

**Markets as Networks:  
The Dynamics and Implications of Interorganizational Network Structures**

Maxim Sytch  
Ross School of Business  
University of Michigan  
701 Tappan St.  
Ann Arbor, MI 48109  
Ph: 734.763.6822 Fax: 734.764.2555  
*msytch@bus.umich.edu*

Ranjay Gulati  
Harvard Business School  
Harvard University  
Morgan Hall, Soldiers Field  
Boston, MA 02163  
Ph: 617.495.6327 Fax: 617.496.6568  
*rgulati@hbs.edu*

**Forthcoming in *Palgrave Encyclopedia of Strategic Management*, D. Teece and M. Augier (Eds.).**

## INTRODUCTION

During the last three decades, research in sociology, organizational theory, and strategy has produced a rich set of insights regarding how networks of interorganizational relationships shape the behaviors and outcomes of corporate actors. This research has provided compelling evidence that the concrete patterns of relationships in which organizations are embedded carry meaningful implications for firms' performance in their exchange ties (Gulati and Sytch 2007) and acquisitions (Zaheer et al. 2010); revenues (Baum et al. 2000; Shipilov and Li 2008); market share (Zaheer and Bell 2005) and market entry (Jensen 2008); IPO success (Gulati and Higgins 2003; Stuart et al. 1999); innovation (Ahuja 2000; Schilling and Phelps 2007); growth (Galaskiewicz et al. 2006; Powell et al. 1996; Stuart 2000); power (Fernandez and Gould 1994); acquisition of competitive capabilities (McEvily and Marcus 2005); alliance formation patterns (Gulati and Gargiulo 1999; Gulati and Westphal 1999); and for firms' propensities to adopt new administrative and governance practices (Davis and Greve 1997; Westphal et al. 1997).

The application of the relational, socio-structural network lens to studying organizations and markets is driven by three unique insights. First, networks of interorganizational relationships are systematically patterned and concentrated. This is in part due to the asymmetric distribution of private information about market opportunities, reliability and competence of potential partners, as well as networks' capacity to channel this information (Gulati 1995b; Gulati and Gargiulo 1999; Gulati et al. 2011b). In addition, inertial tendencies and partnering momentum with familiar partners may extend beyond purely economic considerations (Li and Rowley 2002; Sorenson and Waguespack 2006). Also, the formation of interorganizational relationships is often driven by extra-economic factors, such social groupings of organizational agents (Kim and Higgins 2007), the distribution of structural opportunities in the network (Sytch et al. 2011), and patterns of social stratification in markets (Podolny 1994).

Second, at the level of a given relationship, interorganizational ties are frequently governed by a combination of social and economic logics (Uzzi 1997). In addition to relying on economic incentives and contracts, many relationships are governed by key elements of social control such as trust (Gulati 1995a; Uzzi 1997); mutual commitment, which extends beyond the implications of economic hostage provisions (Gulati and Sytch 2007); reciprocity and close co-identification among exchange partners (Larson 1992).

Third, the application of the network lens to studying organizations and markets enhances the explanatory power of a range of organizational behaviors and outcomes. Indeed, it offers a unique analytical approach that intermediates the oversocialized and undersocialized accounts of action (Granovetter 1985). In contrast to either viewing organizations as atomistic actors or predetermining organizational behaviors and outcomes based on the characteristics of the social context, the socio-structural perspective allows for the role of social context, which is measured and customized. Specifically, the role social context plays in shaping organizational action and outcomes is tied to the exact patterns of social relationships in which organizations are embedded.

Studies in the socio-structural network tradition have examined numerous empirical contexts, including strategic interorganizational partnerships (Gulati 1995b; Gulati et al. 2011b; Sytch et al. 2011); investment syndicate ties (Baum et al. 2005; Podolny 1993; Shipilov 2006); board interlocks (Davis 1991; Mizruchi 1992); and corporate litigation (Sytch 2011). Broadly speaking, the recognition of the embeddedness of corporate actors in webs of interorganizational relationships has produced two interrelated streams of research. One stream has focused on examining the antecedents of social structures, investigating how dyadic relationships develop and aggregate to shape the global properties of network architectures. The second stream of research has examined how a focal organization's position in networks of interorganizational relationships can shape organizational outcomes. More recently, this research has extended to consider how variations in the properties of global network structures –

captured at the level of an entire industry or an organizational field – can affect collective outcomes across different interorganizational contexts. Below we summarize some of the key insights from each stream of work.

## WHERE DO NETWORKS COME FROM?

Much of the research on the formation of networks has focused on the antecedents of dyadic interorganizational ties as the central building blocks of social structures. Extant work has outlined several key mechanisms underlying the formation of interorganizational ties. Specifically, studies have offered compelling evidence that firms form dyadic relationships to *combine complementary resources* (Hage and Aiken 1967; Pfeffer and Nowak 1976; Wang and Zajac 2007). Recent research on network resources has offered the motivations for this phenomenon, explaining the importance of organizational reach to financial, technological, and human capital that may otherwise be unavailable within a particular organization's boundaries (Gulati 2007; Gulati et al. 2011a; Lavie 2006). Several studies have also revealed strong evidence toward patterns of *homophilous attachment* in networks, where organizations link with alters that are similar on key discernable attributes such as status (Chung et al. 2000; Podolny 1994) or partner profiles (Powell et al. 2005). Furthermore, *spatial proximity* among organizations has been associated with the increased probability of *chance encounters* among organizational actors and reduced costs of maintaining the emerging connections, thus leading to the higher likelihood of a dyadic interorganizational tie (Powell et al. 2005; Sorenson and Stuart 2001).

Networks also can reproduce through a set of endogenous dynamics, wherein organizations tend to partner with prior partners and partners of current partners (Gulati 1995b; Gulati and Gargiulo 1999). The mechanisms of *familiarity* and *partner referral* that likely underlie these network formation tendencies can help ensure the formation of trust between firms (Gulati and Sytch 2008) and access to private information on network partners, both of which are absolutely critical in partner search and selection. Because social actors are unwilling to accumulate social debt, evidence of reciprocity in forming dyads also exists, whereby invitations to cooperate tend to be reciprocated over time (Lincoln et al. 1992; Ozdemir 2007). Interestingly, many of the mechanisms described above predict not just the formation but also the dissolution of dyadic relationships. Specifically, research finds that the absence of competitive exchange options (Baker et al. 1998); growing familiarity between partners (Levinthal and Fichman 1988); the compatibility of the partners' resources and the presence of prior ties between them (Greve et al. 2010); and the availability of common third-party ties (Polidoro et al. 2010) decrease the likelihood of the relationship dissolution.<sup>1</sup> Moving away from the standalone analysis of collaborative network structures, studies have shown that the formation of collaborative and conflictual relationships among organization is likely to be intricately interrelated, thus prompting the study of dual social structures (Sytch 2011).

More recently, research has also taken steps to link dyad-formation behaviors to the emerging properties of the global network context. The theoretical inspiration for this research dates to earlier work by Coleman (1990) and Giddens (1984), where micro-level behaviors are conceptualized as both shaping and being influenced by the emerging properties of the social context. Specifically, recognizing the strong socio-structural pressures to tie with prior partners and partners' partners (which tend to connect firms into densely connected network communities), research has examined the antecedents of bridging ties that connect firms from different network communities (Baum

---

<sup>1</sup> Greve et al. (2010) documented that the presence of common third-party ties can actually increase the likelihood of relationship dissolution. This effect is largely attributed to the effect of joint withdrawals, where many firms leave at the same time. Many of the triads in their setting of the global liner shipping industry were associated with multilateral alliances.

et al. 2003; Rosenkopf and Padula 2008; Sytch et al. 2011).<sup>2</sup> Bridging relationships have not only been connected to a unique set of organizational outcomes (Baum et al. 2010; McEvily et al. 2011), but also have been credited with keeping large social systems connected and coherent (Baum et al. 2003; Gulati et al. 2011b). Some work, for example, has examined firms' entering into bridging ties as a function of the *incentives of value appropriation and distribution* from bridging and the *opportunity space* for bridging reflected in the number of available bridging contacts, which is afforded by the dynamically evolving global network structure (Sytch et al. 2011).

In understanding this linkage between the formation of dyads and the emergence of global network typologies, small-world characteristics have received particularly pronounced scholarly attention (Baum et al. 2003; Gulati et al. 2011b). Small worlds are a specific configuration of global-level network architecture that combines high levels of clustering with low levels of path length. Such networks thus differ structurally from some of the main stylized network forms such as regular or random networks (Watts and Strogatz 1998) and have been found to describe a wide range of organizational settings (Davis et al. 2003; Kogut and Walker 2001; Uzzi and Spiro 2005). Specifically, some work has documented that the emergence of small worlds was strongly driven by bridging ties formed as a result of (a) insurgent partnering by firms in more peripheral network positions in an attempt to improve their network position and (b) control partnering by more prominent firms that aimed to preserve their dominant position (Baum et al. 2003). In the context of the global computer industry, other studies have found that small worlds can follow an inverted U-shape evolutionary trajectory (Gulati et al. 2011b). This study documented that the initially sparse and fragmented structure of the global network induced firms to actively pursue bridging relationships, which tied network communities into a small-world system. The excessive formation of bridging ties among network communities, however, eliminated the very diversity these ties were designed to harness. The subsequent decline in the formation of bridging ties led to a fragmentation of the network and a declining small-world property of average path length (Gulati et al. 2011b). An important dimension of the work on the evolutionary dynamics of network structures considers how these networks can co-evolve with the technological landscape of the industry and how they are influenced by critical exogenous events (Gulati et al. 2011b; Madhavan et al. 1998; Rosenkopf and Tushman 1998).

## **IMPLICATIONS OF NETWORK STRUCTURES FOR INDIVIDUAL AND COLLECTIVE OUTCOMES**

In examining markets as networks and firms' embeddedness in these networks, scholars have considered a series of mechanisms by which social structures can affect organizational outcomes. These mechanisms relate to the concrete patterns of relationships in which organizations are embedded and drive organizational outcomes by determining (a) access to private information, knowledge, and other resources; (b) levels of dependence and power among organizations by virtue of differentiated control over and availability of these resources; and (c) patterns of market stratification.

### *Access to Private Information, Knowledge, and Other Resources*

One of the central mechanisms by which interorganizational networks are believed to shape organizational outcomes is *access to private information, knowledge, and other resources*, which are otherwise unavailable outside rich and deeply embedded network ties (Gulati 1995a; Owen-Smith and Powell 2004; Uzzi 1997). These interorganizational ties are often relationally embedded in that they feature high levels of trust, joint-action, and fine-grained information transfer (Uzzi 1997). Network connections thus open unique opportunities for learning from network alters and

---

<sup>2</sup> Network communities refer to dense structural groups or clusters, where firms are connected more strongly to one another than to the other firms in the network.

transferring tacit knowledge (Beckman and Haunschild 2002; Haunschild and Beckman 1998). Furthermore, network structures become informative in understanding organizations' horizons of observability and reference groups, thus adding significant explanatory power to the *dynamics of imitation* (Greve 2009; Haunschild 1993). As a result, several studies have linked network structures to firm's adopting various innovations and to the diffusion of knowledge and innovations through entire social systems (Davis and Greve 1997; Greve 2009).

The focus on access to knowledge and information has spurred research on how global-level network characteristics can determine individual and collective outcomes (Uzzi and Spiro 2005). For example, a study of 11 different industry-level alliance networks documented that firms display higher levels of innovativeness when embedded in partnership networks that most closely approximate small-world structures (Schilling and Phelps 2007). While the dense clustering in networks preserves the requisite variety of information, short path distances enable firms to quickly diffuse and disseminate that information, thus jointly promoting innovativeness of resident firms. Other work has systematically investigated what features of industry-wide network structures promote and hinder diffusion of knowledge (Tatarynowicz et al. 2011).

#### *Dependence and Power*

A deeper understanding of network topologies can also reveal the implications of *dependence and power* for economic exchange and organizational outcomes (Bae and Gargiulo 2004; Baker 1990; Casciaro and Piskorski 2005; Ryall and Sorenson 2007). Understanding the network structure of the market can offer deep insights into the availability of alternative exchange partners for the focal organization. Coupled with the criticality of the resources a given partner provides, the availability of alternative exchange partners can shape the focal organization's dependence on that partner. The partner's power over the focal organization can subsequently be expressed as the inverse function of that dependence (Emerson 1962). If the levels of dependence in a dyadic relationship are asymmetrical, the performance benefits to the stronger, dependence-advantaged firm are expected to come at the expense of the weaker, dependence-disadvantaged partner (Aldrich 1979; Kim et al. 2004; Pfeffer and Salancik 1978). Evidence has suggested, however, that excessive value appropriation by the more powerful party can limit value creation in the exchange tie, potentially leaving the more powerful party with a net loss (Gulati and Sytch 2007). More importantly, while the relationship between dependence asymmetry in a relationship and organizational outcomes is indeed driven by the logic of power, the relationship between mutual dependence (the combined level of partners' dependence in a dyad) and organizational outcomes is more likely to be described by the logic of relational embeddedness. Higher levels of mutual dependence translate into higher levels of joint action and quality of information exchange, subsequently boosting value creation in the exchange (Gulati and Sytch 2007).

Research on the implications of *brokerage* – network positions that entail spanning contacts that are otherwise unconnected – effectively interpolates between the mechanisms of access to private information and power (Burt 1992). Building on the argument that a brokerage position provides access to non-redundant private information and the benefits of controlling it (for a lively debate of this issue, see Burt 2008; Reagans and Zuckerman 2008), multiple empirical studies have documented the positive implications of holding this position (McEvily and Zaheer 1999; Zaheer and Bell 2005; Zaheer and Soda 2009). Actors in the brokerage position, however, effectively forgo the benefits of a strong reputational lock-in and social sanctions, which tend to be associated with dense network structures. As a result, some empirical findings have pointed to the possibility that the effect of brokerage may not be universal, but instead contingent on the broader characteristics of the industrial context. Specifically, brokerage is likely to exert a positive effect on organizational performance (Rowley et al. 2000) and be pursued by organizations (Gulati et al. 2011b; Tatarynowicz et al. 2011) in those interorganizational settings, where the benefits of access to novel knowledge and information outweigh the costs and risks of reaching into unfamiliar network regions.

### *Market Stratification*

Dissecting markets as network structures can also provide important insights into the dynamics and implications of social stratification (Podolny 2008). In uncertain situations, where the quality of exchange partners is difficult to assess, the endorsement by high-status actors can serve as a critical signal of quality. This, in turn, can be associated with important organizational outcomes, such as revenues, IPO success, and market entry (Jensen 2003; Podolny 1993; Stuart et al. 1999).

## References

- Ahuja, G. 2000. Collaboration networks, structural holes, and innovation: A longitudinal study. *Admi. Sci. Quart.* **45**(3) 425-455.
- Aldrich, H.E. 1979. *Organizations and environments*. Prentice Hall, Engelwood Cliffs, N.J.
- Bae, J., M. Gargiulo. 2004. Partner substitutability, alliance network structure, and firm profitability in the telecommunications industry. *Acad. of Management J.* **47**(6) 843-859.
- Baker, W.E. 1990. Market networks and corporate behavior. *Amer. J. of Sociology* **96**(3) 589-625.
- Baker, W.E., R.R. Faulkner, G. Fisher. 1998. Hazards of the market: The continuity and dissolution of interorganizational market relationships. *American Sociological Review* **63**(2) 147-177.
- Baum, J., B. McEvily, T. Rowley. 2010. Better with age? Tie longevity and the performance implications of bridging and closure. *Org. Sci.* **In press** (Published online before print August 20, 2010, DOI:10.1287/orsc.1100.0572.) 1-17.
- Baum, J.A.C., T. Calabrese, B.S. Silverman. 2000. Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology. *Strat. Management J.* **21**(3) 267-294.
- Baum, J.A.C., T.J. Rowley, A.V. Shipilov, Y.-T. Chuang. 2005. Dancing with strangers: Aspiration performance and the search for underwriting syndicate partners. *Admi. Sci. Quart.* **50**(4) 536-575.
- Baum, J.A.C., A.V. Shipilov, T. Rowley. 2003. Where do small worlds come from? *Industrial and Corporate Change* **12**(4) 697-725.
- Beckman, C.M., P.R. Haunschild. 2002. Network learning: The effects of partners' heterogeneity of experience on corporate acquisitions. *Admi. Sci. Quart.* **47**(1) 92-124.
- Burt, R.S. 1992. *Structural holes: The social structure of competition*. Harvard University Press, Cambridge, MA.
- Burt, R.S. 2008. Information and structural holes: Comment on Reagans and Zuckerman. *Industrial and Corporate Change*.
- Casciaro, T., M.J. Piskorski. 2005. Power imbalance, mutual dependence, and constraint absorption: Resource dependence theory revisited. *Admi. Sci. Quart.* **50** 167-199.
- Chung, S., H. Singh, K. Lee. 2000. Complementarity, status similarity and social capital as drivers of alliance formation. *Strat. Management J.* **21**(1) 1-22.
- Coleman, J.S. 1990. *Foundations of Social Theory*. Harvard University Press, Cambridge, MA.
- Davis, G.F. 1991. Agents without principles? The spread of the poison pill through the intercorporate network. *Admi. Sci. Quart.* **36**(4) 583-613.
- Davis, G.F., H.R. Greve. 1997. Corporate elite networks and governance changes in the 1980s. *Amer. J. of Sociology* **103** 1-37.
- Davis, G.F., M. Yoo, W.E. Baker. 2003. The small world of the American corporate elite, 1982-2001. *Strategic Organization* **1**(3) 301-326.
- Emerson, R.M. 1962. Power-dependence relations. *American Sociological Review*(27) 31-41.
- Fernandez, R.M., R.V. Gould. 1994. A Dilemma of state power: Brokerage and influence in the national health policy domain. *Amer. J. of Sociology* **99**(6) 1455-1491.
- Galaskiewicz, J., W. Bielefeld, M. Dowell. 2006. Networks and organizational growth: A study of community based nonprofits. *Admi. Sci. Quart.* **51** 337-380.
- Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structure*. University of California Press, Berkeley, CA.
- Granovetter, M. 1985. Economic action and social structure: The problem of embeddedness. *Amer. J. of Sociology* **91**(3) 481-510.
- Greve, H.R. 2009. Bigger and safer: The diffusion of competitive advantage. *Strat. Management J.* **30** 1-23.
- Greve, H.R., J.A.C. Baum, H. Mitsuhashi, T. Rowley. 2010. Built to last but falling apart: Cohesion, friction and withdrawal from interfirm alliances. *Acad. of Management J.* **53**(2).
- Gulati, R. 1995a. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Acad. of Management J.* **38**(1) 85-112.

- Gulati, R. 1995b. Social structure and alliance formation patterns: A longitudinal analysis. *Admi. Sci. Quart.* **40**(4) 619-652.
- Gulati, R. 2007. *Managing network resources: Alliances, affiliations, and other relational assets*. Oxford University Press, Oxford.
- Gulati, R., M. Gargiulo. 1999. Where do interorganizational networks come from? *Amer. J. of Sociology* **104**(5) 1439-1493.
- Gulati, R., M.C. Higgins. 2003. Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strat. Management J.* **24**(2) 127-144.
- Gulati, R., D. Lavie, R. Madhavan. 2011a. Unpacking the performance effects of network resources: Reach, richness, and receptivity. *Working Paper*.
- Gulati, R., M. Sytch. 2007. Dependence asymmetry and joint dependence in interorganizational relationships: Effects of embeddedness on exchange performance. *Admi. Sci. Quart.* **52** 32-69.
- Gulati, R., M. Sytch. 2008. Does familiarity breed trust? Revisiting the antecedents of trust. *Managerial and Decision Economics* **29** 165-190.
- Gulati, R., M. Sytch, A. Tatarynowicz. 2011b. The rise and fall of small worlds: Exploring the evolutionary dynamics of social structure. *Org. Sci.* (published online before print December 29, 2010, DOI:10.1287/orsc.1100.0592.).
- Gulati, R., J.D. Westphal. 1999. Cooperative or controlling? The effects of CEO-board relations and the content of interlocks on the formation of joint ventures. *Admi. Sci. Quart.* **44**(3) 34.
- Hage, J., M. Aiken. 1967. Program change and organizational properties: A comparative analysis. *Amer. J. of Sociology* **72** 503-519.
- Haunschild, P.R. 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Admi. Sci. Quart.* **38**(4) 564-592.
- Haunschild, P.R., C. Beckman. 1998. When do interlocks matter?: Alternate sources of information and interlock influence. *Admi. Sci. Quart.* **43**(4) 815-844.
- Jensen, M.C. 2003. The role of network resources in market entry: Commerical banks' entry into investment banking, 1991-1997. *Admi. Sci. Quart.* **48**(3) 466-497.
- Jensen, M.C. 2008. The use of relational discrimination to manage market entry: When do social status and structural holes work against you? . *Acad. of Management J.* **51** 723-743.
- Kim, H., R.E. Hoskisson, W.P. Wan. 2004. Power dependence, diversification strategy, and performance in keiretsu member firms. *Strat. Management J.* **25**(7) 613-636.
- Kim, J.W., M.C. Higgins. 2007. Where do alliances come from? The effects of upper echelons on alliance formation. *Research Policy* **36**(4) 499-514.
- Kogut, B., G. Walker. 2001. The Small World of Germany and the Durability of National Networks. *American Sociological Review* **66**(3) 317-335.
- Larson, A. 1992. Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. *Admi. Sci. Quart.* **37**(1) 76-104.
- Lavie, D. 2006. The competitive advantage of interconnected firms: An extension of the resource-based view. *The Academy of Management Review* **31**(3) 638-658.
- Levinthal, D.A., M. Fichman. 1988. Dynamics of interorganizational attachments: Auditor-client relationships. *Admi. Sci. Quart.* **33**(3) 345-369.
- Li, S.X., T.J. Rowley. 2002. Inertia and evaluation mechanisms in interorganizational partner selection: Syndicate formation among U.S. investment banks. *Acad. of Management J.* **45**(6) 1104-1118.
- Lincoln, J.M., M.L. Gerlach, P. Takahashi. 1992. Keiretsu networks in the Japanese economy: A dyad analysis of intercorporate ties *American Sociological Review* **57**(5) 561-585.
- Madhavan, R., B.R. Koka, J.E. Prescott. 1998. Networks in transition: How industry events (re)shape interfirm relationships. *Strat. Management J.* **19** 439-459.
- McEvily, B., J. Jaffee, M. Tortoriello. 2011. Not all bridging ties are equal: Network imprinting and firm growth in the Nashville legal industry 1933-1978. *Org. Sci.* **Forthcoming**.
- McEvily, B., A. Marcus. 2005. Embedded ties and the acquisition of competitive capabilities. *Strat. Management J.* **26** 1033-1055.

- McEvily, B., A. Zaheer. 1999. Bridging ties: A source of firm heterogeneity in competitive capabilities. *Strat. Management J.* **20**(12) 1133-1156.
- Mizruchi, M.S. 1992. *The Structure of Corporate Political Action: Interfirm Relations and Their Consequences*. Harvard University Press, Cambridge, MA.
- Owen-Smith, J., W.W. Powell. 2004. Knowledge networks in the Boston biotechnology community. *Org. Sci.* **15**(1) 5-21.
- Ozdemir, S. 2007. Social balance sheet, social capital and reciprocation in the US VC Industry. *Paper Presented at the Academy of Management Conference, Philadelphia, PA*.
- Pfeffer, J., P. Nowak. 1976. Joint-ventures and interorganizational interdependence. *Admi. Sci. Quart.* **21**(3) 398-418.
- Pfeffer, J., G. Salancik. 1978. *The External Control of Organizations*. Harper and Row, New York.
- Podolny, J. 1994. Market uncertainty and the social character of economic exchange. *Admi. Sci. Quart.* **39**(3) 458-483.
- Podolny, J.M. 1993. A status-based model of market competition. *Amer. J. of Sociology* **98**(4) 829-872.
- Podolny, J.M. 2008. *Status signals: A sociological study of market competition*. Princeton University Press, Princeton, NJ.
- Polidoro, F., G. Ahuja, W. Mitchell. 2010. When the social structure overshadows competing incentives: The effects of network embeddedness on joint venture dissolution. *Acad. of Management J.* **Forthcoming**.
- Powell, W.W., K.W. Koput, L. Smith-Doerr. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Admi. Sci. Quart.* **41**(1) 116-145.
- Powell, W.W., D.R. White, K.W. Koput, J. Owen-Smith. 2005. Network dynamics and field evolution: The growth of interorganizational collaboration in the life sciences. *Amer. J. of Sociology* **110**(4) 1132-1205.
- Reagans, R., E. Zuckerman. 2008. Why knowledge does not equal power: the network redundancy trade-off. *Industrial and Corporate Change* **17**(5) 904-944.
- Rosenkopf, L., G. Padula. 2008. Investigating the microstructure of network evolution: Alliance formation in the mobile communications industry. *Org. Sci.* **19**(5) 669-687.
- Rosenkopf, L., M. Tushman. 1998. The coevolution of community networks and technology: Lessons from the flight simulation industry. *Industrial and Corporate Change* 311-346.
- Rowley, T., D. Behrens, D. Krackhardt. 2000. Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strat. Management J.* **21**(3) 369-386.
- Ryall, M.D., O. Sorenson. 2007. Brokers and competitive advantage. *Management Science* **53**(4) 566-583.
- Schilling, M., C.C. Phelps. 2007. Interfirm collaboration networks: The impact of large-scale network structure on firm innovation. *Management Science* **53**(7) 1113-1126.
- Shipilov, A. 2006. Network strategies and performance of Canadian investment banks. *Acad. of Management J.* **49** 590-604.
- Shipilov, A.V., S.X. Li. 2008. To have a cake and eat it too? Structural holes' influence on status accumulation and market performance in collaborative networks. *Admi. Sci. Quart.* **53**(1) 73-108.
- Sorenson, O., T.E. Stuart. 2001. Syndication networks and the spatial distribution of venture capital investments. *Amer. J. of Sociology* **106**(6) 1546-1588.
- Sorenson, O., D.M. Waguespack. 2006. Social structure and exchange: Self-confirming dynamics in Hollywood. *Admi. Sci. Quart.* **51**(4) 560-589.
- Stuart, T.E. 2000. Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry. *Strat. Management J.* **21**(8) 791-811.
- Stuart, T.E., H. Hoang, R.C. Hybels. 1999. Interorganizational endorsements and the performance of entrepreneurial ventures. *Admi. Sci. Quart.* **44**(2) 35.
- Sytch, M. 2011. Where Do Conflictual Ties Come From? Exploring the Role of Spatial Distribution of Principals and Mediating Agents. *Best Paper Proceedings of the Academy of Management Annual Conference*(Montreal, Canada.).
- Sytch, M., A. Tatarynowicz, R. Gulati. 2011. Toward a theory of extended contact: Incentives and opportunities for bridging across network communities. *Org. Sci.* **Forthcoming**.
- Tatarynowicz, A., R. Gulati, M. Sytch. 2011. Individual Behaviors and Collective Outcomes: Capturing the Structural and Functional Variety of Collaborative Networks across Industries. *Working Paper*.

- Uzzi, B. 1997. Social structure and competition in interfirm networks: The paradox of embeddedness. *Admi. Sci. Quart.* **42** 35-67.
- Uzzi, B., J. Spiro. 2005. Collaboration and creativity: The small world problem. *Amer. J. of Sociology* **111**(2) 447-504.
- Wang, L., E.J. Zajac. 2007. Alliance or acquisition? A dyadic perspective on interfirm resource combinations. *Strat. Management J.* **28**(13) 1291-1317.
- Watts, D.J., S.H. Strogatz. 1998. Collective dynamics of small-world networks. *Nature* **393** 440-442.
- Westphal, J.D., R. Gulati, S.M. Shortell. 1997. Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. *Admi. Sci. Quart.* **42**(2) 366-394.
- Zaheer, A., G.G. Bell. 2005. Benefiting from network position: Firm capabilities, structural holes, and performance. *Strat. Management J.* **26** 809-825.
- Zaheer, A., E. Hernandez, S. Banerjee. 2010. Prior alliances with targets and acquisition performance in knowledge-intensive industries. *Org. Sci.* **Forthcoming**.
- Zaheer, A., G. Soda. 2009. Network evolution: The origins of structural holes. *Admi. Sci. Quart.* **54** 1-31.