustrates the three social components of relationally embedded ties, along with their attributes. Social leverage processes, which are identified by the reciprocal arrows between the social components, indicate which attributes were generally involved.

Leveraging between Personal Relationship and Social Capital. The social leverage processes between personal relationship and social capital facilitated the development of these social components. Taking one direction at a time, both sociality and affect (attributes of personal relationship) increased brokering activity (attribute of social capital). Sociality increased social interactions and opportunities to meet new people, which facilitated brokering activity. Affect influenced the willingness of network partners to broker each other to new ties. Thus both sociality and affect served as social leverage processes to increase the overall social capital within the dyadic network relationship. As an

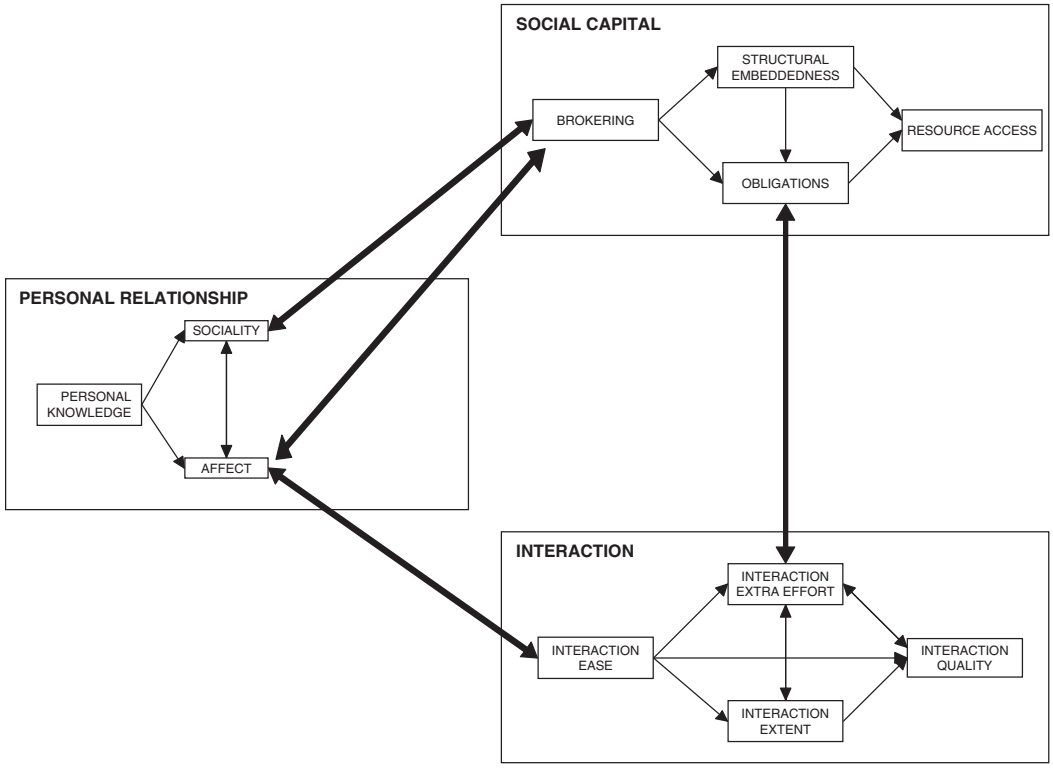
Table 4

Attributes Contributing to the Social Leverage Processes between Social Components

Social Leverage Process			Leveraging Attributes
Social Capital	⟷	Personal Relationship	Brokering, Affect / Sociality
Dyadic Interaction	⟷	Social Capital	Interaction Effort, Obligation
Personal Relationship	⟷	Dyadic Interaction	Affect, Interaction Ease

Figure 4

Attributes Facilitating Social Leveraging Processes of Embedded Network Ties



example, an entrepreneur at DataTools indicated that "we have a personal relationship with these folks that allows us to kind of seed around in other places" (3–2:6405).

In the other direction, network ties often sought and took advantage of opportunities to intentionally broker each other into their extended network relationships. Such intentional brokering often created new opportunities for sociality between the entrepreneur

and the new network tie. Brokering created more ties in common, increasing structural embeddedness, which increased the potential for sociality. Mitch at RamPart, who introduced his father and Tony, indicated "[Now] my dad knows Tony. In fact, we've all gone in on [buying] the drift boat together" (8–14:1431). In addition, brokering also led to feelings of gratitude, respect and liking toward the brokering partner, which increased the affect within the tie. Chad at DataTools expressed his gratitude, "Frankly . . . that's the only way we could have gotten into there. It would have been extremely difficult to get in with these people [without brokering]" (3:2341). In another example, DataNet indicated regarding one of their ties, "They were recommended to us by someone else that we knew . . . we just seemed to hit it off" (1–5:4614). Thus brokering serves as a social leverage process to add sociality and affect, components of personal relationship, to the dyadic tie.

Leveraging between Dyadic Interaction and Social Capital. The social leverage processes between dyadic interaction and social capital facilitated the development of these social components. Interaction effort (attribute of dyadic interaction) on the tie's behalf increased the tie's obligations (attribute of social capital). These entrepreneurs intentionally generated extra effort to create obligations. For example, Chad at DataTool stated, "The more we help these guys to show progress, the more supportive they're going to be in helping us" (3:647). Keith at CustomSoft indicated that he earned "points" (5:1169) as a result of extra efforts for a network tie. Extra effort generated asymmetric exchanges in which efforts were not immediately reciprocated. However, informants clearly expected that ties would eventually reciprocate and fulfill obligations at some future point, as indicated by Chad at DataTools: "You keep pouring investment into them . . . because I know that when the time comes . . . they're going to come to me again. Then I can reap the reward" (3:1789). However, interaction effort had to rise above minimal or expected efforts to trigger obligation responses. Relationally embedded ties allowed asymmetry to exist for long periods of time without explicit measurement of reciprocity. As a result, these obligations, while yet unmet, represented a source of social capital.

In the other direction, obligations created leverage to increase dyadic interaction. Obligations and norms of reciprocity, stemming from social capital, caused dyadic partners to try to equalize asymmetrical relationships by extending effort on behalf of the other. As an example, Brian at Animators indicated that his effort for a client was motivated by his sense of obligation: "He told me that he was sticking his neck out for me and . . . I took that on personally. . . . I was going to make him very happy that he hired us. And we worked our tails off for them" (4–4:759). Yet even with efforts extended, informants rarely considered their relationally embedded ties to be in a state of even, symmetrical exchange. Fulfilling obligations of social capital often turned the asymmetry in the opposite direction causing their partner to also increase efforts. Thus the attributes of effort and obligation created the reciprocal leverage processes that allowed entrepreneurs to add social components to their relationally embedded ties by increasing the social capital, through interaction effort, or the dyadic interaction, through obligations.

Leveraging between Economic Interaction and Personal Relationship. The leverage processes between dyadic economic interaction and personal relationship facilitated the development of these social components through interaction ease (attribute of dyadic interaction) and through affect (attribute of personal relationship). When a tie entered the

network based on dyadic interaction, the ease of interaction spurred development of affect, as stated by Brian at Animators:

> We finished that [first] job. We did a great job . . . Then the next year, a contract was coming up and he didn't . . . bid it with anyone else because he said, 'We'd love to work with you,' and it was as we got working on the second one that I realized how much he appreciated working with us. I think he let his guard down a little bit. He became a little bit more personable. And on the second project we were just great friends. . . . Once you can get beyond the professional relationship, and you develop a little bit of a rapport, it's a totally different ballgame (4–4:517, 772, 804).

When the economic interaction was characterized by a greater extent of ease, particularly in terms of communication quality, confidence and goal congruence, this ease decreased conflict and friction, making the interaction more comfortable and convenient. Carol at DataNet described such a relationship: "When we communicate . . . it goes so well . . . He has the ability to be our hands and eyes and do it for us. And we say, 'Yeah, that's it' " (1–1:4845). Interaction ease functioned as a leverage process to facilitate the development of affect, an attribute of personal relationship. Max at Animators discussed the process: "I started out hiring them to build models for us, and I feel like now they've become friends" (4–21:2765). This process aligns with social theory which suggests that interaction between two people precedes the development of the personal relationship (Coleman, 1990).

In the other direction, affect provided leverage to increase interaction ease, an attribute of dyadic economic interaction. The entrepreneurs often sought for ways to include their personal network ties into the business because they enjoyed the relationship. In 7 of the 8 cases, entrepreneurs reached out to family or friend ties, with whom a personal relationship had already been established, and initiated business interaction with them. For example, David at LastWord stated, "There's some people you can just say, 'It'd be wonderful if we could ever work together' " (2:5472). Kevin at DataTools described the result of this social leverage process as going "a lot deeper than just business." However, he continued, "But the business always is there, so they're separate. They help support one another" (3:4498). Thus affect and interaction ease serve as social leverage processes between personal relationship and economic interaction.

In sum, relational embeddedness is a dynamic, evolving process, which can be found in varying degrees within network relationships (Hite, 2003). The data suggest that each social component has attributes that function as social leverage processes toward the other social components. The social component of initial network entry provided the primary leverage process used to develop a second social component. This development increased the relational embeddedness within the tie. Table 5 identifies the number and percentage of relationally embedded ties using each network entry process and their corresponding second social component. Of the 66 relationally embedded ties, 5 (8%) never added a second component, 35 (54%) leveraged only to add a second component, and 26 (39%) leveraged to add both a second and third component, thereby achieving full embeddedness. Of the 61 ties (92%) that used a primary leverage process to develop a second social component, the most common social leverage processes occurred between personal relationship and social capital (42%), followed by personal relationship and economic interaction (23%). When a relationally embedded tie had two social components, then both components can potentially serve to provide a secondary leverage process to add the final social component and constitute full embeddedness (Hite, 2003). The tie then continuously revisits and strengthens these social components. Thus the recursive nature of the

Table 5

Primary Leverage Process by Network Entry

Social Component of Network Entry	Second Social Component: Personal Relationship	Dyadic Interaction	Social Capital	None	Network Entry Total
Personal Relationship	—	15 (23%)	28 (42%)	1 (2%)	44 (66%)
Dyadic Interaction	5 (8%)	—	3 (5%)	1 (2%)	9 (14%)
Social Capital	2 (3%)	8 (12%)	—	3 (5%)	13 (20%)
Second Social Component Total	7 (11%)	23 (35%)	31 (47%)	5 (8%)	66

social leverage processes facilitates the evolution of relational-embeddedness by adding and strengthening social components over time.

Proposition 2: The use of social leveraging processes will be related to the addition of social components to relationally embedded ties.

Trust Facilitation Processes

Each social component facilitated a different type of trust within the relationship. While trust is often considered a cause of or at least a descriptor of relational embeddedness, the data suggested that trust was an outcome of the social components within the relationship. Three types of trust—personal goodwill trust, personal competency trust, and social trust—resulted respectively from the three social components of personal relationship, economic interaction and social capital (see Figure 3) (Hite, 2003). Therefore, various combinations of social components facilitated different types and combinations of trust within the relationally embedded ties.

Personal Goodwill Trust. Based on the personal relationship, network ties developed a direct, personal knowledge of and trust of each other's goodwill. Keith at CustomSoft described this process as "you've got to have that personal relationship for them to trust you" (5:3550). Personal goodwill trust implied that the network partners were looking out for each other's best interests. Mitch at RamPart felt that "there's such a bond with being good friends, knowing that you can trust somebody" (8:1089). The theme of the need to build the personal relationship prior to goodwill trust was common across all tie cases. This personal goodwill trust provided strategic controls for relational governance, due to the motivation to maintain the relationship, and also inhibited opportunism and encouraged mutual value-seeking behaviors.

Personal Competency Trust. Based on a history of dyadic economic interaction, network ties developed a direct, personal knowledge of and trust of each other's competency. The personal competency trust was built over time through repeated interactions, such that the routines and processes of the interaction became known, understood and expected. Kyle at CommNet said of a network partner, "The more he works with us, the more he

learns about us, the more valuable he is" (6:4168). Fred at DataNet described an experience with a long-time network tie: "When he designed one of our logos . . . we gave him the name of the company and gave him free reign to do whatever he wanted to" (1–1:4845). As the economic interaction increased, the confidence the partners had in the competence and economic value of the tie increased, and they were less willing to switch to a new partner. Keith at CustomSoft described this trust development process:

> Once they become familiar and comfortable . . . it's like a channel. Once they get down in that, then actually getting up and out and going to find somebody else is a huge amount of work and a lot of risk. And so once you get that established, then you're home free with them, and you can spend your efforts trying to get [new ties]. . . . But getting to that point is very difficult. There were a lot of all-nighters coding and programming that were off the bill to be able to make them happy. Once you get that established, then things are sweet. (5:3404).

Thus dyadic interaction served to create personal knowledge-based trust between network partners. This trust provided strategic controls for relational contracting, due to the value of the interaction history, the access to critical competencies, and the asset specificity and predictability.

Social Trust. As a result of greater social capital at the network level, network ties increased social trust built on information from a third party. Social trust provided critical control mechanisms for relational contracting through reputation and other social controls (Portes & Sensenbrenner, 1993). Thus governance of the network tie appears to rely on the fact that both parties knew a common third who can vouchsafe the network partnership.

Given that each social component facilitated the development of a different type of trust, the fully embedded ties, having all three social components, exhibited a more effective balance of all three types of trust, like a three-legged stool. Fully embedded ties were better aligned to be effectively governed by relational contracting, given their protection by the full range of both social and personal trusts. At the same time, less relationally embedded ties tended to lack one or more types of trust and exhibited governance challenges when the entrepreneurs relied solely on relational governance. For example, Chad did not receive the desired quality of service from an insurance agent recommended by his father. This tie was relationally embedded solely on the basis of social capital, which resulted in social trust but no personal trust (goodwill or economic).

A common theme emerged that without multiple types of trust to govern the non-fully embedded ties, these ties often created problems for the emerging firm. Informants recognized, often in unfortunate hindsight, the importance of more formal governance mechanisms for these ties, such as written contracts. The sole reliance of these emerging firms on the limited trust within ties that were not fully embedded (e.g., did not have all three social components) was often an unreliable and insufficient governance strategy. Given the patterns of trust facilitating processes, full embeddedness generated more protection through a combination of different types of trust. Based on the data, the social relationship of relationally embedded network ties directly influences the development of different types of trust that, in turn, influence the effectiveness of relational governance.

> **Proposition 3a:** The greater the personal relationship, in terms of personal knowledge, affect and sociality, the greater the personal goodwill trust within the network tie.

Proposition 3b: The greater the dyadic interaction, in terms of extent, effort, ease, and quality, the greater the personal economic trust within the network tie.
Proposition 3c: The greater the social capital, in terms of brokering and obligations, the greater the social trust within the network tie.
Proposition 3d: The more types of trust within a network tie, the more likely that relational governance will be effective.

The three evolutionary processes of network entry, social leveraging and trust facilitation were all shown to contribute to the development of relational embeddedness. Indeed, they occurred in a developmental manner, beginning with the network entry process and then moving into social leveraging processes, while trust facilitation processes occurred as each social component was strengthened. With the identification of these processes, the next question is whether there is a predictable pattern of evolution. The second research question addressed the potential paths toward relational embeddedness.

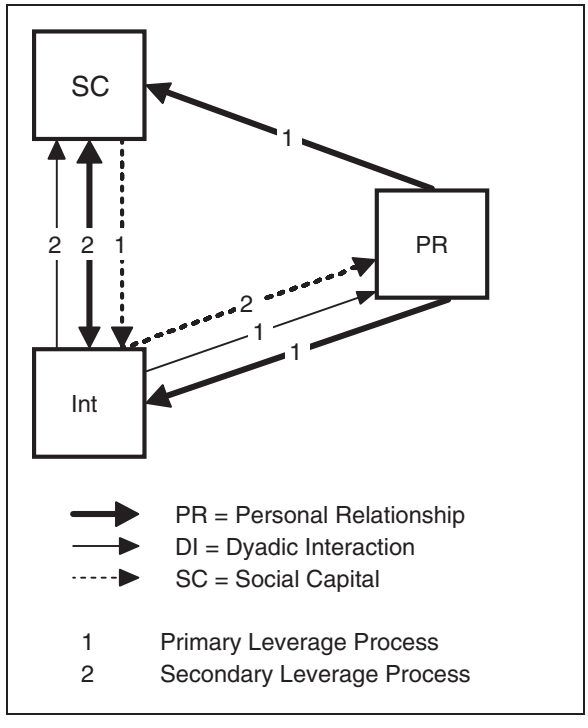
Evolutionary Paths of Relational Embeddedness

Findings indicated common patterns among network entry and social leverage processes, but not all potential paths to relational embeddedness were equally common. After network entry, relationally embedded network ties evolved over time, using different combinations of primary and secondary leveraging processes to add new social components to the relationship (see Tables 4 and 5). Thus network ties demonstrated different levels of relational embeddedness at different points in time, and not all ties had evolved at the time of the study to full embeddedness. The most common paths to full embeddedness are diagrammed in Figure 5, which illustrates each social component as providing points of network entry. Arrows indicate the primary leverage (#1) and secondary leverage (#2) processes most commonly used from each network entry point. Based upon the data, five paths (see Figure 6) are proposed to as be the most common for the evolution of relationally embedded network ties.

From Dyadic Economic Interaction to Full Embeddedness. The first path to full embeddedness begins when a network partner initially enters the firm's network based on dyadic economic interaction, often beginning merely as a market tie. Over time, depending on the history of the interaction, personal competency trust may develop, and the tie begins to demonstrate competency embeddedness (Hite, 2003). Increased interaction ease then serves as the primary leverage process facilitating the development of affect, adding the component of personal relationship. Strengthening the personal relationship then facilitates personal goodwill trust between the network partners. With both components of dyadic economic interaction and personal relationship, the tie is characterized as having isolated embeddedness (Hite, 2003) where trust is based on direct personal experience. Affect and sociality, attributes of the personal relationship, serve as the secondary leverage process encouraging network partners to broker each other into their larger networks. Through brokering activity, social capital increases, which can facilitate the development of social trust. At this point, the tie has evolved in a linear manner to incorporate all three social components—dyadic economic interaction, personal relationship, and then social capital—to become fully embedded. At the same time, the tie has evolved to develop a well-rounded trust consisting of competency trust, goodwill trust and, finally, social trust. This path best describes the evolution from an arm's length tie to a fully embedded tie.

Figure 5

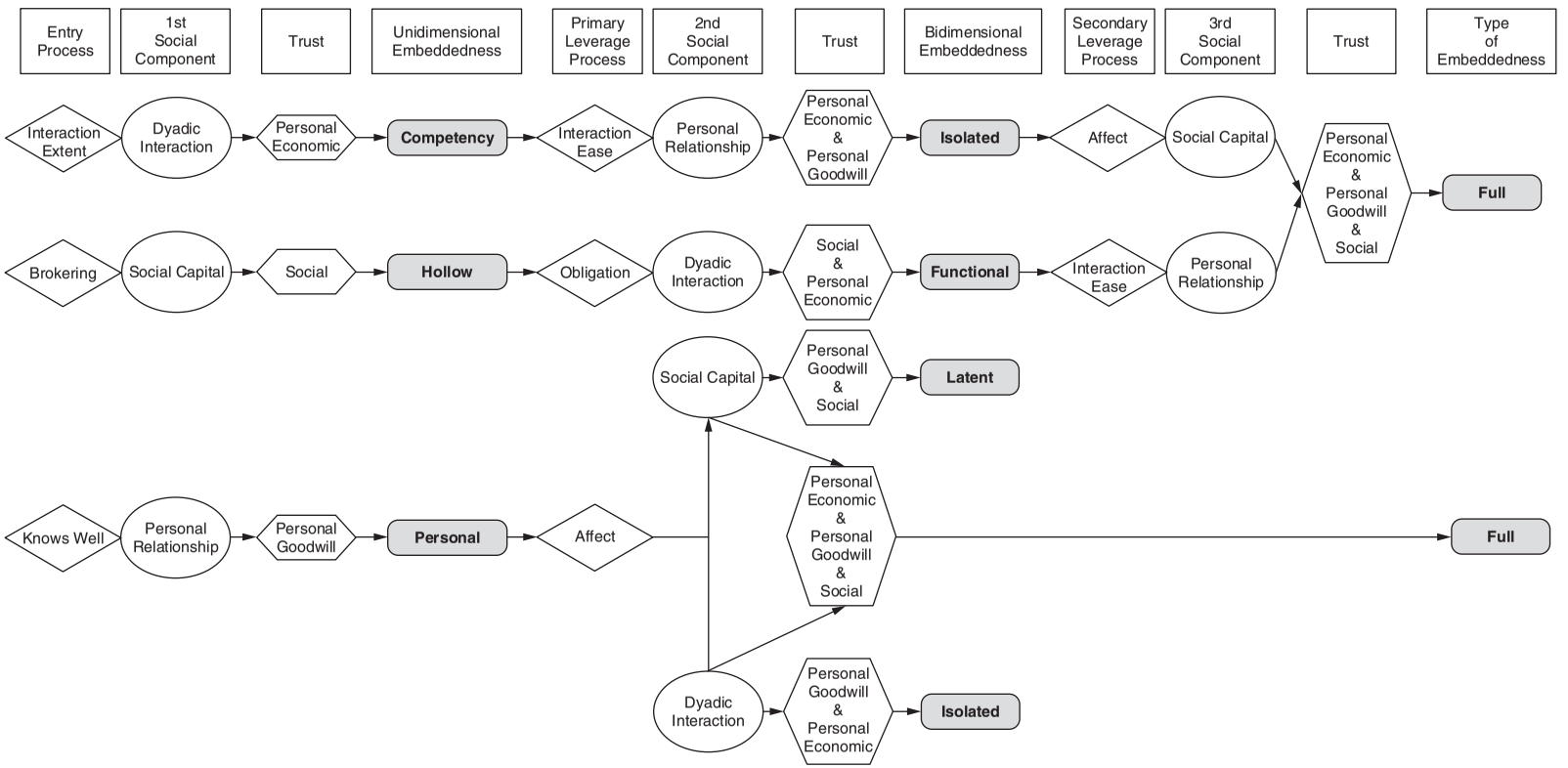
Primary and Secondary Leveraging Processes of Fully Embedded Network Ties



From Social Capital to Full Embeddedness. The second path to full embeddedness begins when a new network partner is brokered into the firm's network by a common tie. The social relationship rests mainly on social capital, the tie is characterized with hollow embeddedness (Hite, 2003) and social trust is based on the third party. As social capital increases, social trust is further facilitated. Social capital creates norms of reciprocity and obligation, leading to network partners extending effort for each other. These obligations and extra efforts create the primary leverage process for developing dyadic economic interaction. As effort is extended, the tie begins to build a history of economic interaction through which personal competency trust can be facilitated. With both social capital and economic interaction, the tie is characterized with functional embeddedness (Hite, 2003) and is governed by both social trust and personal competency trust. With the development of dyadic economic interaction, dyadic partners are more likely and more able to generate interaction ease. Increased ease facilitates the secondary leverage process, which increases affect and thereby develops personal relationship. Personal relationship facilitates personal goodwill trust. At this point, the tie has evolved in a linear manner to incorporate all three social components—social capital, dyadic economic interaction, and then personal relationship—to become fully embedded. At the same time, the tie has evolved to develop a well-rounded trust consisting of competency trust, goodwill trust and, finally, social trust. This path best describes the evolution of relational embeddedness for a brokered tie.

Figure 6

Evolutionary Paths to Fully Embedded Network Ties



From Personal Relationship to Full Embeddedness. The last three paths to full embeddedness begin when a network partner enters the network through personal relationship. However, the initial path appears to diverge into three directions. Paths 3 and 4 were demonstrated as ties entered through personal relationship and developed full embeddedness by leveraging their affect toward interaction ease (economic interaction) or toward brokering (social capital); these paths appeared with equal frequency. However, an unanticipated fifth path was identified when ties demonstrated social leverage towards both components *simultaneously*. This dual primary leveraging potential suggests that ties with personal embeddedness may evolve more quickly to full embeddedness as they can add the two remaining social components simultaneously rather than linearly, thus shortening the evolutionary process. This simultaneous leveraging also has implications for trust development, given that both social trust and personal competency trust may also develop more simultaneously. This simultaneous path also explains observed advantages of using pre-existing ties, such as friends, family and previous business associates, in the networks of emerging entrepreneurial firms (Aldrich, Rosen, & Woodward, 1986; Aldrich & Zimmer, 1986; Granovetter, 1985; Larson, 1992; Larson & Starr, 1993).

The evolutionary paths to relational embeddedness clearly suggest that relational embeddedness is attainable from any network entry point and may be influenced by the proactive actions of entrepreneurs. This model of paths (see Figure 6) also suggests that ties that enter the network through personal relationship have an increased likelihood of evolving successfully to full embeddedness and of doing so more quickly than ties using other entry processes.

Proposition 4a: Network ties that enter the network through personal relationship will be more likely to evolve to full embeddedness than those entering the network through social capital or dyadic interaction.

Proposition 4b: Network ties that enter the network through personal relationship will evolve more quickly to full embeddedness than those entering the network through social capital or dyadic interaction.

Discussion

The findings illustrate that emerging firms do rely on relationally embedded ties and that the path to full relational embeddedness is a dynamic, evolutionary process. Social relationships evolve over time by leveraging social components. The evolving social relationship, in turn, supports the development of trust, which functions as the governance mechanism for effective relational contracting in which the exchange creates value (Dyer & Singh, 1998; Madhok, 1997). Thus full relational embeddedness, with its corresponding three types of trust, allows the social relationship of a network tie to legitimately influence the economic actions of the entrepreneurial firm in a manner that supports successful firm emergence and performance.

The Nature of the Evolution of Relational Embeddedness

The evolution of relational embeddedness was shown to be both additive and recursive. The additive nature was demonstrated as ties added social components through the social leveraging processes. This additive nature is also suggested by Larson and Starr's (1993) argument that social ties can be layered with business functions, and business ties can be layered with social functions. The recursive nature of relational embeddedness

was evident when social relationships evolved in a cyclical, building process—rather than in a strictly linear manner—both within and across social components. The recursive nature of this evolution suggests that the various social components and types of trust can be antecedent to each other (Bradach & Eccles, 1991). However, this evolutionary process, while often recursive, occurred through identifiable processes of network entry, social leverage and trust facilitation.

However, not all possible evolutionary paths to full relational embeddedness were equally demonstrated. The majority of ties entered through personal relationship. Unlike other ties, ties with personal embeddedness could then follow one of two potential paths to full embeddedness; some, in fact, pursued both routes simultaneously. As a result, these personally-embedded ties that use a dual route may evolve more quickly toward full embeddedness than other ties. This dual evolutionary path is illustrated when an entrepreneur goes to a close friend to meet a business need. Social leverage suggests that the affect in this relationship could make it easier to interact with this friend than with others, thereby facilitating growing economic interaction. At the same time, the affect and sociality in the personal relationship would also encourage them to take advantage of brokering opportunities, thereby increasing the number of common ties and facilitating the development of social capital. By adding both components simultaneously, the tie on this evolutionary path may achieve high levels of all three social components more quickly than most other types of ties and, thus, evolve more quickly to full relational embeddedness. For emerging entrepreneurial firms, this means that the tie may have quicker access to all three types of trust to support effective relational governance.

Strategic Implications for Emerging Firms

Proactive Network Management vs. Path Dependence. First, the question is raised as to whether the emerging firm can intentionally manage the evolution of relational embeddedness or whether it is merely a path-dependent process outside of the firm's control. The data demonstrated a path-dependent nature to this evolution; however, paths were influenced by the network entry processes and entrepreneurs who intentionally involved themselves in social leverage processes that added social components. For example, informants discussed proactively facilitating sociality, brokering, making interactions easier, creating and fulfilling obligations, and giving extra effort. Social leveraging processes may, thus, be quite manageable. The data suggest then that while emerging firms may have little control of the point of network entry and even the evolutionary path, greater control may exist within the social leveraging processes. Therefore, emerging firms could proactively and strategically facilitate both the type and extent of relational embeddedness. As a result, intentional entrepreneurial action may be at the root of relational embeddedness and its evolution, in contrast to Friedman & McAdam's (1992) claim that "network theory fails to offer a plausible model of individual action" (p. 160).

Influence on the Firm. The second strategic implication is that as ties become more relationally embedded, they are likely to have an increased influence on the emerging firm (Uzzi, 1996). This increasing influence may create constraints if the firm values the relationship more than effective economic decisions. Yet theoretically the increasing relational embeddedness also increases the extent and types of trust available in the relationship, which may counter potential constraints. Emerging firms must take into account the actual nature of the relational embeddedness, and therefore of the trust, of the ties as

the firm seeks to balance the potentially increasing influence of these ties on the firm. Future research should examine the relationship between types of relational embeddedness and the types of constraints experienced by emerging firms. In addition, attention should be given to new or additional constraints experienced by the firm as the tie evolves toward more relational embeddedness.

Opportunity Discovery, Recognition & Refinement. The third strategic implication is that opportunity discovery may be enhanced as ties develop relational embeddedness. While emerging firms may discover many opportunities from newly-added weak ties that are strategically well positioned (e.g., structural holes) (Burt, 1992; Granovetter, 1973; Hite & Hesterly, 2001), actually recognizing the value of the opportunity, taking the necessary risks, refining the opportunity to the market, and opening the necessary doors to take advantage of the opportunity may depend upon the type of relational embeddedness (Hite & Hesterly, 2001). Many opportunities may only be known through and synergistically created with relationally embedded ties. If the type of relational embeddedness influences opportunity discovery, then this evolutionary model suggests that emerging firms can proactively and strategically enhance opportunity discovery as they manage relational embeddedness (Katz & Gartner, 1988; Shane & Venkataraman, 2000). Future research should examine the role of the evolution of relational embeddedness on entrepreneurial opportunity discovery.

Resource Acquisition. The fourth strategic implication is that resource acquisition benefits may vary depending on the type and evolution of relationally embedded ties. The greater the relational embeddedness, the more likely the tie will engage in relational exchange, rather than being limited to market exchange (Williamson, 1985; Zaheer & Venkataraman, 1995). This may explain why resource-poor emerging firms often rely on relationally embedded ties for resource acquisition (Jarillo, 1989). This evolutionary model suggests that emerging firms can identify the type of relational embeddedness (and thus know who to ask for what) as well as proactively enhance resource acquisition as they facilitate the development of relational embeddedness among their critical resource ties. Future research should examine the relationship between the evolution of relational embeddedness and resource acquisition strategies.

Relational Governance. The fifth strategic implication is that while relational governance is most appropriate for relationally embedded ties (Dyer & Singh, 1998; Williamson, 1979; Zaheer & Venkataraman, 1995), all ties are not relationally embedded and even relationally embedded ties may differ in the type and extent of embeddedness. Therefore, challenges may arise for emerging firms that rely heavily upon relational governance to acquire necessary external resources (Hite & Hesterly, 2001; Jarillo, 1989; Larson & Starr, 1993). A mismatch between governance controls and type of relational embeddedness may create vulnerabilities for the emerging firm. For example, if the emerging firm relies on relational governance (e.g., relational contracting and trust) for ties that are not sufficiently relationally embedded, the firm may expose itself to unsuspected risks, such as opportunism, that are more generally assumed to exist in market exchange relationships. Therefore, effectively choosing governance mode may require consideration of not only the characteristics of the transaction (Williamson, 1985), but also the characteristics of the dyadic relationship (Hite, 2003).

For example, Mitch at RamPart relied on high levels of personal relationship and economic interaction with an external sales representative to provide sufficient trust to support relational governance. However, these social components provided only personal

goodwill and competency trust. That relational governance alone was insufficient was shown when the sales representative stole his client list and sold around him. This tie had only isolated embeddedness (Hite, 2003), which lacked social capital and therefore social trust. No third party provided governance mechanisms to protect the entrepreneur. The entrepreneur could have proactively developed greater social capital with this tie, using the social leverage processes of sociality to increase brokering or making extra efforts to increase obligations. In addition, he could have put additional governance mechanisms in place, such as a contractual non-competition agreement.

Disadvantages of the Evolution of Relationally Embedded Ties. The sixth strategic implication suggests that evolution of relationally embedded ties may present several potential disadvantages (Coleman, 1988; Dubini & Aldrich, 1991; Granovetter, 1985; Hesterly, Jones, & Madhok, 1998; Portes & Sensenbrenner, 1993). First, such evolution can contribute to overembeddedness (Uzzi, 1997) which occurs as the firm experiences an overabundance of embedded ties.[4] If the firm assumes all network ties need full relational embeddedness, it may allocate too many resources to tie development, experience excess constraints on actions, and be inhibited from successful early growth (Hite & Hesterly, 2001; Uzzi, 1996).

Second, this evolution requires emerging firms to constantly re-assess the fit between type of relational embeddedness and governance structures. If the tie is not fully embedded, e.g., relies on only one or two types of trust, the tie may not represent a balance of social components and their corresponding types of trust. Therefore, the emerging firm may need to implement additional governance mechanisms (e.g., formal contracting). However, this imbalance among social components is further aggravated by the evolution of relational embeddedness, which implies that the underlying social relationship is constantly changing. Under conditions of potentially evolving relational embeddedness, governance mechanisms need to be continually monitored and adjusted, as they may shift or evolve out of alignment; evolving networks may necessitate changes in governance strategies. Thus network challenges at the dyadic level may not necessarily result from too much social relationship but rather from the constantly changing nature of the social relationship and the potential lack of governance fit. Fitting governance to the type of relational embeddedness may place the emerging firm in a better position to access both the cost minimizing and value maximizing aspects of relational embeddedness (Madhok, 1997). This model specifies conditions under which networks can contribute to emerging firm effectiveness (Dubini & Aldrich, 1991). Emerging firms must be aware of the potential for overembeddedness, must not assume that all relationally embedded ties are alike, must constantly assess relational embeddedness, and may need to adapt governance measures to fit both the transactional and relational characteristics of network ties (Hite, 2003; Williamson, 1985). Future research should explore symptoms of the lack of governance alignment among relationally embedded ties.

Lack of Evolution. The data indicated two additional evolutionary processes: the lack of evolution and the presence of de-evolution. First, many relationally embedded ties (61%) either had not yet evolved or had stopped evolving towards full embeddedness. The proposed models, however, do not suggest that all network ties will or should become

4. However, the potential dangers of overembeddedness at the network level may be alleviated by the fact that while embedded network ties represented a crucial and stable component of the emerging firm's external network, less than half of the emerging firm's network ties were embedded (45%).

fully relationally embedded. Evolutionary pressures may move a tie towards developing a second social component (54% of the ties), even if no further evolution occurs. Second, 5 relationally embedded ties lost social components that had previously been in the relationship and demonstrated devolution due either to: (1) a change in the economic interaction, e.g., decreased interaction (3 ties), (2) a change in the type of or needs of the interaction (1 tie), or (3) broken social or personal goodwill trust (1 tie). Four of these ties demonstrated latent embeddedness (personal relationship and social capital); these had previously been fully embedded but were no longer being used by the firm for current economic purposes. The entrepreneurs suggested, however, that they could "reactivate" these ties at any time if needed. Further exploration should be undertaken to determine the causes of both the lack of evolution and the devolution processes among relationally embedded ties.

These propositions and models lay fertile groundwork for future theory testing on the evolution of relationally embedded ties within different contexts and populations, particularly using longitudinal methods. The typology of relational embeddedness (Hite, 2003) and the network tie evolution through this typology provide a foundation for developing measures and instruments of relational embeddedness.

Conclusion

Emerging firms tap into their external network as they seek to discover opportunities and mobilize necessary resources. Many of their network ties will be relationally embedded; yet all relationally embedded ties are not alike. Relationally embedded ties are multi-dimensional and represent different types of embeddedness (Hite, 2003). This study examined the relationally embedded ties of emerging entrepreneurial firms in the computer industry and found that these ties evolved over time using three evolutionary processes: network entry, social leverage and trust facilitation. Five evolutionary paths were identified, and it was found that ties entering the network through personal relationship may evolve more quickly toward full relational embeddedness. The identified evolutionary processes and paths explain how network ties come to influence emerging firms and reveal the potential role of individual entrepreneurial action in facilitating and managing the evolution of relationally embedded ties. This research contributes to the current discussions of strategic entrepreneurial networks and raises critical strategic implications for emerging firms in terms of opportunities, resources and governance. Theoretical propositions suggest that entrepreneurs, as agents for their emerging firms, can proactively manage the evolutionary processes and paths of relationally embedded ties to enhance the firm's emergence and growth.

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The author would like to thank William S. Hesterly, W. Gibb Dyer, Karin Fladmoe-Lindquist, Lee T. Perry, Janeen Costa, Charlene Zietsma, Sharon Black, Clifford Mayes, Ellen J. Williams, and Tad Brinkerhoff, as well as the editor and anonymous reviewers, for their comments and suggestions on earlier drafts of this article.