

## Chapter Two

# Intraorganizational Networks

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The adage 'its not what you know but who you know' has taken on an unfortunate ubiquity humbling the terms "network" and "networking" to broadly used buzzwords. References to networking activities abound in business periodicals, corporate newsletters and the like. We witness networking groups and mentor programs with networking intentions, the "young professional's networking group" convening interested residents of a local condominium building, and such popular press books as *Savvy Networking* (RoAne, 1993) or *Power Schmoozing* (Mandell, 1996). While there is great virtue in the message that individuals and organizations ought to be cognizant of the role networks play in organizational life, these well meaning but often cursory efforts to encourage proactive use of one's social network belie the richness of available theory and research about those networks.

We do not quibble too much with the popular adage: networks do matter and this, in fact, may be the only claim that would not engender academic debate. Empirical research accumulated over the last two decades demonstrates that social networks are associated with outcomes relevant to individuals and organizations, including what O'Reilly (1991) identifies as issues central to organization behavior studies: motivation, leadership, job design, turnover and absenteeism, and work attitudes (Krackhardt and Brass, 1994). Illustrations of these network effects include: access to labor market information (Granovetter, 1973), deal-making (Mizruchi and Stearns, 2000), career advancement (Lin 2001; Podolny and Baron, 1997), identity formation (Ibarra, 1992), trust building and cooperation (Burt, 2000; Labianca et al., 1998; Coleman 1988); commitment and retention (Krackhardt and Porter, 1986), opinions about organizations (Galaskiewicz and Burt, 1991), group and team performance (Ancona and Caldwell, 1992; Rosenthal, 1996), performance evaluations and compensation (Burt, 2000; Meyerson, 1994), and behavior at the top of the firm such as use of poison pills (Davis and Greve, 1997), to name merely a few.

This chapter is organized around the intuitions social network theory brings to bear on intraorganizational phenomenon. Work in social network theory is characterized by its emphasis on structural form (patterns and positions) or relational content

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(qualities of network ties), as well as by its level of analysis. These broad distinctions form the foundation of the framework for our review of the central questions addressed in this field. Key elements of central studies we highlight are summarized in Table 2.1.

## Literature Review

### STRUCTURE AND RELATIONS

A common sense explanation for why persons behave the way they do is to individualize. This is akin to what social psychologists refer to as the fundamental attribution error where we are likely to explain behavior in others by personality attributes rather than by situational constraints. A first step in correcting the bias is to consider people in terms of their relationships with other people. Social network theory does this by attributing behavior to the social context in which an actor is embedded. Some take a *structural* approach and focus on the pattern of relations in a social network. In this tradition, behavior, attitudes, or beliefs (outcomes) are attributed to network form: the position or location of an actor in its social network. There are essentially two kinds of mechanisms rooted in the form of the network: reach and demand.

The earliest studies focused on demand: actors differentiated by status orderings such as prestige. It was obvious – people are concerned about who has more, who is higher up. We refer to this as a demand mechanism because the differentiation among social actors is attributed to the demand on those actors – popularity – such as how many people cite them as friends. Network studies refer to this as the in-degree – the number or volume of the ties *to* a person. Early on in this research tradition, social demand was linked to esteem (Moreno, 1960) and innovativeness (Rogers, [1962] 1995). Within community structures and organizations demand is an index of power and influence (Brass, 1985, 1992; Hunter, 1953; Laumann and Pappi, 1976).

Perhaps the most elegant theoretical statement of these models is Coleman's (1990) model of prominence in exchange systems. Coleman disaggregates relationships into a definition of intertwined interest and control, where the relationship from one person to another increases with the extent to which the first person is interested in what the second person has. Once the demand structure is known in a social system, the relational structure can be imputed and an equilibrium in the system defined; see for example, Taylor and Coleman (1979). Podolny's (1993, 2000) work on status is a recent renaissance of demand models.

Demand models are distinguished from reach models by their emphasis on the actor as the object of relations; reach models are about social access. Reach models are concerned with how many people are you connected to or what sort of resources you access by virtue of those connections. Foundations in this area include Granovetter's (1973) work on weak ties; Freeman's (1977) work on betweenness centrality, and Burt's (1980 and 1992) work on autonomy and structural holes. Granovetter looks at how weak relationships access novel information (in job searches) or access external constituents (in the case of community organization). Ties can vary in their strength. Strong ties are those to people we feel closest to, see most frequently, or have known the longest. Strong ties are typically embedded in dense, overlapping networks, such that

**Table 2.1** Selected studies of intraorganizational networks

<i>Reference</i>	<i>Key concepts</i>	<i>Key variables</i>	<i>Key findings or predictions</i>	<i>Key contribution</i>	<i>Sample</i>
Granovetter, 1973	Value of weak ties	Tie strength	Weak ties are entry to disparate social structures and therefore provide access to novel information	Illustrates how relational closeness or distance affects information flow in egocentric networks	100 interviews and 182 mail surveys of professional, technical, and managerial workers in Newton, MA
Freeman, 1977	Centrality	Betweenness	Centrality is associated with better access to resources, information	Illustrates how network position affects	
Burt, 1992	Structural holes	Network constraint	Low constraint networks (many holes) are a competitive advantage	Reveals how structure and network position affect outcomes such as speed of promotion and profit margins	A stratified random probability sample (N = 284) of the top 3305 managers in a large computer manufacturer
Podolny and Baron, 1997	Relational content	Task-advice network Strategic information network Buy-in network Mentor relation Social support network	Social capital value of structural hole networks contingent on type of network tie	For buy-in networks, closeness has a positive effect on job mobility	236 employees in a high-technology firm
Mizruchi and Stearns, 2000	Uncertainty and use of social networks Relational content Network structure	Density Hierarchy Risk Complexity	Low density deal approval networks associated with likelihood of deal closing	Networks effects predictably contingent on characteristics of transaction	91 bankers in the global banking unit of a large bank
Coleman, 1988	Social capital as cohesion and network closure	Closure	Drop out rates inversely related to social capital of student	Integration and trust emerging from network closure	Random sample of 4000 public school students
Burt, 2000	Social capital as brokerage	Autonomy	Higher rates of return (bonus compensation, job mobility) to structural hole networks	Coordination and control emerging from network brokerage	186 senior bankers in a large financial institution

weak ties more so than strong ties are portals to information or social worlds that are not already reached by one's closest friends.

Centrality refers to the extent to which an actor in the network is involved in relationships in a network. The most central person in a network is the person on the shortest path between all pairs of other positions in the network, the person the fewest steps away from reaching all persons in a network. Centrality is a mechanism for accessing resources insofar as the actor located at the crossroads of others in a network is positioned to disproportionately (and most quickly) amass information circulated in the network and to influence the network by gatekeeping the information in the network. Burt's (1992) Structural Hole theory attributes to structural positions of brokerage (ties to disconnected others) better access to information (and control of its dissemination), or control of the form of projects that connect people on other sides of a hole. These resources are linked to outcomes such as job promotions or compensation; for review, see Burt (2000).

The structural form of the network is predictive for both reach and demand models. A second broad approach within social network theory is *relational*, which emphasizes the content of relations as predictive. The emphasis in this stream of research is the content of the ties in a network. To put the distinction between these approaches another way, questions on a sociometric questionnaire that are "name generators" (e.g. List the people to whom you go for advice at work) are about the form of the network. "Name interpreters" in such questionnaires (e.g. How frequently do you talk to each of the people you named (the alters)? or data about those named contacts, such as age, education) are about the content of the network. Content-based studies look at the substance of the ties: friendship, kinship, work, advice, mentorship or at characteristics of alters in the network: demographics such as age, race, gender or education or opinions and beliefs such as commitment to the organization.

## LEVELS OF ANALYSIS

One of the unique and powerful aspects of social network theory is that it is applicable at multiple levels of analysis and aggregation. It can be used to study individuals, dyads, and groups. These three levels of analysis are viable across kinds of actors: individuals, groups, and organizations, such that network theory can study, for example, the ego networks of organizations and even industry classifications (see Gulati, Dialdin, and Wang; and Baker and Faulkner, this volume). The three intraorganizational levels that are our focus are given in the rows in Table 2.2. The columns in Table 2.2 are the two approaches of network studies discussed above.

The simplest level of analysis is the dyad, a pair of actors. In dyadic network studies an important variable is some aspect of the relationship between two social actors, such as the kind of ties (friend, coworker, kin, boss, subordinate) or the strength of relationship. Studies in the alliance literature that focus on the pair of alliance partners are similarly dyadic in nature.

The second level of analysis is the network of an individual actor, referred to as an ego network or egocentric network. Here, the focal variable of study is derived from the complete network of an individual, aggregated across dyads within the network. Size, centrality, density, constraint, and range are examples of network properties used frequently in egocentric network studies.

**Table 2.2** Framework of intraorganizational network studies

	<i>Network form/Structural</i>	<i>Network content/Relational</i>
<b>Dyad</b>	Etiology of relations	Homophily Effects of kinds of relations
<b>Individual or ego network</b>	Behavioral and opinion implications of variation in basic network parameters such as density, hierarchy, size	Network composition
<b>Group</b>	Group attitudes and behaviors	Group composition

The third level of analysis is the group as a whole, an aggregation of egocentric networks: a system of  $N$  actors yields one observed value to analyze. At this most aggregate level of analysis, the focus is on characteristics of a network as a whole, such as density (density is also used in studies of egocentric networks), connectedness, and 'averages' (summary measures to aggregate across egocentric networks, such as average constraint).

## Central Questions

Central questions in intraorganizational network studies fall into one or another of the cells in Table 2.2. The columns of Table 2.2 correspond to the distinction between the structural approach of network form and the relational approach of network content. The rows of Table 2.2 correspond to the three levels of analysis. What follows here is a discussion of the theoretical ideas underlying the main questions in each of those partitions.

### DYAD

Dyad studies that look at the *structure* of relations are concerned with the central question of 'where do ties come from?' The etiology of relationships has been the subject of countless studies across disciplines such as anthropology, sociology, and social psychology. Within social network studies, a prolific line of work on this topic springs from the observation that network ties tend to be between similar kinds of people, that they are homophilous. Homophily refers to the proclivity for relationships, particularly friendships, to form between people with the same gender, race, age, or occupations, for example. There are both structural form and relational content explanations for homophily.

Structural explanations focus on the contextual reasons homophilous ties form. The predominant explanation here is that colocation causes similar people to be in the same place at the same time and exposure to potential network relationships are circumscribed by this artifact. Feld (1981) takes the contextual explanation a step further and suggests that institutional constraints explain colocation. Organization demographics

limit the possibilities for the kinds of networks observed (Blau, 1977). For example, in an organization comprised mostly of men, the networks of women in the organization are likely to be less homophilous than those of the men given the different proportions of the genders in the organization population. Relational content explanations for homophily include interpersonal attraction and comfort (Marsden, 1988). From this perspective, collocation is an outcome of similar or at least like-minded people selecting the same venues.

In addition to research aimed at understanding why certain kinds of ties form, *content-based* approaches to studying network dyads also consider the effects of particular kinds of ties or relational content. Examples of studies that inspect closely the content of dyadic relationships include Douthit's (2000) study of managers in financial organizations that examines whether subordinate performance is linked to qualities of the boss-subordinate relationship, and Reagans' (2000) study of how the social similarity between colleague dyads influences the performance ratings they give one another. Higgins and Kram's (2001) work on mentoring relationships calls for identifying developmental relationships, and joint consideration of tie strength and structure for understanding the role of networks on career advancement and job satisfaction.

## EGOCENTRIC OR INDIVIDUAL NETWORK

*Structural form* approaches at the egocentric network level of analysis focus on whether, and how, characteristics of an individuals' network affect outcomes such as behavior or beliefs. Often cited examples of this stream of theory and research include the network form studies introduced in the first section of this chapter: Granovetter's ([1974] 1995) research on how weak tie networks help individuals find job faster; Burt's (1992 and 1997) studies linking manager autonomy to rate of promotion and compensation.

Granovetter ([1974] 1995) studied people who changed jobs and asked those who found their new job through a network contact how frequently they interacted with that person. Operationalizing the strength of a network tie as the frequency of seeing an alter, Granovetter reports that most – more than 80 percent – of the people who used a contact to find a job saw that person only occasionally. The theoretical implication is that people we see infrequently are an important source of unique information.

Burt's (1992) theory of Structural Holes focuses directly on the structure of networks and maintains that there is a competitive advantage (information and control benefits defined earlier) to networks where the ego is connected to disconnected others. Burt's initial empirical research on individual careers and structural holes was a study of senior managers in a large electronics and computer manufacturer; see Burt (1983) for an early incarnation of this line of work on autonomy and constraint applied at the interorganizational level. Burt's key predictor variable is the measure of network constraint, the extent to which ego is tied to alters who are themselves connected: the greater the constraint, the less the autonomy, the fewer the structural holes. The main finding is that managers are promoted more quickly when they have lower constraint networks, see Burt (2000) for review.

Egocentric studies which emphasize *network content* consider network properties similar to network-form studies, but focus on qualities of the tie rather than on structure alone. There are many studies that look at the same sorts of questions as above in

network form. Podolny and Baron (1997), for example, study of the effects of networks on job mobility in a large high-technology engineering and manufacturing corporation. The authors distinguish among respondent's networks five kinds of ties – task-advice, strategic-information, buy-in, mentor, and social support – and examine whether the density of connections among kinds of alters affects job grade mobility.

Mizruchi and Stearns (2000) distinguish advice networks and approval networks in their study of deal closings in a large bank. The bankers in their study use networks to gather information from others in the organization about the client or about the financial product involved. The bank requires deals be approved by at least three officers, so each banker also needs to invoke their approval network to get the signatures necessary to close a deal. They find that managers instinctually turn to their closest contacts when gathering information (and ties among ones closest contacts are likely to be dense) yet managers with low density approval networks are more successful in closing deals. When due diligence in the approval process involves disparate, disconnected networks, there are “a diversity of views, and potential criticisms, that compel the banker to create a higher-quality product,” which is likely to lead to a closed deal.

In addition to the type of tie, there is broad interest in how networks affect the transmission of beliefs or practices. So-called contagion studies look at how relationships or structures affect the diffusion of knowledge and the adoption of change (Coleman et al., 1966; Burt, 1987). For Coleman et al. (1966), the researchers were interested in predicting the prescribing of a new medication by a network of physicians. They report that the uncertainty about whether or not to prescribe the new medication was addressed via conversations with colleagues. In other words, they report that the mechanism for contagion was direct social influence, that people adopted an innovation if their “friends” had adopted it. Burt (1987), looking at the same data as Coleman et al., considered and found support for an alternate mechanism: individual physicians turn not necessarily to their close colleagues for advice, but look at the behavior of other physicians that are “like themselves” in the sense that they occupy the same position in the social structure. This is akin to mimetic processes in institutional theory.

To see how the contagion process affects organizational behavior, consider Krackhardt and Porter's (1986) study of turnover in an organization. Their analysis reveals that turnover begets turnover in patterned ways. They begin with the concern that when someone similar to you in the advice network leaves, you take that as relevant information and may leave also and their findings are consistent with this: when one person leaves, others who occupy positions in the network similar to the person who left (role equivalent people in the organization) tend to leave shortly thereafter. When someone like you leaves an organization, this is a cue to you that either the organization is inimical to persons like you, or that persons like you can find more rewarding opportunities elsewhere. This results in clusters of kinds of people leaving who are similar to each at work.

The influence of opinions and beliefs of others affects the functioning of an organization as is illustrated by Krackhardt and Porter (1985), this time looking at network content – friendship ties – to predict job satisfaction. Turning attention to the survivors (those remaining in the organization after the wave of departures) and organizational aftershocks, the authors distinguished survivors by whether or not they had friendship networks comprised mostly of people who had left the organization. Somewhat counterintuitively, they find that those who had friendship networks comprised mostly

