

## **A Longitudinal Examination of Communication Networks and Organizational Life Cycle in an Entrepreneurial Venture**

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**Sponsoring information:** This study was sponsored by Kaplan University's Faculty Research Grant Program (FRGP).

### **Abstract**

*Originally envisioned as a long-term study to examine organizational life cycle stage and communications this longitudinal study of a new start company came to a conclusion when the company was unable to outlast a worldwide economic downturn. However, the completion of a two-phased longitudinal review did allow for the assessment of organizational maturity based on general life cycle models. Consistent with existing life cycle stage theories, the results indicate that highly interconnected communication patterns in a new start company shift during organizational maturity toward an emphasis on decentralization. Interestingly, the survival of the company founder in a secondary business created an unexpected research opportunity to examine personal narratives and entrepreneurial spirit in the face of adversity. The unexpected secondary result was an affirmation of the potential role that personal narratives of action and innovation may play in creating conditions of entrepreneurial resiliency.*

**Keywords:** Entrepreneur, life cycle, social network analysis, Hero Myth Index

### **1. Introduction**

This longitudinal study examined communication networks and organizational life-cycle stage in the context of an entrepreneurial business venture in North America. Basic social network analysis modeling techniques were used to assess relative organizational maturity as predicted by general life cycle models. While it is accepted that organizations undergo life cycle phases of growth and maturity (Adizes, 2004; Gupta & Chin, 1994), the availability of social network analysis techniques provides the opportunity to confirm the relationship between organizational communications and life cycle developmental patterns. The assessment of communication patterns provided visual and quantitative evidence of the correspondence between structural and relational organizational characteristics and current life cycle stage. Consistent with existing life cycle stage theories, highly interconnected communication patterns were found in a new company and shift occurring during organizational maturity toward an emphasis on decentralization.

This case study was originally envisioned as a long-term study to examine the relationship between communications networks and organizational life cycle over the complete life span of a new start company.

However, during the longitudinal extension the company under investigation, the mortgage company Northcity Corporation, became a victim of the general worldwide economic downturn.

While this ended the original long-term study, a second longitudinal phase was completed and confirmed the progress of organizational maturity as indicated by shifting communication patterns.

In addition, these new conditions offered an unexpected opportunity to examine coping responses by the company founder. The results indicate that environmental conditions and survival strategies impact organizational patterns. The survival of the company founder in a secondary business created an additional research opportunity to re-examine entrepreneurial spirit in the face of adversity. The surprising result was an affirmation of the potential role that personal narratives of action and innovation can play in creating conditions of resiliency.

## ***2. Entrepreneurial Background***

This study examined communication patterns within Northcity Corporation, an entrepreneurial mortgage company founded by two brothers and established as a family-run business. Previous mortgage industry experience for the founders was 10 and 2 years respectively. Early organizational changes included the separation from a parent franchise to operate as an independent mortgage company within nine months of establishment and the inclusion of a third family member as part-owner. At the time of the original pilot study Northcity Corporation had been established for approximately two years and consisted of eight employees, including the two original founders. Of all employees, four were related by family ties.

After approximately three years a longitudinal extension of the original pilot study was conducted to assess changes to communication patterns and organizational maturity within Northcity Corporation. Several organizational changes had occurred since the original study. First, of the two founders one had departed the company and relocated. The number of employees had decreased to from eight to seven, with several working pro bono in an attempt to strengthen the company's financial position. In an attempt to survive the worldwide economic downturn the remaining company founder had also began to reduce risk exposure in the mortgage industry by beginning several new business initiatives. In addition to its mortgage services, new initiatives were started to provide property management services and to develop Velma.com, a new subscriber service for customer relations management.

Despite out surviving many other mortgage companies in worsening economic conditions Northcity Corporation closed as a business just after the completion of the second phase of this study. However, the new businesses that were created under its diversification initiative offered the remaining company founder the opportunity to continue as an entrepreneur. This created an unexpected research opportunity to examine entrepreneurial spirit in the face of adversity and led to a secondary research focus on conditions of resiliency in conditions of entrepreneurial hardship.

## ***3. Method***

### ***3.1. Phase 1***

The original pilot study collected data by providing self-report questionnaires to all Northcity Corporation employees ( $n = 8$ ) and by conducting interviews with Northcity Corporation founders ( $n = 2$ ). Research was completed with the consent and participation of Northcity Corporation. Participation for employees in both the Phase 1 and Phase 2 studies was strictly voluntary. Survey items focused on two elements of information: communication connections and communication frequency. A multi-column questionnaire was provided to each respondent. Respondents answered the following items: (1) Who I communicate with, and (2) Frequency of communications (rated with the following scaled values, 5: Daily; 4: Weekly; 3: Monthly; 4: Quarterly; 5: Yearly). Company biographical data was collected through interviews with Northcity Corporation founders.

Survey data was analyzed and graphically depicted using UCINET 6, a social network analysis tool (Borgatti, Everett, & Freeman, 2002).

### 3.2. Phase 2

The planned long-term longitudinal extension of the original pilot study was interrupted when Northcity Corporation closed for business during the study. A communications survey identical to the one used in Phase 1 was released and all of the seven remaining employees ( $n = 7$ ) were able to respond prior to company closure. Survey data was analyzed and graphically depicted using UCINET 6. The responses provided insight into the changing structural dynamics at Northcity Corporation and its relative agreement with expected patterns of life cycle maturity.

Since the remaining company founder was able to continue as an entrepreneur by focusing on earlier diversification initiatives after the closing of Northcity Corporation, this research was afforded the opportunity to also examine personal perspectives of entrepreneurial spirit. To capture this new dimension the remaining company founder completed the Hero Myth Index (Pearson, 1991). This secondary research outcome highlighted the roles that universal narratives may play in framing coping behavior as well as the importance of personal frames of reference relative to action and innovation.

## **4. Results**

### 4.1. Phase 1

The original pilot study found that Northcity Corporation's communication patterns corresponded to its current organizational life cycle stage. As a new-start company in its second year, Northcity Corporation could be categorized as being in the inception stage. New companies such as Northcity Corporation may tend to have little organizational hierarchy and it is likely that everyone is on a first-name basis, reflecting close social ties (Adizes, 2004). The interconnected internal and external communication networks of Northcity Corporation are depicted in Figure 1. Square-shaped nodes numbered 1-8 represent Northcity employees. Triangle-shaped nodes numbered 9-24 represent external business contacts. The graphic depiction of communication patterns reveals the high degree to interconnectedness between Northcity Corporation employees. Northcity Corporation structural and relational attributes such as small size and enmeshed communication patterns confirm its inception stage life cycle status.

### 4.2. Phase 2

By the time of the Phase 2 study Northcity Corporation was in its fifth year of business. The interconnected internal and external communication networks at Northcity Corporation at the time of the Phase 2 study are depicted in Figure 2. Square-shaped nodes numbered 1-7 represent Northcity Corporation employees. Triangle-shaped nodes numbered 8-40 represent external business contacts. The graphic depiction of communication patterns reveals shifts in network structure toward a less shared and more decentralized network structure. The shift from a highly enmeshed network toward a less dense, layered spoke and wheel structure is visually discernable. In terms of life cycle stage, at the time of the Phase 2 study Northcity Corporation was likely in the transition from pre-bureaucratic to early bureaucratic communication structures.

## **5. Changes in Network Characteristics**

This longitudinal study was able to confirm shifts in company-wide communications patterns as Northcity Corporation began to mature in its organizational life cycle. Social network analysis was able to assess structural measures for network centrality, betweenness, density and clique formation. The general movement of these measures indicates a shift towards a more hierarchical, less shared and less centrally focused network (See Figure 3). Centrality describes the number of ties (i.e., connections) between nodes in a network (Hanneman & Riddle, 2005). Centrality can be assessed by counting the number of direct connections that a network node possesses.

In the Phase 1 study an analysis of centrality within the Northcity Corporation network revealed that the eight corporation employees occupied all top eight positions when ranked according to the measure of centrality. Not surprisingly, the two company founders ranked highest in centrality, collectively possessing direct access to all but one node within the network (i.e., 96% of the network).

In the Phase 2 study the remaining seven employees still occupied the top seven positions when ranked according to centrality. However, the dominant role of the remaining company founder had begun to diminish. As a network node the remaining company founder reported 12 out of 39 possible connections (31%), a decline from 14 of 25 connections (56%) he reported in the pilot study. It is relevant to note that in the pilot study all eight Northcity Corporation employees reported direct contact to each other. This is characteristic of highly enmeshed networks. But, by the time the follow-on study was conducted just two employees, including the remaining founder (node 1), still reported direct ties to all other employees.

Betweenness describes the condition in which a node is on the path between two other nodes (Hanneman & Riddle, 2005). In terms of the frequency in which they are on unique paths between two other nodes, the pilot study indicated that the top ranked positions were held by seven Northcity Corporation employees. In order, approximate betweenness ratings and the associated node were: 120 (node 4), 33 (node 3), 27 (node 7), 21 (node 6), 11 (node 2), 7 (node 1), and 5 (node 5). The high betweenness rating for node 4 indicates direct access to a majority of the network. Overall, these results indicate that many connections within the network can be made directly without going through an intermediary. As a result, with the exception of one strategically located node (node 4), betweenness within the overall network is generally low. The Phase 2 study indicated a decrease in betweenness for the remaining company founder (labeled node 4 in Phase 1 and node 1 in Phase 2) and an increase in betweenness for the other employees. Betweenness ratings for the Phase 2 study were: 107 (node 1), 44 (node 5), 37 (node 2), 35 (node 3), 25 (node 7), 17 (node 4), 15 (node 6).

The results for the assessment of betweenness indicate the evolution of a more layered and less shared network. These results are generally confirmed by density analysis. Density is the proportion of all possible ties that are actually present within a network (Hanneman & Riddle, 2005). Higher measures of density indicate more overall interaction within a given network. Analysis conducted during the pilot study indicated that the network density for Northcity Corporation was .23. That is, 23% of all possible ties between nodes were present. In the Phase 2 study overall network density had decreased to 4.5%. This less dense, sparser network reflects the presence of an increased number of unique, node to node communication ties and fewer shared ties. For example, the pilot study indicated that there was just a single unshared node (i.e., connected to only one other node). However, the Phase 2 study indicated the presence of 23 unshared nodes.

A decrease in shared ties was also reflected in clique analysis. A clique is a sub-set of nodes that are more closely associated with each other than with other nodes within a network (Hanneman & Riddle, 2005). In the original pilot study clique analysis revealed that there are 17 cliques consisting of three or more nodes within the Northcity communications network. Overall, there were two cliques with seven members, one with five members, six with four members, and eight with three members. A large degree of the overlap between these cliques can be accounted for by the two founding officers of the company. Because of his high degree of centrality the founder labeled as node 4 (see Figure 1) was a member of 15 of the 17 cliques. The second founder, labeled as node 3 (see Figure 1), was present in 8 of the 17 cliques.

In the Phase 2 study, the number of cliques consisting of 3 or more nodes was reduced from 17 to 10 despite an increase in the number of nodes in the network. Overall, there were two cliques with seven members, one with six members, one with four members, and three with three members. The remaining founder had membership in the most cliques at seven, but now shared the top position with another employee. Further, the remaining founder's presence in all cliques was reduced from 88% (15 of 17) to 70% (7 of 10). This indicates that, although the remaining founder still maintained a dominant position in the network, his relative positional power was decreasing as the network expanded and shifted toward a less shared and less centrally focused structure.

## **6. Entrepreneurial Spirit and Resiliency**

The survival of the company founder in a subsequent venture after the closure of the original business created an unexpected research opportunity to examine personal narratives and entrepreneurial spirit in the face of adversity. In order to further explore this dimension the company founder completed the Hero Myth Index following the longitudinal study. The Hero Myth Index is a 72 item self-report questionnaire designed to the respondent's correspondence to a range of 12 heroic archetypes (e.g., Orphan, Warrior, Seeker, etc.) (Pearson, 1991).

These archetypes are based on the conceptualization of life as a hero's journey in which archetype based personality traits emerge in ways that can either illuminate and expand or hinder its opportunities. The results from the Hero Myth Index indicated that the original company founder rated most highly, in order, on the scales for the following archetypes: (1) Sage, (2) Warrior and Ruler (tied) and (3) Creator and Fool (tied). According to Pearson (1991) each of these archetypes possesses differing goal and problem response orientations as well as gifts (See Figure 4).

These results may indicate that the original founder may possess a constellation of complementary personality traits that reinforce his life journey as an entrepreneur. They may reveal a nuanced balance of vision, discipline, creativity and a propensity for action. These characteristics may provide insight into both his entrepreneurial drive and his resiliency in the face of changing conditions. For example, he rated most highly on the scale for the Sage archetype. This may indicate a predisposition to openness, deep insight and long-range perspectives (Pearson, 1991). High ratings for the Warrior and Ruler archetypes may indicate a predisposition for action, discipline, risk acceptance, as well as elements of altruism (Pearson, 1991).

Finally, high ratings for the Creator and Fool archetypes may indicate a drive for self-improvement, creativity and an open enjoyment of life (Pearson, 1991). It is possible that the founder's preferences for wide perspectives, action, openness, engagement and contribution all work together to reinforce a personal narrative of innovation and survival.

Overall, this additional research finding, while not definitive, may provide an intriguing affirmation of the potential for personal narratives to frame positive coping behaviors and to create conditions that foster entrepreneurial spirit and resiliency.

## **7. Limitations and Future Research**

While this long-term longitudinal study was shortened by the closure of the business under investigation, it is possible that future studies could extend the research line into new areas. As companies evolve additional measurements may be used to assess new organizational changes. During organizational maturity the formalization of organizational structures will impact the overall network as well as individual nodes. It is likely that power will emerge as an indicator of bureaucratization within a company and may be a key characteristic of emergent positional advantages within the company. This characteristic may be of interest as a component of any study of an organization in its mid-life stage. In addition, the excursion of this study into an examination of the personality archetypes that may correspond to entrepreneurial drive and survival offers an intriguing opportunity to more definitively explore the personality components of entrepreneurship.

## **8. Conclusion**

New companies may possess pre-bureaucratic structures and rely on coordination through person-to-person communication between individuals with relatively equal hierarchical authority as a means of communication (Wagner & Hollenbeck, 2002). However, as organizations develop in the course of their lifespan, they tend to become larger and require adaptive changes as communication requirements begin to overwhelm initial structures. The shift to more stratified communication processes may arise as entrepreneurial company founders begin to delegate responsibilities in order to cope and survive (Gupta & Chin, 1994).

The results of the present longitudinal study provide empirical confirmation of this normative life-cycle development. Had Northcity Corporation survived adverse economic conditions, it is likely that it would have continued to follow its trajectory toward developing increasingly stratified and more formalized bureaucratic communication structures. In addition, the survival of one of the company founders in a secondary business venture provided additional perspective into the spirit of entrepreneurship. The correspondence of the founder to personality archetypes associated with drive, action, openness, vision and creation may provide some insight into those characteristics that may sustain resiliency in the face of entrepreneurial adversity.

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Figure 1. Company-wide communication patterns reported during Phase 1

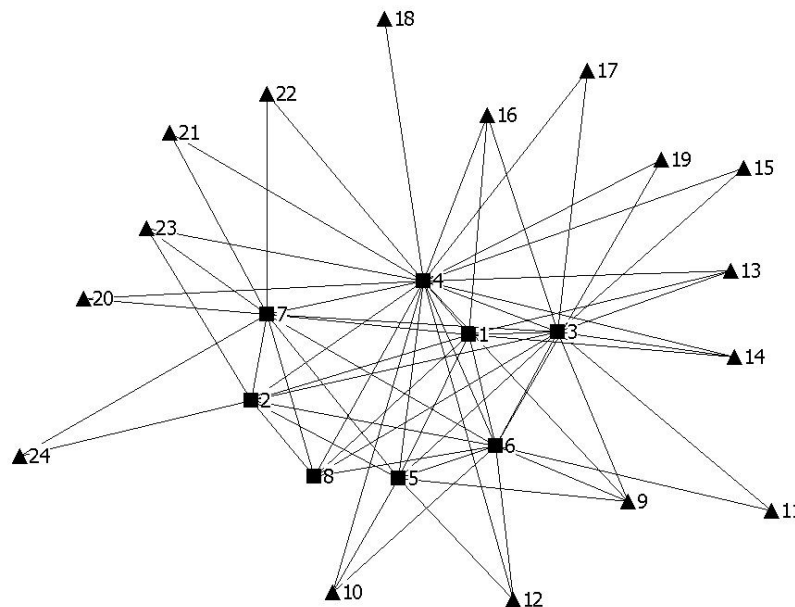


Figure 2. Company-wide communication patterns reported during Phase 2

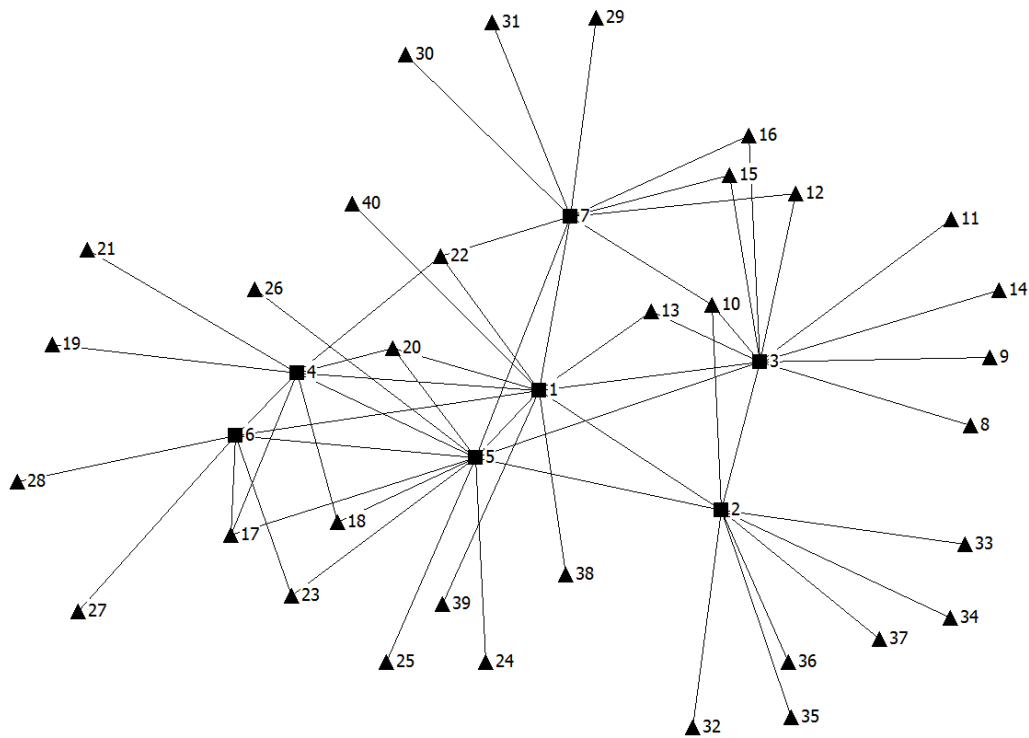


Table-1: Shifts in network structure

<i>Measure</i>	<i>Direction of movement</i>
Centrality	Decreasing
Betweenness	Increasing
Density	Decreasing
Cliques	Decreasing

Table-2: Archetype characteristics

<i>Archetype</i>	<i>Goal</i>	<i>Response to problems</i>	<i>Gifts</i>
Sage	Truth, Understanding	Understand or transcend it	Wisdom, Skepticism
Warrior	Make a difference through struggle	Defeat it or convert it	Courage, Discipline, Skill
Ruler	Harmony, Prosperity	Find its constructive use	Responsibility, Competence
Creator	Creation of life, Work or a new reality	Accepts it, Willing to create another reality	Creativity, Identity
Fool	Enjoyment, Aliveness	Play with it	Freedom, Liberation