ABSTRACT

Studies of entrepreneurial networks have largely concentrated on one or the other of the two dominant network perspectives – structural or flow. We argue that an integrated approach can provide new insights into interactions of different types of flows across actors, and the interdependence of structures and flows. Because of this either-or divide, we know relatively little about how both these perspectives combine to create distinct network configurations. In response, we contrast and integrate structural and flow complexity to develop a typology of four network configurations: clusters, cliques, communities and crowds.

By adopting the structural contingency theory logic, we identify network goals and capabilities on which the performance of each configuration is contingent. Rent seeking and opportunity seeking goals, and intermediation and mediation capabilities correspond with low and high levels of structural complexity, respectively. Efficiency seeking and synergy seeking goals, and standardization and mutual adjustment capabilities correspond with low and high levels of flow complexity, respectively. Based on these goals and capabilities, parallels are drawn between each of the four configurations and the Miles and Snow typology (1978).

This study makes two contributions. First, it formally introduces configuration theory to the study of how elements in networks interact to holistically form configurations. Second, the typology provides the ability to classify entrepreneurial network configurations, and predict which network goals and capabilities their performance is contingent on. We believe this typology may also apply to other inter-organizational networks.

INTRODUCTION

Throughout the social network paradigm prior entrepreneurial network research has tended to adopt either a structural perspective that focuses on the positioning of network actors, or a flow perspective that examines the transformation and transmission of resources (Borgatti & Foster, 2003). Structural complexity, the degree to which actors in a network are interdependently connected, has been linked to performance (Rosenkopf & Schilling, 2007; Zaheer & Bell, 2005; Soh, 2003; Koka & Prescott, 2002; Shepherd, 1991). Flow complexity, the interdependence of how resources are transformed and transmitted, has also been linked to performance (Hite, 2003; Yli-Renko, Sapienza & Hay, 2001; Gulati & Gargiulo, 1999; Larson & Starr, 1993; Larson, 1991). However, research that examines how both - structural complexity and flow complexity - mutually influence network behaviors and outcomes is lacking.

To address the structure-flow divide, we consider how the complexity of network structures and network flows combine to produce a typology of four network configurations. Like research on organizational configurations (Meyer, Tsui & Hinings, 1993; Greenwood & Hinings, 1988; Miller & Friesen 1984), we seek to help entrepreneurship scholars to identify viable and theoretically interesting types of networks. In particular, we focus on how variations in the complexity of structures and flows combine to influence the form, function and performance of the network.

Using this typology, we build on the logic of contingency theory and the strategy-structure-performance paradigm (Galan & Sanchez-Bueno, 2009; Amburgey & Dacin, 1994; Galunic & Eisenhardt, 1994; Miller, 1981; Porter, 1980; Galbraith, 1973; Burns & Stalker, 1961) to develop propositions about network goals and capabilities on which the performance of each configuration is contingent. This work is a theory contribution that addresses the need to better understand how
network configurations vary (Brass et al. 2004; Hoang & Antoncic, 2003), and how such variations influence entrepreneurship scholarship and practice (Doty & Glick, 1994).

A REVIEW OF ENTREPRENEURIAL NETWORK RESEARCH PERSPECTIVES

Since our concern, the integration of structural and flow-based research, is a challenge that persists beyond entrepreneurship, we draw upon Borgatti and Foster’s (2003) typology of the network paradigm in organizational research. The same divide can be seen in reviews in entrepreneurship (Hoang & Antoncic, 2003). We review key findings in both perspectives and select studies that have attempted to go beyond an either-or focus. In light of how complementary one perspective is to the other, we agree with other scholars who have identified this divide (see: Jack, Forthcoming) and argue that the field has been lacking an integrated perspective due to a lack of conceptual models, methods and theoretical lens that reflect the complexity of entrepreneurship (Zahra, 2007). In this study we focus on providing a theoretical typology by adopting the configuration and, contingency theory lenses.

Structural studies focus on the composition of relationship portfolios that entrepreneurs have. Some of these studies create lists of actors by types, and investigate the relative time spent or importance of each type (Watson, 2007; Lechner, Dowling & Welpe, 2006; Rothaermel & Deeds, 2006; Baum, Calabrese & Silverman, 2000; Ostgaard & Birley, 1994; Dollinger, 1985).

Other structural studies account for interactions between multiple actors in entrepreneurial networks, but limit their investigation to one type of actor (Al-Laham & Souitaris, 2008; Zaheer & Bell, 2005; Soh, 2003; Uzzi, 1999, 1996; Powell, Koput & Smith-Doerr, 1996). Collectively, these studies reveal that a diversity of actors is important as is a diversity of relationships, but typecast actors into independent one-dimensional flows and are unable to account for interactions of flows within or across relationships.

In contrast to structural studies, flow studies focus on how multiple exchanges occur within a single dyadic relationship (Hite, 2003; Yli-Renko, Sapienza & Hay, 2001; Das & Teng, 2000; Larson and Starr, 1993; Larson, 1992, 1991). While this perspective may reveal interdependencies between flows within the dyadic relationship, it omits the greater structural context in which the relationship exists, and thus also interdependencies with flows from other sources. This layering of different types of exchange within the same relationship is termed “multiplexity” (Hoang & Antoncic, 2003). For example, an entrepreneur’s relationship with an investor involves considerable time to facilitate exchanges of cash, equity, advice, and control, as well as to make introductions to other trusted actors.

Integrating both perspectives (i.e., examining the interplay between network structures and network flows) is theoretically important for two reasons. First, an integrated model highlights how multiple actors can be simultaneously involved in multiple flows, and how these flows then interact across relationships. This focus is important because an improved understanding these interdependencies will enable more accurate assessment and prediction of which capabilities, goals and strategies lead to greater performance. Second, we can understand how changes in flows influence the addition or removal of relationships, and, how such changes to the structure influence the flows in the existing structural relationships. This understanding will enable us to gain insight into how networks evolve and which decisions and trade-offs entrepreneurs manage throughout the evolution of their network and venture, thus providing insight into specific network tactics.

We believe there are at least two related reasons why studies on entrepreneurial networks do not focus on how structures and flows interact to form holistic configurations. First, a focus solely on one of the two perspectives is attractive because it is much easier to model and discuss a network in terms of a single perspective, rather than as a complex system of two interdependent perspectives. Second, the most common methods used to study networks are ill suited for an integrated analysis of structures and flows, in particular the complexity thereof. In this study, we focus on the first reason and present a typology of network configurations by contrasting structural and flow complexity, and identify implications for each configuration regarding corresponding network goals and capabilities on which performance is contingent.

To conceptually depict the complexity and configuration of organizations, researchers have used descriptors such as “patterns” (Greve & Salaff, 2003) or “constellations” (Shepherd, 1991; Lorenzoni & Ornati, 1988. There have been a number of studies regarding the diversity of entrepreneurial networks (Hill & Birkinshaw, 2008; Lechner, Dowling & Welpe, 2006; Rothaermel & Deeds, 2006; Hite, 2003; Belussi & Arcangeli, 1998; Bensaou & Venkatraman, 1995; Ostgaard & Birley, 1994; Woo, Cooper & Dunkelberg, 1991) and a number of studies have used configuration theory in other
areas of entrepreneurship (Wiklund & Shepherd, 2005; Konunka et al 2003; Bantel, 1998). However, research on entrepreneurial networks has largely overlooked configuration theory, as noted in some reviews (e.g., Brass et al 2004; Pittaway et al 2004; Hoang & Antoncic, 2003; Bensaou & Venkatraman, 1995).

Configurational research is concerned with the genesis, diversity and performance of different types or forms of organization (Greenwood & Hinings, 1988; Miller & Friesen, 1984). Organizational configurations are comprised of elements whose interactions give rise to a "multidimensional constellation of conceptually distinct characteristics that commonly occur together" (Meyer, Tsui & Hinings, 1993, p. 1175). These interactions form the configuration and provide a means for describing complexity. At a detailed level, the structural complexity represents the interactions between actors, and flow complexity represents the interactions between flows. Because each actor may be associated with one or more flows, and each flow may be associated with one or more actors, there is inherently an interaction between structures and flows. The relationship between the configuration of structures and flows and their corresponding goals and capabilities is incorporated in analogous arguments in structural contingency theory (Miller, 1981; Galbraith, 1973).

In summary, we find the structural and flow perspectives alone to be inadequate for revealing the complexity of entrepreneurial networks, and propose their integration through the logic and lens of configuration theory. An inherent aspect of the configuration approach is the development of typologies. In the following section, we describe and explain how varying degrees of structural and flow complexity create a typology of network configurations, and how each configuration has corresponding network goals and capabilities on which their performance is contingent.

A STRUCTURE-FLOW TYPOLOGY OF ENTREPRENEURIAL NETWORK CONFIGURATIONS

In the following sections, we explore how variations in the structural and flow complexity combine to produce different entrepreneurial network configurations. In general, complexity reflects the degree to which there are multiple interactions (Butts, 2001; Anderson, 1999). Consequently, greater structural complexity reflects more interactions between actors, and greater flow complexity reflects more interactions between flows. Although both of these dimensions are conceivably continuous variables, our typology contrasts only high and low values to allow us to identify four stylized archetypes, which we label cluster, clique, community, and crowd (see Figure 1). We argue that the conditions for each network configuration have important implications for corresponding network capabilities and network goals. Matching appropriate capabilities and goals to each configuration further helps predict performance. For purposes of developing a typology which brackets the spectrum of empirically possible network configurations, we limit ourselves to high and low values.

In order to link each configuration, corresponding goals and capabilities to performance, we inherit the logic of structural contingency theory (Miller, 1981; Galbraith, 1973) and the strategy-structure-performance paradigm (Galan & Sanchez-Bueno, 2009; Amburgey & Dacin, 1994; Miller, 1988;). With knowledge of the structural and flow characteristics of each entrepreneurial network configuration, it is possible to predict corresponding goals and capabilities on which performance is contingent.

Of the goals entrepreneurs can chose from (Bhidé, 1996), we focus on those related to the conditions provided by high or low complexity of network structure and network flows. Low structural complexity, few interactions between actors, provides the opportunity to attain rents from brokering resources between disconnected actors, and profiting from the marginal differences in value between the parties involved, or by adding value along the way to increase the profit margins (Rotheaemel & Deeds, 2006; Zaheer & Bell, 2005; Soh, 2003). These are otherwise known as Burt rents (Kogut, 2000; Burt, 1992). Phrased in terms of goals, we refer to the pursuit of Burt rents as rent seeking goals. In contrast, high structural complexity, many interactions between actors, provides the opportunity to devise new combinations of resources and ideas by brokering new relationships between actors, and benefiting from having brought the actors together and participating in the collective output (Kelley, Peters & O’Connor, 2009; Dyer & Nobeoka, 2000). These are otherwise known as Coleman rents (Kogut, 2000; Coleman, 1990). We refer to the pursuit of Coleman rents as opportunity seeking goals.

Low flow complexity, few interactions between flows, provides the opportunity to avoid spending time and effort exploring interdependencies, and to increase the efficiency with which each relationship is coordinated (Williamson, 1981). These independent relationships are thus associated
with what we call efficiency seeking goals. In contrast, high flow complexity, many interactions between flows, provides the opportunity to seek out new ways in which interdependent resources and flows complement one another to gain synergistic benefits (Dubois & Håkansson, 1997; Dierckx & Cool, 1989). Synergies build on the notion of complementarity, in that complementarities may be a prerequisite for firms to interact (Doz, 1996), and are a necessary but insufficient condition for synergies to be achieved (Harrison et al 2001). These interdependent relationships are thus associated with what we call synergy seeking goals.

Capabilities can encompass a wide variety of processes and routines with which to deploy resources (Eisenhardt & Martin, 2000; Teece, Pisano & Shuen, 1997; Amit & Schoemaker, 1993). Just as we differentiate between goals related to structural and flow complexity, as differentiate between capabilities related to either. Regarding structural complexity, while there has been much recent research on capabilities related to managing the diversity of alliance portfolios (Al-Laham & Souitaris, 2008; Capaldo, 2007; Hoffmann, 2007; Rothaermel & Deeds, 2006; Lorenzoni & Lipparini 1999), these do not address the relationships between the actors to which the entrepreneur is connected. In turn, we focus more specifically on brokering capabilities (Hargadon & Sutton, 1997; Walker, Kogut & Shan, 1997; Burt, 1992). Brokering capabilities include capabilities with which entrepreneurs keep others apart and maintain their position as middle-man, and those with which entrepreneurs create new relationships and bring others together.

For low structural complexity, the capability corresponding to keeping others apart and retaining rents is defined here as intermediation. In network parlance, this capability is an attribute of the tertius gaudens or the “third who enjoys” (Burt, 1992; Simmel, 1950). Intermediation helps entrepreneurs to access novel resources from actors that are separated by structural holes (Zaheer & Bell, 2005), and benefit from unique insights, value-add and superior network positions (Hill & Birkenshaw, 2008). In contrast, for high structural complexity, the capability corresponding to creating new relationships and bringing others together, and generating opportunities, is defined here as mediation. In network parlance, this capability is an attribute of the tertius iungens or the “third who joins” (Obstfeld, 2005).

Regarding the management of flow complexity, recent research indicates that entrepreneurs develop relational capabilities (Schreiner, Kale, & Corsten, 2009; Walter, Auer & Ritter, 2006; Kale, Dyer & Singh, 2002; Anand & Khanna, 2000; Dyer & Singh 1998), which we refer to here as coordination capabilities. For low flow complexity, the capability corresponding to achieving efficient flow management is defined here as standardization. By standardizing the terms of agreement for each flow, economies of scale can be achieved and remaining managerial resources can be reallocated to other aspects (Larson, 1991; Aldrich & Herker, 1977). In contrast, for high flow complexity, the capability corresponding to unlocking synergies across flows (within or across relationships) is defined here as mutual adjustment (Larsson & Bowen, 1989; Thompson, 1967). Using this capability, entrepreneurs can influence the actors who are in control of those resources, and come to some mutually beneficial agreement. Mutual adjustment is synonymous with mutual adaptation (Dubois & Håkansson, 1997) and co-operation (Richardson, 1972).

By combining high and low complexity structures and flows, we develop a typology of four network configurations. The following sections outline how high and low levels of structural and flow complexity combine to form each configuration, describe the effects of structure-flow interactions, and provide propositions identifying the network goals and capabilities on which performance is contingent.

Cluster Network Configuration

The first network configuration we consider is described by low structural complexity and low flow complexity, and is located in the bottom left quadrant of the typology. We refer to this as the cluster network configuration because the network is comprised of multiple clusters of actors, who may be similar by way of the type of flows they are involved in, but are otherwise not directly related to each other. In this case, the entrepreneur coordinates flows that are independent of each other, and brokers them between actors who are unrelated to each other. This means that the entrepreneur is in the position to profit from aggregating and redistributing flows without concern to complementarities or conflicts between them. An entrepreneur whose network typifies this configuration is a distributor who draws on resources from a portfolio of unrelated sources, and redistributes them again to a portfolio of unrelated customers. For longer-term security, these entrepreneurs may seek to lock suppliers in to specific margins and secure exclusive distribution agreements, but will otherwise not seek ways in
which flows complement each another or coordinate those suppliers to unlock synergies. Such entrepreneurs may apply transaction cost economics to exchanges in order to facilitate them.

Another version of the same configuration exists in which entrepreneurs do add value to the flows by transforming them significantly along their way. Such cases include biotechnology firms with the caveat that their flows have a tendency towards higher complexity within relationships but still low flow complexity across relationships. Higher performance biotechnology firms have been observed to benefit from “access to diverse information and capabilities with minimum costs of redundancy, conflict and complexity” (Baum, Calabrese & Silverman, 2000, p. 267). In this case, their motivation to seek efficiency in relationships is not to maximize the number of relationships, but to minimize coordination efforts to a limited number of relationships in order to maximize the managerial resources available to focus on their value-add.

The goals associated with the cluster configuration are rent seeking and efficiency seeking goals. In other words, the goal of an entrepreneur with a cluster configuration is to exploit their position in the structure while keeping others apart, and to minimize managerial resources dedicated to each relationship. Failure to maintain their position and keep others at some degree of arm’s length may result in them being disintermediated from the supply or value chain, and others discovering their sources of novel ideas, thus losing their competitive advantage (Zaheer & Bell, 2005; Burt, 2004, 1992; Farrell & Katz, 2000).

In sum, we propose that low structural complexity and low flow complexity combine to produce the cluster network configuration, of which the performance is contingent on goals and capabilities as follows:

Proposition 1a: For entrepreneurs with cluster network configurations, greater performance is contingent on seeking rents between relationships, and on seeking efficiency within and across relationships.

Proposition 1b: For entrepreneurs with cluster network configurations, greater performance is contingent on intermediation and standardization capabilities.

Respective to the entrepreneurial types presented in the Miles and Snow typology (Miles & Snow, 1978), these entrepreneurs are most similar to the defenders. They have found an opportunity they can exploit by maintaining some degree of secrecy about how the network works by keeping others apart and at a relative distance from their internal operations.

Clique Network Configuration

In complete contrast to the cluster configuration, the second network configuration is described by high structural complexity and high flow complexity, and is located in the top right quadrant of the typology. We refer to this configuration as the clique network configuration, because of its compatibility with other definitions of cliques (Knoke & Kuklinski, 1982; Luce & Perry, 1949), i.e., it consists of close-knit actors whose multiple reciprocal interdependencies result in common interests, views and patterns of behavior, which collectively enable or constrain their performance. The high structural complexity in the clique network configuration provides the conditions by which the entrepreneur can explore new combinations of actors, resources and activities that provide new opportunities, and is done by brokering or mediating new relationships. The high flow complexity means that the flows are mutually interdependent in this configuration, and a change in one flow could impose changes in other flows. This flow interdependence is “reciprocal” in nature (Larson & Bowen, 1989; Thompson, 1967), and requires the entrepreneur to foster mutual adjustment of all actors involved (Dubois & Häkansson, 1997). This configuration can be seen by some areas of manufacturing in which a tight network of interconnected actors all look out for each others’ interests, enabling many smaller firms to act together to bid on large projects and corner niche markets (Lorenzoni & Lipparini, 1999; Uzzi, 1996; Lipparini & Sobrero, 1994).

This configuration provides the potential to go beyond aggregating flows and provides the opportunity to unlock synergies between flows, provided the entrepreneur can get everyone else to mutually adjust and go along with the overall vision. Thus, we propose the following relationship between the clique configuration and entrepreneurial goals and capabilities:

Proposition 2a: For entrepreneurs with clique network configurations, greater performance is contingent on seeking opportunities within and between relationships, and on seeking synergy within and between relationships.
Proposition 2b: For entrepreneurs with clique network configurations, greater performance is contingent on mediation and mutual adjustment capabilities.

Respective to the entrepreneurial types presented in the Miles and Snow typology (Miles & Snow, 1978), these entrepreneurs are most similar to the prospectors. They seek opportunities they can exploit by mediating the process of getting others to mutually adjust, and agree to make concessions to unlock synergies and make previously unforeseen gains (Dubois & Hakansson, 1997; Larsson & Bowen, 1989; Thompson 1967). Their reputation as an innovator and being on the forefront of what is possible may even supersede profitability objectives (Miles et al 1978).

Community Network Configuration

The remaining two configurations can be seen as combinations of the cluster and clique configurations. The third configuration is described by low high structural complexity and high flow complexity, and is located in the bottom right quadrant of our typology. We call this configuration the community network configuration, because the configuration conditions suit entrepreneurs connect local pockets of expertise and isolated professionals, as seen in communities of practice (Wenger, McDermott & Snyder, 2002). In this case, the entrepreneur manages interdependent flows similar to those in the clique configuration, but is in a position to be the central administrator. An episodic example of entrepreneurs who act as intermediaries, acting under strict confidentiality within each of their relationships, but with a focus on brokering complex and synergistic proposals across relationships is the InnovationXchange (Christopherson, Kitson & Michie, 2008). After independently investigating how to combine interdependent flows across actors, members of the InnovationXchange help forge the mutually agreeable terms of agreement by which these additional benefits can be unlocked. These entrepreneurs are able to profit from the deals because they are able to sign non disclosure agreements with all other actors involved, while these respective actors are unwilling to risk direct leakage of confidential information to potential competitors. These profits from negotiating a cooperation among competitors has also been referred to as “syncretic rents” (Lado, Boyd & Hanlon, 1997).

For entrepreneurs with the community network configuration, we propose the following:

Proposition 3a: For entrepreneurs with community network configurations, greater performance is contingent on rent seeking between relationships, and on synergy seeking within individual or pairs of relationships.

Proposition 3b: For entrepreneurs with community network configurations, greater performance is contingent on intermediation and mutual adjustment capabilities.

This network configuration is analogous to the analyzer type in the Miles and Snow typology, due to their minimizing risk while on a quest for maximizing the opportunities to profit (Miles et al 1978).

Crowd Network Configuration

The final configuration in the typology, is described by high structural complexity and low flow complexity, and is located in the top left quadrant of the typology. We refer to this as the crowd network configuration because the conditions characterize a network in which the various actors, resources and activities are assembled in a relatively cohesive but chaotic mass. In this case, the entrepreneur coordinates flows that are relatively independent of each other, while brokering relationships between actors.

An example entrepreneurial network for this configuration would be the embryonic networks of first-time entrepreneurs who are at the start-up stage of their first venture. Such entrepreneurs must spend a significant portion of their time “[exploring and strengthening] a broad range of network relationships” in order to gain favorable access to resources (Zhao & Aram, 1995, p. 366). These entrepreneurs broker new relationships, much like events organized by trade associations (Kelley, Peters & O’Connor, 2009; Dubini & Aldrich, 1991), where the entrepreneurs are seeking that initial or next opportunity to gain at least some short-term benefit. In many ways they are just trying to make sense and create order of their turbulent environment (McKelvey, 2004).

Since the longevity of relationships cannot be relied on, the entrepreneur is likely to protect themselves from wasting managerial resources on hazardous relationships by pursuing efficiency within them. These entrepreneurs may also seek out redundancy across connections in case one disappears. With no guarantee of longevity of any relationship, the survival of the entrepreneurs’
business further depends on their ability to mediate new direct and indirect relationships and move from opportunity to opportunity.

For entrepreneurs with the community network configuration, we propose the following:

**Proposition 4a:** For entrepreneurs with crowd network configurations, greater performance is contingent on seeking opportunities within relationships, and on seeking efficiency within relationships.

**Proposition 4b:** For entrepreneurs with crowd network configurations, greater performance is contingent on mediation and standardization capabilities.

This network configuration is analogous to the reactor type in the Miles and Snow typology (1978), since both are dealing with unstable contexts, and the outcomes of their actions are likely to be short-lived if they cannot transition to one of the other types in either typology. For crowd configurations, seeking efficiency may be a matter of survival than a growth strategy.

**CONCLUSION**

While network-based studies are an important part of entrepreneurship research, we argue that research on entrepreneurial networks has been limited by applying structure-only perspectives or flow-only perspectives, which are individually unable to capture the full complexity of network configurations. In order to understand the value of a network’s structure, we need to acknowledge the diversity and interactions of flows that define it. Likewise for flows, situations abound where context is everything and studying a single flow or relationship can provide too limited a picture of what is really happening. In response, we viewed these networks through a configuration theory lens to embrace and combine the complexity of structures and flows.

By integrating structures and flows, we produce a typology that presents four archetypical entrepreneurial network configurations: **cluster, clique, community, and crowd.** Development of the typology is a response to calls for research identifying logical network configurations and their influence on entrepreneurship (e.g., Jack, Forthcoming; Hill & Birkinshaw, 2008; Hoang & Antoncic, 2003; Ostgaard & Birley, 1994). Our typology provides more than a means of classifying network configurations in that we provide testable propositions for each of the archetypes (Doty & Glick, 1994). Following the logic of contingency theory and the strategy-structure-paradigm (Galan & Sanchez-Bueno, 2009; Amburgey & Dacin, 1994; Miller, 1981; Porter, 1980; Galbraith, 1973; Burns & Stalker, 1961) we provide propositions identifying on which network goals and capabilities the performance of each configuration is contingent. This typology provides a taxonomic framework for other researchers in this field to develop empirically based taxonomies and to test how our proposed configurations and their variations relate to entrepreneurial performance.

We build on related goals in network research (Kogut, 2000; Hargadon & Sutton, 1997; Walker, Kogut & Shan, 1997; Burt, 1992; Coleman, 1990) to focus on those related to structural and flow complexity. These goals are rent seeking and opportunity seeking for low and high levels of structural complexity, respectively, and efficiency seeking and synergy seeking for low and high levels of flow complexity, respectively. The interdependence of structures and flows varies with each configuration. At one extreme is the clique configuration, for which every actor is involved in every flow, and all flows interact with each other. Any change in the structure immediately affects all flows, and any change in flows immediately affects all actors. This requires complete consensus to enable collective action. At the other extreme is the crowd configuration, which is in a constant state of change, with independent actors and flows churning through the network. Any changes may incrementally affect the entrepreneur, but otherwise do not affect the rest of the structure or flows. Intermediate levels of structure-flow interdependence exist for the community and cluster configurations in as much as flows involve more than one actor, or individual actors provide exclusive access to critical flows.

We build on the capability research (Teece, Pisano & Shuen 1997) to focus on capabilities that are more specifically related to effective management of relationships and portfolios of relationships (Schreiner, Kale, & Corsten, 2009; Walter, Auer & Ritter, 2006; Kale, Dyer & Singh, 2002; Anand & Khanna, 2000; Dyer & Singh 1998). Based on the studies reviewed here, we have distinguished between two types of network capabilities: brokering capabilities with which to manage low or high levels of structural complexity, and coordination capabilities with which to coordinate low or high levels of flow complexity. More specifically, the brokering capabilities for low and high levels of structural complexity are intermediation and mediation, respectively. These agree with notions of tertius ijungens (Burt, 1992) and tertius gaudens (Obstfeld, 2005) in the literature, respectively. The
coordination capabilities for low and high levels of flow complexity are standardization and mutual adjustment, respectively. These agree with notions of reducing relationships to efficient transactions (Williamson, 1981), and leveraging complementarities (Dubois & Håkansson, 1997; Doz, 1996; Larsson & Bowen, 1989), respectively.

For those familiar with the Miles and Snow (1978) typology of entrepreneurial types, we draw parallels between their typology and ours. Both typologies support a diverse range of strategies, including exploration versus exploitation, and reacting to the immediate environment versus proactively enacting it. Lastly, while we have focused on and made arguments regarding entrepreneurial networks, we have drawn on literature and examples from other forms of networks. The core arguments presented regard the complexity of network structures and flows, which are important for new ventures, but also transferable to other settings. Consequently, we believe this typology and many of the arguments presented here apply to the larger field of inter-organizational networks.
REFERENCES


Burt, RS 1992, Structural Holes, Harvard University, Cambridge, MA.


Galbraith, JR 1973, *Designing Complex Organizations*, Addison-Wesley, Reading, MA.


Obstfeld, D 2005, ‘Social networks, the Tertius lungens and orientation involvement in innovation’, *Administrative Science Quarterly*, vol. 50, no. 1, March, pp. 100-130.


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<tr>
<th>Network Flow Complexity</th>
<th>Conditions</th>
<th>Goals</th>
<th>Capabilities</th>
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<tr>
<td>Low</td>
<td>Cohesive network of actors with flows that are relatively simple and independent (e.g., initial networks formed by first-time entrepreneurs)</td>
<td>Rent and efficiency seeking</td>
<td>Exploitative brokering and standardized coordination</td>
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<tr>
<td>High</td>
<td>Cohesive network of actors with flows that are relatively complex and interdependent (e.g., complex match-maker like InnovationXchange)</td>
<td>Opportunity and synergy seeking</td>
<td>Explorative brokering and coordination by mutual adjustment</td>
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**Cluster**
- **Conditions**: Fragmented network of actors with flows that are relatively simple and independent (e.g., networks used by founders of biotech ventures)
- **Goals**: Rent and efficiency seeking
- **Capabilities**: Exploitative brokering and standardized coordination

**Community**
- **Conditions**: Cohesive network of actors with flows that are relatively simple and multiplex and relatively interdependent (e.g., network formed by manufacturing firms to bid on larger projects)
- **Goals**: Opportunity and synergy seeking
- **Capabilities**: Exploitative brokering and coordination by mutual adjustment

**Figure 1 – Typology of entrepreneurial network configurations**