

A complex network diagram with numerous nodes of varying sizes and colors (shades of gray) connected by thin lines, forming a dense web of connections. The nodes are scattered across the page, with a higher concentration in the upper right quadrant.

5

Social Network Analysis of Work and Organizations

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Learning Objectives

- Explain when and why weak ties matter, as well as when and why strong ties help when people use social networks to look for jobs
- Examine the differences between Chinese Guanxi interpersonal networks and Western interpersonal networks, and how such differences affect people's use of personal networks to facilitate their job searches
- Discuss the differences between social cohesive networks that exhibit social closure and social competitive networks that exhibit a structural hole
- Demonstrate how social closure and structural holes facilitate career advancement for men and women differently
- Appraise why and how informal networks such as advice-seeking and friendship networks among co-workers may have significant impact on an organization's power structure
- Describe the antecedent factors and consequences of inter-organizational interlocking and strategic alliances
- Assess the differences between forward vertical integration and backward vertical integration, and give examples of each

Work and organizations are essential components to an economy, and the study of these two components is massive, drawing from the diverse disciplines of economics, management sciences, and sociology. In this chapter, we discuss social network studies of labor markets, intra-organizational networks, and inter-organizational relations. In labor market analyses, we focus on person-job matching, describing how social networks help job seekers find desirable jobs and help employers fill vacancies with qualified candidates. In intra-organizational networks, we examine how individuals can use personal networks to advance their careers, as well as how inter-personal networks within organizations affect the power structure of those organizations and their employees' work attitudes. Intra-organizational ties also include relationships between subunits and different departments. We discuss how organizations can achieve synergies by facilitating knowledge transfers between different internal units, which in turn can lead to innovation and high performance.

In inter-organizational relations, we describe two common forms of linkage between organizations: interlocking board directorates and strategic alliances. We investigate the antecedent factors to the formations of inter-organizational relations, as well as their consequences. We also discuss the inter-organizational relations in the context of industries such as within industrial alliances as opposed to cross-industrial partnerships.

5.1 Personal Connections and Labor Market Processes

One of the key processes in the labor market is person-job matching, in which job candidates seek out information and opportunities to obtain desirable positions. It is also a process that employers use to identify and recruit top talent to fill their job openings. In classical labor economics, such a process is automatic—the invisible hand of the market will make adjustments, depending on the demands and supplies of the candidates and the available job vacancies. When candidates outnumber jobs, the pay for a job will go down, causing a decrease of candidates to the point that the market returns to a balance (equilibrium) between supply and demand. Conversely, when jobs outnumber candidates, the pay for a job will go up, which stimulates the supply of candidates to the point that the market reaches equilibrium.

Sociologists heavily criticize such an approach, contending that such automatic person-job matching is an exception, not the rule. Often, jobs are distributed unequally among job seekers, and employers must use different strategies to recruit well-trained candidates. Personal connections and inter-personal networks, such as Guanxi in China, exert significant influences in the process of job searching for job seekers and candidate recruitment for employers. The following sections discuss some of the sociological analyses mentioned earlier. Be prepared. Some findings may be surprising to you!

5.1.1 Social Networks and Job Searches

Perhaps the most important aspect of the labor market process in advanced economies such as the ones in the United States or Europe is information distribution. For employers, information distribution focuses on disseminating their hiring ads to as many job seekers as possible. For job seekers, information distribution focuses on obtaining that pertinent information and submitting their materials to the right targets. Sometimes, job seekers take the initiative to post their ready-for-hire ads on mass media (newspapers, online job banks, or association webpages) or on their personal network sites, such as Facebook or LinkedIn. One key to this information diffusion is the recognition that it is a social process and that it happens in human society where interpersonal networks are dense, rich, dynamic, and versatile. Granted that with cutting edge technology such as the Internet and smartphone apps, information distribution is much faster and widespread than it was in pre-Internet days, the most effective way for job seekers, as well as employers, to distribute information is still simply messages passed through interpersonal networks.

Mark Granovetter (1973) interviewed professional, technical, and managerial (PTM) employees in the Boston area to study how they obtained their current jobs. Although some PTM workers found their jobs through formal means or direct

applications, more than half of PTM workers in Granovetter's sample used personal contacts to obtain their jobs. The use of personal contacts to locate jobs is more pronounced for older workers (>34 years old) and managerial employees than it is for younger workers or professional/technical workers. Those job seekers obtained their jobs through personal contacts by collecting key information passing through their networks, such as the job's qualifications, specific requirements, and the time frame for the opening. And the most surprising finding from Granovetter's research is that although job seekers' strong-tie contacts, such as relatives or close friends are the most motivated to help, it is those weak-tie contacts, acquaintances or workplace friends, who pass along the most useful information for locating the jobs. The reason behind such a phenomenon is dubbed the **strength of weak ties**. The idea behind the strength of weak ties is that one's weak-tie contacts tend to traverse different social circles than one's self. Such diversity in information embedded in one's weak-tie contacts provides the useful nonredundant information job seekers need. In contrast, one's strong-tie contacts are connected with those one already knows, so the information passing along from strong-tie contacts is already known to the job seekers. The utility of that redundant information is then lower than the utility of the nonredundant knowledge.

Let us borrow an artificial example to illustrate the operation of Granovetter's strength of weak ties in job searches. Figure 5.1 (Knoke, 2012a, p. 32) shows an egocentric network (see Chapter 2 for details on egocentric networks) of Ann, who is an engineer but was laid off recently. The solid lines denote strong ties, whereas the dotted lines represent weak ties. In the figure, Ann is strongly tied with Bob, Dee, and Cora and weakly tied to Erin, who in turn is weakly connected with Fran, Greg, and Hank. According to Granovetter, the strong-tied friends such as Bob, Dee, and Cora are

FIGURE 5.1 • Ann's Egocentric Network With a Mixture of Strong Ties (Solid Lines) and Weak Ties (Dotted Lines)



Note: Adapted from p. 32 of Knoke, D. (2012). *Economic networks*. Cambridge, England: Polity.

perhaps motivated to help Ann, but the information they provide to Ann is less useful as they are simply passing along information Ann already has. In contrast, Ann's weak-tied friends, Erin, Fran, Greg, and Hank, are not as motivated to help her, but they possess information from diverse sources and, more importantly, the information is novel, not simply a repetition of something Ann already knows. They may casually pass the nonredundant information along to Ann, who will greatly benefit from such fresh intelligence about engineering openings.

Does the "strength of weak ties" apply to other countries or other occupational groups than managerial, technical, and professional workers? The pictures get more complicated when we change the national and institutional contexts. In Germany, for example, weak ties are helpful to those who have high job prestige and want to gain further career advancement. For job shifters whose initial job prestige is low, strong intimate ties provide the structural leverage needed for career advancement (Wegener, 1991). This is because personal networks are heterogeneous, and those of low social standings have contacts of higher social standing in their networks. Connections within one's network between job seekers and their helpers are normally strong. In contrast, for those whose social standings are already high, finding helpers within their networks whose social standings are even higher is much more difficult. Job seekers must go beyond their networks to identify those helpers; hence, the ties connecting the job seekers with their ultimate helpers are commonly weak. In fact, such results correlate with Granovetter's (1973) study sample comprising only PTM workers. For those whose occupational prestige is lower than the PTM workers, strong ties matter in their job search. Occupational stratification is not the only factor distinguishing between strong ties and weak ties in affording network actors' job search leverage, but also the level of market development and legal/institutional differences also determine the kind of network ties that make a difference in finding a desirable job or improving one's income. In Section 5.1.3, we discuss how networks help job seekers in China (Bian, 1997) and Taiwan (Lin, Fu, & Hsung, 2001), respectively.

Making use of personal networks to gain valuable information is not restricted to job seekers only, though; on the other side of the fence, employers also take advantage of their employees' personal connections to recruit talent to fill their vacancies. The most commonly used method by employers is referral by current employees. In the following sections, we discuss the rationale behind an employer's decision to use referrals as opposed to other recruitment methods, and whether, and to what extent, such a recruitment method pays off.

5.1.2 Networks and Filling Job Vacancies

Employee referral is a recruiting method used by employers, in which employers encourage their current employees to nominate qualified candidates to fill the openings inside their organization. Employee referral is one of the most important recruiting strategies that has been practiced fairly extensively. For example, Harry Holzer (1987) reported that 36% of firms in his study used the method; and using a national representative sample of organizations, scholars reported that more than 51% of jobs are

filled through referral (Kalleberg, Knoke, Marsden, & Spaeth, 1996, p. 138; Marsden & Campbell, 1990). Historically, referral hiring is not even a new phenomenon; studies have stated that it has been prevalent since the 1950s (Myers & Schultz, 1951; Rees & Schultz, 1970).

So what are the benefits of using referral as opposed to news media, online ads, or other recruiting methods? First of all, employee referral is less expensive than other means, such as news media, online postings, or broadcasting through association media. Although all those formal means of disseminating job information cost employers broadcasting fees, employee referral is the least expensive and tends to be a mostly cost-free recruiting method. Even when employers sometimes incur some costs by offering a referral bonus, they recoup the cost and achieve some returns to their investment by reducing recruitment expenses. Second, employee referrals serve as useful screening devices. Employers take advantage of the homophily principle that people prefer to work with others who are similar to themselves to solicit referrals from high-ability employees. The logic is that high-ability employees would recruit other high-ability candidates who are like them to the workplace, enhancing the human resources of the employers. James Montgomery (1991) named such a phenomenon **inbreeding bias**, noting that workers like to recruit others who are like them to work with them. Employers certainly exploit such inbreeding biases to increase the quality of their new hires. Third, employees who venture out to recruit qualified candidates per their employer's requests are putting their reputation on the line, and this is especially true when they receive monetary incentives for recruitment. Such employees are thus motivated to identify and recruit the best candidates as they see fit for the job at hand.

Other than the rationales discussed earlier, employers also use employee referrals to expand the scope of their reach to potential candidates to facilitate information exchange between the candidates and the employers, as well as to ease the fit-in process for new employees (Fernandez, Castilla, & Moore, 2000). For example, in a hypothetical scenario in which an employer asks 10 employees for their referrals to one opening in the organization, each employee then passes along the job information to 10 of their social contacts, and each social contact in turn passes along the information to 10 other social contacts. Thus, three steps out from the employer, 1,000 people (10^3) received the job information. Compared with the formal news media broadcast, these 1,000 job ad recipients may be a small number. Nevertheless, the recipients of the message through referral are much more trained and suitable for the opening than those targeted by the news media because employees would only refer those that they deem to be fitting candidates for the job. Employee referrals also establish an information conduit between employers and job candidates through referring employees. On the one hand, employers receive information about the candidates' hard-to-measure qualities from their referrers (he or she is truly a team player or he or she really likes to work alone). On the other hand, job candidates attain information on not only how to apply to maximize their chances, but also in case they receive the offer, how to deal with the hidden rules and informal office politics of their new workplace so they can

work efficiently while playing it safe. Employee referrals also bring the extra benefit of facilitating new employees' fit-in process through their referrers. This is called the **socialization process** through which the referrers of the new employees socialize them into their new roles, avoiding the initial shock or hard landing that is commonly experienced by new employees.

Do employee referrals pay off? Do employers using employee referrals achieve those alleged economic benefits? First of all, employers using employee referrals make a \$250 investment (in the form of referral bonus), receiving a return of \$416 in reduced recruiting costs, at a rate of return of 67% (Fernandez et al., 2000, p. 1351). So, clearly, employee referrals carry some economic benefits to the employers. But researchers could not find direct empirical support for the inbreeding bias, informational advantages, and socialization benefits (Fernandez et al., 2000). Compared with nonreferrals, referrals do not have better job information, and they have the same propensity to turn over—referrals and nonreferrals have the same level of loyalty to their employers. Yet, between referrals and their referrers, there is strong correlation in terms of their propensities to turn over—when referrers turn over, their referrals are also likely to turn over; when referrers stay put, their referrals are also likely to stay put. The implication is that employers can take advantage of such interdependency between referrers and referrals: By keeping the referrers, they can better retain many of their new hires.

These social network studies of job matching in the labor market presumed an advanced market economy in which government plays a passive and facilitative role in the flow of and matching of jobs and candidates. Such cultural, social, and economic systems are prevalent in North America and Western Europe. With that said, how do social networks influence job matching in different social and institutional systems than those in an advanced economy? The following sections describe the process of job searching in the largest transitional economy in the world, that of China, as well as labor market processing in Taiwan.

5.1.3 Social Networks and Job Placement in Other Countries

The strength of weak ties discovered by Granovetter (1973) in the United States ignited a great deal of interest across the globe. Is the strength of weak ties universally true in other labor markets with different cultural or institutional systems than those present in the United States? In Germany, for example, both strong and weak ties benefit job changers. For those whose initial job status is low in Germany, strong ties can be used to obtain their next place of employment. Nevertheless, for those whose initial job is of high status in Germany, weak ties are the most helpful in landing them an ideal job (Wegener, 1991). In Sweden, young workers use their parents' strong social ties to land their first job, and the benefits of using strong ties are especially large when the unemployment rate is high or when the youths have low education or bad grades (Kramarz & Skans, 2014). Yet, the benefits of strong ties do not stop at the job search stage in Sweden. Those who used the strong ties to obtain their first job stayed in the positions longer and experienced faster wage growth than those who used other means

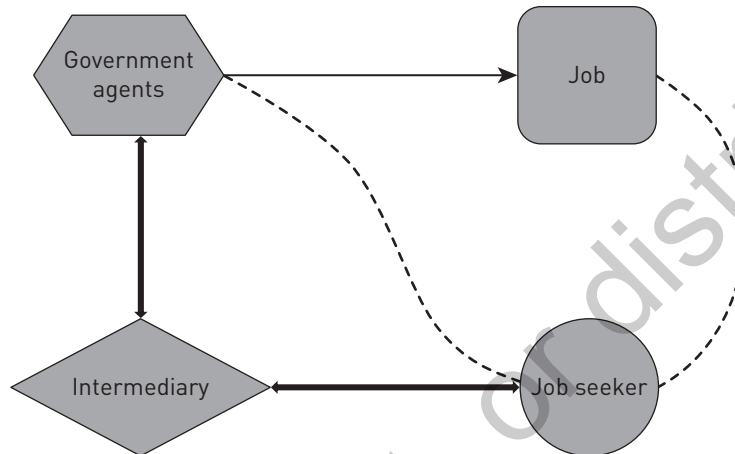
to obtain their first job. But perhaps the country that has the most different cultural traditions, institutional arrangements, and historical backgrounds than those of the United States and Western Europe is China. In the following section, we discuss the job search process and the use of personal networks in China.

Unlike Western-style market economies, the labor market in reform-era China in the 1980s was characterized by strong governmental intervention—the Chinese government controlled the laborers and assigned jobs to them (Bian, 1994). Nevertheless, such models, although rigid and flawless by design, are loosely enforced. Job seekers seek out their network contacts to gain favorable conditions in the jobs they apply for. Government agents who control those job quotas scramble to respond to requests from multiple sources in their networks. The networks between job seekers and their helpers are particularly active in the Chinese labor market, providing a fascinating opportunity for scholars to study how networks afford social actors leverage in an institutional environment that is very different from that of the United States and Western Europe (Bian, 1997).

The Chinese interpersonal network, which is dubbed as the **Guanxi network**, exerts tremendous influence in the job search and labor-matching process. First, compared with Western interpersonal networks, Chinese Guanxi networks entail long-term orientation, greater levels of trust, and higher expectations of mutuality or reciprocity. It is also multidimensional in that it encompasses both emotional expressive contents and purposeful instrumental acts. It turns out that the strong, multidimensional Guanxi network is exactly what job seekers and their helpers need to land the job seekers desirable positions. This is because the governmental agents, who control quotas of job openings, are not supposed to exercise personal favoritism toward applicants. For them to help job seekers, a strong level of trust must be in place to minimize the later risks of governmental scrutiny regarding any malfeasance, regardless of whether there is actual malfeasance. Indeed, approximately 55% of Chinese job seekers either enter high-status work units or obtain high-status jobs by using their helpers via strong Guanxi networks (Bian, 1997).

In addition, a somewhat unique feature of Chinese job seekers is that when they lack personal connections with government agents who control the quota of a position desirable to them, they mobilize their immediate social contacts, who can in turn connect them to the governmental agents or their eventual helpers. In other words, many Chinese job seekers first identify a desirable position, then identify the agents who have control over the position, and finally find some intermediaries who can tie them to the agents. Yet, for such a strategy to work, connections between job seekers and intermediaries, and between intermediaries and agents, must be strong. Figure 5.2 depicts such a scenario, and the dotted lines denote a job seeker's cognitive knowledge of the job, as well as the government agent who controls the job. And the single arrow from the government agent to the job means that the agent has significant influence in deciding whom to hire for the job. And the double-headed lines connecting the government agent and intermediary, and connecting the intermediary and the job seeker, indicate strong personal ties (Guanxi) between the pairs. Figure 5.2 vividly

FIGURE 5.2 • Mobilizing Network Resources to Obtain a Job in Chinese Labor Market



demonstrates the flow of the network mobilization: First, the job seeker obtains information of the desired job and who has the decision-making power. Then the job seeker identifies his or her strong-tied contact, who in turn has strong ties with the agent. Through such a two-step hop, the job seeker eventually is connected with the agent who may be persuaded to favor the job seeker. Such strategic mobilization of one's network contacts to facilitate one's social action is one key process in actualizing one's social capital in the Chinese labor market (Lin, 2001).

A SOCIAL NETWORK IN ACTION: THE DIFFERENCE GENDER PLAYS IN HOW THE NETWORK AFFECTS A JOB SEARCH IN TAIWAN

Certainly a social network plays a role in other labor market processes besides just finding a job or changing jobs. In Taiwan, for example, social networks, measured with a positional generator (see Chapter 2 of this book) to capture the extent to which people have personal contacts in different positions are related to job prestige and income. An interesting social phenomenon in Taiwan is that such network benefits only accrue for men. For women to attain high job prestige and income, human capital (education and training) must provide the avenue. Does the gender-based distinction in pathways to high job status only appear in Taiwan? More research is needed to answer this question.

5.2 Intra-Organizational Networks

Intra-organizational networks are those networks within the boundaries of an organization. They can refer to those networks among co-workers in terms of friendship, advice seeking, and information sharing or to those networks between subunit or departments within an organization for knowledge transfer and innovation. Intra-organizational networks, once formed, have significant consequences to the individuals in the networks, to the subunit or department, and to the entire organization. In the following sections, we discuss those intra-organizational networks and how they affect individual persons, work units in the organization, and eventually the entire organization.

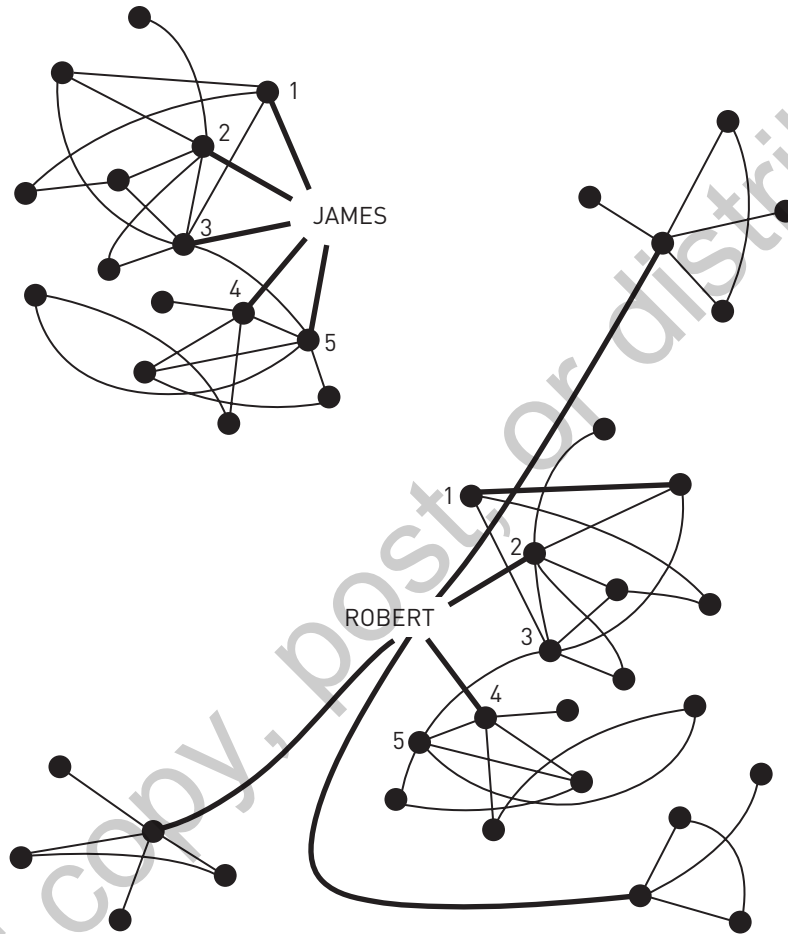
5.2.1 Intra-Organizational Network and Getting Ahead: An Egoistic View

Most people engage in some kind of social activity, such as discussing important matters or socializing (dinner, lunch, drinks, coffee hours, or visitations) with other people they trust. When those social networking activities take place among co-workers in a workplace, some intra-organization networks are formed. Certainly, intra-organizational networks among colleagues can also form out of work-related activities such as authority relations with supervisors and subordinates, political support, or the securing of critical resources. The question remains, though, do those intra-organizational networks help their participants to get ahead in their career advancement within the organization? Well, it depends on how those networks are formed surrounding those given workers. The following sections discuss those network configurations in detail from the vantage point of an individual employee (Burt, 1997). Note that such network study designs are called egocentric network studies, and the questionnaire items used to collect information about workers' egocentric social networks are referred to as name generators. Both egocentric network studies and name generators receive a great deal of coverage in Chapter 2.

Social networks can be facilitative to individual actor's goal attainment by providing them with the resources flowing in those networks. Those resources can be norms that sustain strong trust among network actors (Coleman, 1990), critical information, brokerage control of the information (Burt, 1992; Burt, 1997), as well as influence from agents to advocate for network actors (Bian, 1997; Lin, 2001). Collectively, those resources are called **social capital**. And much like the weak-ties or strong-ties debate in the previous section, researchers disagree on what network configurations are optimal for capitalizing on the social capitals in one's social network. Here, our book draws heavily from Ronald Burt's **structural hole theory** (Burt, 1992; Burt, 1997). But to obtain a more balanced view, readers should consult James Coleman (1990) or Nan Lin (2001) to get a glimpse of other exciting studies on this subject.

In a given network, structural holes are present between nodes or clusters of nodes that are disconnected from each other. Any individual nodes that connect to those nodes that are disconnected between them are occupying the structural hole. And the nodes that occupy many structural holes in their networks are reaping the information

FIGURE 5.3 • Which Ties Matter? Structural Hole or Social Closure



*Thick lines represent a manager's direct contacts.

Note: Adapted from p. 341 of Burt, R. S. (1997). The contingent value of social capital. *Administrative Science Quarterly*, 42(2), 339–365.

and control benefits from being the brokers of those holes. To illustrate, let's use Burt's (1997, p. 341) artificial networks, shown in Figure 5.3 with one node (Robert) full of structural holes and another (James) lacking structural holes.

When comparing James with Robert in Figure 5.3, both have five ties with others, but Robert has a network configuration that is superior to that of James because Robert's ties cross a few structural holes, whereas James's ties are all located within the same cluster. But why is crossing structural holes so important? First, structural holes provide nonredundant informational benefits to the nodes that have access to those holes. With the

same number of network ties, James's information sources are homogenous: All of them come from the same cluster. Robert, in contrast, receives diverse information from sources in three different clusters. Each network tie provides additive information to Robert but redundant information to James. The second benefit of being the broker of the structural holes is the control benefits. For example, Robert can control the information flow among the three disconnected clusters. He can decide when, to what extent, and how accurately he passes information from one cluster to the others. In making those decisions, Robert can make the best use of the information at hand by playing the clusters off each other. Being able to sit on the structural holes among otherwise disconnected contacts produces tremendous opportunities that Robert can explore to gain personal benefits.

So does the structural hole benefit the network actors in reality? To investigate this, Burt (1997) studied 170 male middle managers in one of the largest American firms in electronic and computer equipment. The study surveyed each manager's key network contacts within and beyond the firm. The nine name generators used to construct the egocentric networks for the managers tap into personal relationship such as discussion and socializing, and work relationships such as political support, authority relationships with supervisors, relationships with subordinates, and critical resources buy-in. By using the egocentric networks of those managers, Burt (1997) computed the index of **network constraint**, which is inversely related to the number of structural holes embedded in one's network. Therefore, the higher the number of structural holes, the lower the level of network constraint. For example, in Figure 5.3, the network constraint for Robert is 20 and for James is 53.6. The study (Burt, 1997) showed a clear pattern of negative relationships between the level of network constraint and career advancement. Managers with greater level of constraint (hence, fewer structural holes in their network) tend to have later promotion and receive smaller bonuses. In contrast, those with lower levels of constraint (hence, many structural holes) tend to have earlier promotion and bigger bonuses. Figure 5.4 shows the negative association between network constraint and early promotion.

SOCIAL NETWORKS IN ACTION: DO STRUCTURAL HOLES BENEFIT WOMEN?

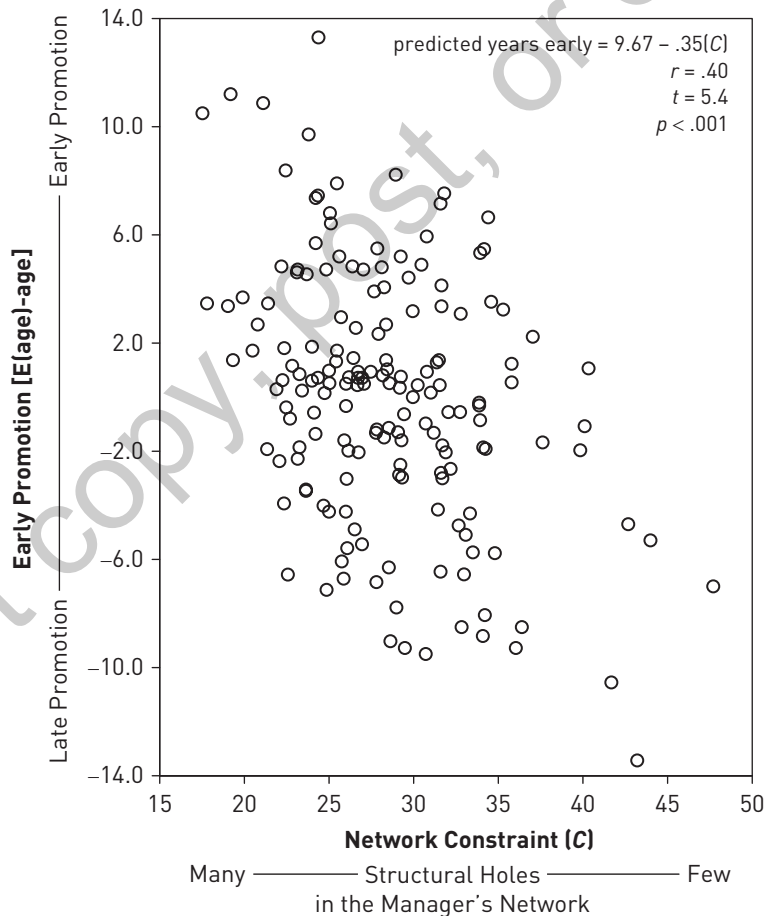
Does the network configuration (network constraint defined with the structural holes) affect female managers in the same way it does men? In another study with the same dataset, Burt (1998) found that the effect of network configuration on female managers counters that of male managers—women managers whose networks have great network constraint (few structural holes) tend to receive early promotion (see Figure 5.5). In other words, in the men's world, Robert's network configuration is more facilitative to career advancement than that of James. In the women's world, it is the opposite—James' network configuration is more facilitative than that of Robert. So why is it that women and men have such stark differences? First, this may be a result of emotional differences between the two sexes. Although men like to seek out opportunities in competitive, sometimes rough

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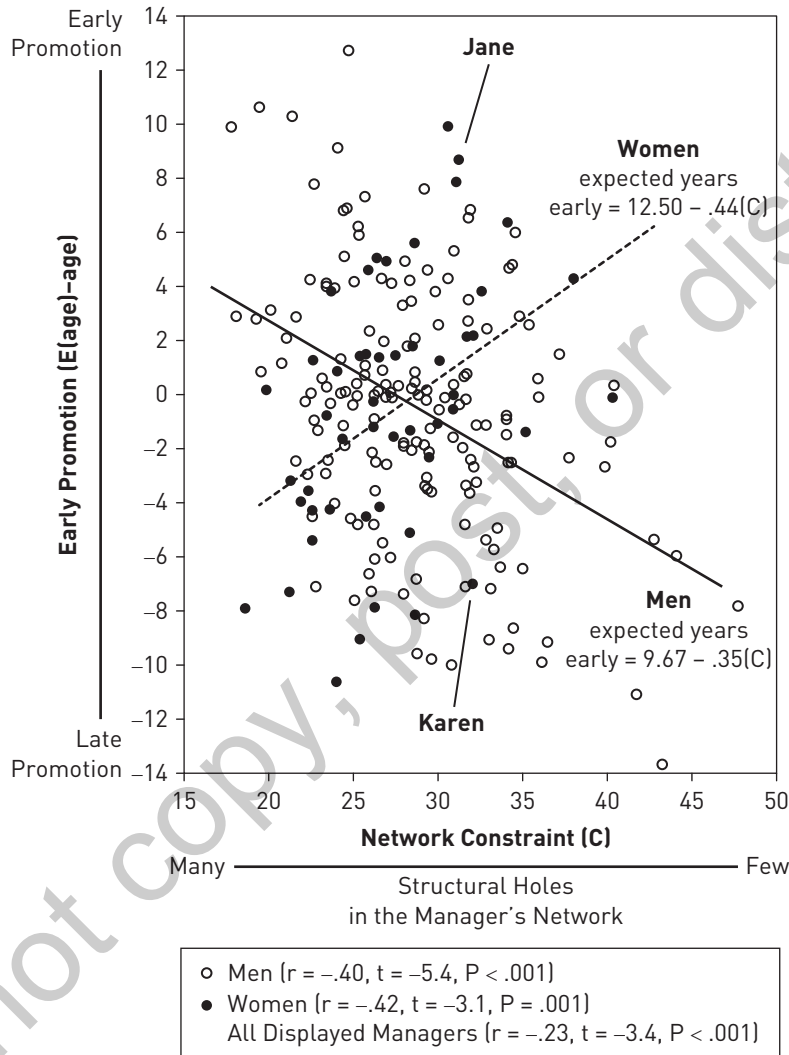
entrepreneurial networks, women tend to thrive in a small circle of supportive close friends. Second, compared with men, women's job status in the corporate world tends to be lower, and they tend to face a more restricted and narrow career ladder: Having an expanded network with many structural holes may not help women to get ahead within the corporate world. Third, the gender difference may stem from how men and women are being treated differently in work organizations. Women with dense networks have the advantage in breaking the "glass ceiling" in their path to advanced positions. Their network contacts will inform them of emerging opportunities and advocate on their behalf, especially in their absence.

FIGURE 5.4 • Correlation Between Network Constraint and Early Promotion



Note: Adapted from p. 348 of Burt, R. S. (1997). The contingent value of social capital. *Administrative Science Quarterly*, 42(2), 339-365.

FIGURE 5.5 • Correlation Between Network Constraint and Early Promotion Between Men and Women



Note: Adapted from p. 11 of Burt, R. S. (1998). The gender of social capital. *Rationality and Society*, 10(1), 5-46.

These discussions alert us to the scope conditions for theories that all good theorizing work should carefully lay out in the scope conditions under which the theory is true. Whether it is the tie strength debate (weak ties versus strong ties in job search outcomes) or the network configuration contest (structural holes or network closure

in career advancement), each theory has its unique set of conditions under which the theory holds true. In the following sections, we discuss the intra-organizational networks and work behaviors such as turnover/absenteeism, work attitudes, leadership, and the power structure within an organization. The main characteristic of those discussions is that they take a structural view as opposed to the egoistic view used in the previous discussions. In other words, rather than seeing things from an individual network node/actor's perspective, the following discussions take the structural perspective, seeing things with an aerial view. In addition to the difference in vantage point, methodologically the following studies use full network design (see Chapter 2 of this book) with a rigorously imposed boundary of work organizations or teams/groups within the organization. They commonly involve investigations of a certain type of relations (advice-seeking or friendship) among a group of co-workers within the same organization or work group (Krackhardt, 1992; Krackhardt & Brass, 1994).

5.2.2 Intra-Organizational Networks and Work Consequences: A Structural View

One issue that often intrigues scholars and practitioners is workers' turnover and job satisfaction. Why do workers choose to leave? How do those departures affect other workers' attitudes and satisfaction? Granted turnover is a multifaceted phenomenon that can be related to individual-level characteristics (race, sex, marital status, education, etc.), job features (income, flexibility, safety, health conditions, etc.), and workplace attributes (various human resources policies). Social network analyses reveal that job turnover is very much related to social networks as turnover tends to occur in clusters (Krackhardt & Porter, 1986). Those clusters are related to workers' roles in an organization. Those roles are not rooted in the formal organizational chart, but instead, they are rooted in the informal advice network among co-workers. In particular, when people see others leave who are in the same network positions (roles) as themselves, they are provided with relevant information about the nature of their jobs and the alternatives to working in their present organization. Because of this information, people in similar positions to those already leaving are motivated to consider leaving as well, resulting in clusters of employees leaving their organization within a given informal advice network.

How do researchers capture the informal advice networks among co-workers? In one study (Krackhardt & Porter, 1986), researchers examined employees in three fast food restaurants that had 16, 27, and 20 workers each. Each worker in the restaurant was presented with a roster of all the employees of that restaurant and asked, "whom would s/he go to for help and advice at work?" Respondents not only reported his or her own network of advice but also were asked to assess each of his or her co-workers' advice networks by answering, "whom would each of the respondent's coworkers go to for help and advice at work?" Such a network study design is called a **cognitive social**

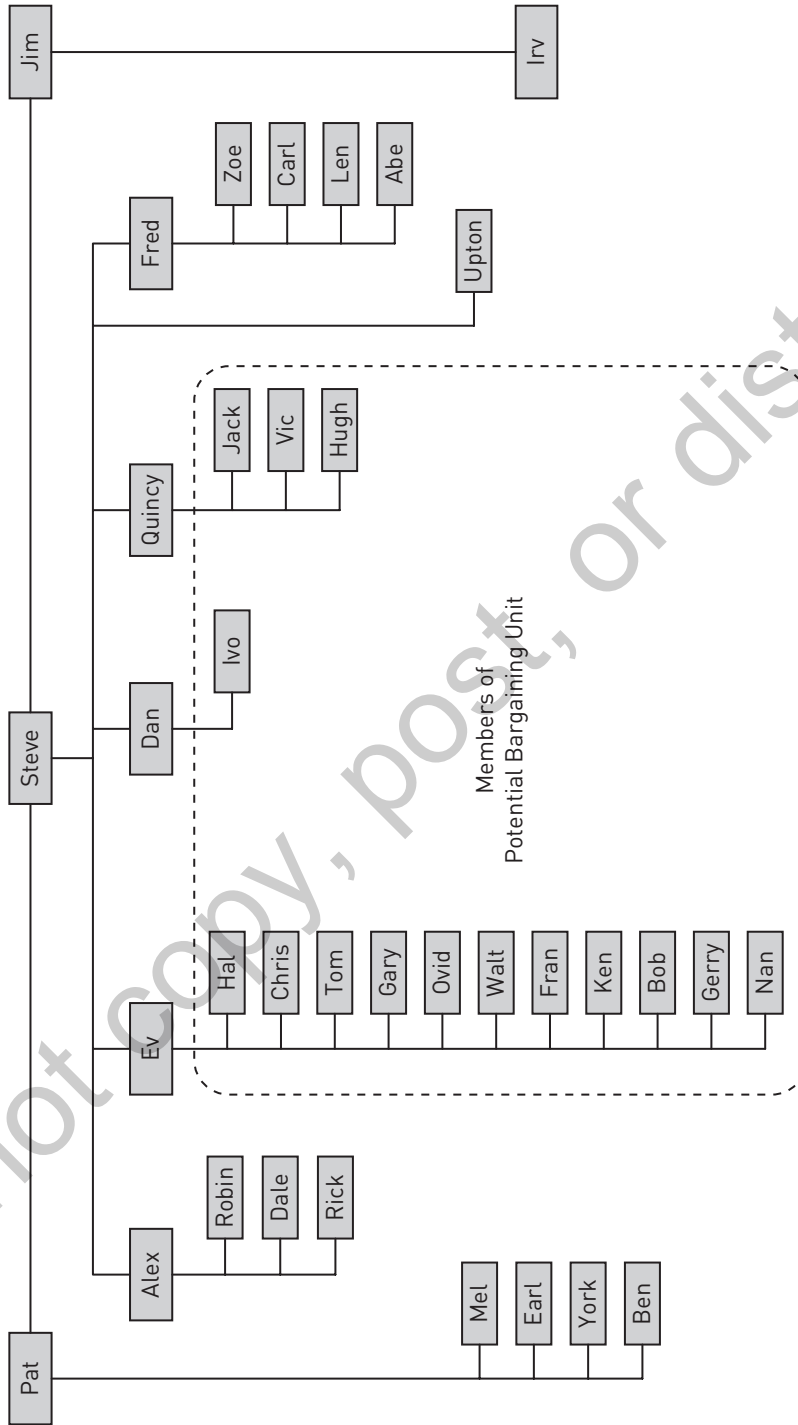
structure (CSS), discussed in great detail in Knoke and Yang (2008, pp. 32–34). The advantage of having CSS data is that it not only has the respondents' self-report of network structure, but it also has a global benchmark (sometimes also called the *actual network*) created by aggregating the perceived matrices from each respondent. The disadvantage of CSS is that it imposes a huge burden on the respondents to generate large amounts of network information. Imagine a network actor in a small group of six co-workers would have to report 15 undirected relations $\left(\frac{6!}{2! \times 4!} = 15\right)$, or 30 directed ties $\left(\frac{6!}{4!} = 30\right)$, as he or she must report ties of all pairs in the network. For that reason, CSS datasets are generally small, comprising tens of network actors rather than hundreds or more.

How does such snowballing networked job turnover affect the work attitudes of those who stay? Contrary to the conventional wisdom that turnover hurts the work attitudes of existing workers, the co-workers of those who chose to leave experienced a greater level of commitment and satisfaction after those turnovers (Krackhardt & Porter, 1985). Perhaps it is because those would-be leavers would always complain to their co-workers, so with their departures, those complaints come to a stop, resulting in increased satisfaction within the workplace among those remaining co-workers.

Another important area in workplace dynamics is the power structure among co-workers. In this regard, the formal organizational chart delineating supervisors and subordinates only tells one side of the story. Informal networks of advising and friendship between co-workers reveal a great deal of power and negotiation in real actions. In one of the case studies of a Silicon Valley IT firm (Silicon Systems), researchers conducted a social network study of the firm's 36 employees before and after a unionization drive (Krackhardt, 1992). In particular, each employee was asked to respond to two questions: "Who would this person go to for help or advice at work?" and "who would this person consider to be a personal friend?" The "this person" in the questions refer to each respondent's co-workers, as well as the respondent himself or herself. Therefore, the study was able to produce CSS data for the friendship and advice network among the 36 co-workers. Again, the benefits of having CSS data are twofold: (1) The data reveal the actual network, in which the relationship exists only when both parties in the relationship agree that it exists. And (2) by correlating one's perceived network (friendship or advice) with the CSS network, one would receive a cognitive accuracy score, which indicates his or her ability to reconstruct the advice or friendship network. Such ability can be used to define one's **reputational power** within an organization (Krackhardt, 1992).

Figure 5.6 shows the official organizational chart of Silicon Systems, whereas Figures 5.7 and 5.8 display the actual Advice Network and the actual Friendship Network, respectively. When comparing the advice network with the friendship network, although Ev and Steve are central actors in the advice network, they are

FIGURE 5.6 • Organizational Chart of Silicon Systems



Note: Adapted from p. 226 of Krackhardt, D. (1992). The strength of strong ties: The importance of philos in organizations. In N. Nohria & R. G. Eccles, Eds., *Networks and organizations* (pp. 226-240). Boston, MA: Harvard Business School Press.

relatively much more peripheral in the friendship network. It suggests that the centralities of Ev and Steve in the advice network simply reflect their leadership roles in technology (Ev is the technical lead) and the organization (Steve is the founder). In contrast, Chris emerged as the leader in the friendship network, having the highest centrality score. More to the point, although Chris has the second highest reputational power (the ability to reconstruct the actual network), Ev and Steve have lower than average reputational power. The unionization drive ultimately failed mainly because the union representatives did not contact and convince Chris, the influential player in the network. And Chris was ambivalent about the union, torn between his original pro-union stance and influences from his two close allies Robin and Mel, who are strong union opponents. Instead, the union representatives spent much of their time with Hal and Jack, two peripheral and less influential players in the friendship network. Had the union representatives understood the informal friendship network structure among the co-workers, they could have revised their plan to wage a much more effective campaign.

An interesting case in point is Steve, who is the founder and president of Silicon Systems. His centrality in advice network is high, but in his friendship network, his centrality is low. He likes to stay in touch with company operations, but he only connects himself with managers of the company. His lack of connections with the company's rank and file contributes to his relatively low reputational power (large discrepancy between his perceived network and the actual network in friendship structure). So when he was informed by union representatives that a unionization was underway in his company, he encountered an overwhelming sense of shock and betrayal. Steve's case points to the issue of effective leadership, to which we turn in the following sections.

By default, a leader occupies the center and top of the formal organizational chart; all employees report to their leader. In reality, different leaders exercise different leadership styles from the most rigid style (only listen to the immediate subordinates) to the most egalitarian type (connecting to a wide range of employees at different levels). From a network point of view, the former represents ineffective leadership that eventually will drive the leader out of touch (much like Steve in Silicon Systems). Yet, the latter is simply impractical as leaders normally have limited time and attention to details. An effective leadership requires that the leaders establish strong connections with those having high centrality scores in the informal network. The central players tend to be more powerful and tend to have access to more relevant information that could be passed back to the leader (Brass & Burkhardt, 1992). When the intra-organizational structure is divided into many subsets, which resembles most cases in reality, it is imperative that leaders establish strong ties with at least one member of each subgroup (Krackhardt, 1994). By making connections to diverse subgroups, the leader receives nonredundant information. Also, subgroups with strong connections to leaders tend to be allies of the leaders. By spreading ties with diverse subgroups,

leaders maximize their allies, minimizing the chance that a disfranchised group will resist or rebel.

But how do leaders identify those subsets of workers and those with high centrality scores in the informal network? This is where the reputational power (Krackhardt, 1990, 1992) becomes relevant. The reputational power comes from the leaders' abilities to reconstruct accurately the informal network structure of their organization. The earlier recommendations for effective leadership only work when leaders have great reputational power (their perceived informal networks resemble their actual informal networks). With that said, how do leaders improve their reputational powers? The answer is by making connections. Essentially this is an iterative and fine-tuning process in which leaders constantly improve their network connections to achieve optimal connections. When leaders stop making connections, the leadership ceases to exist.

Intra-organizational networks may derive from a random process in which individual employees establish informal personal networks with their co-workers for advice-seeking or friendship purposes. Once formed, those informal networks are consequential to individual career advancements and overall workforce activities in terms of turnover, job satisfaction, power structure, and effective leadership. In for-profit business firms, intra-organizational networks may also come from more or less formalized resource flows between different subunits within a given firm (Knoke, 2012a; Tsai, 2000). And formation and configuration of those intra-organizational networks exert influences on the firm's performance by improving knowledge transfer between organizational subunits and increasing their innovativeness (Wijk, Jansen, & Lyles, 2008). Note that although intra-organizational networks in business firms often refer to cross-unit linkages, those connections ultimately derive from those boundary-spanning personnel or agents. And the personal networks of those agents strongly influence the formation and evolving of those inter-unit relations (Galaskiewicz & Zaheer, 1999; Tsai, 2000).

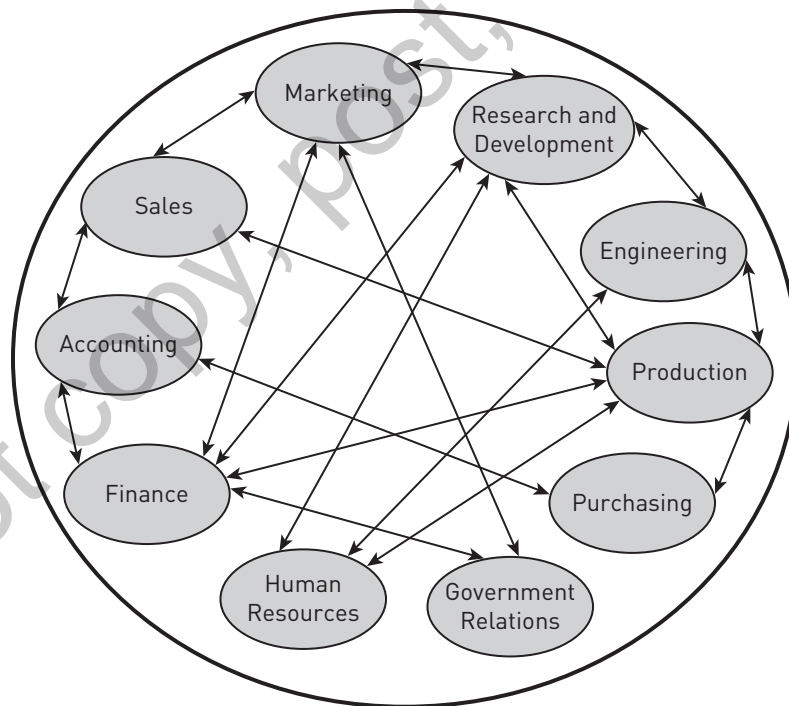
5.2.3 Intra-Organizational Networks and Competitive Advantage: An Organizational Utility View

At the beginning of the new millennium, a new form of organization, often called the *networked organization*, emerged as a prominent mode of control and coordination (Knoke, 2001). Compared with the traditional hierarchical mode of structure, networked organizations emphasize vertical and lateral collaborations between subunits in different levels and different functional areas. Consultative ties between subunits replace administrative fiats in regulating those intra-organizational relations. Often short-term projects supersede long-term hierarchical commands to coordinate different departments or functional areas in delivering customized goods and services. Networked organizations exhibit in several main forms (Knoke, 2001: chap. 6). In the following sections, we discuss one of those main intra-organizational networks: the

internal network organization. Then we examine the intra-organizational network within multinational corporations (MNCs) and knowledge transfers between different subunits in an organization.

An internal network organization represents one extreme form of networked organization where all hierarchical command lines are replaced with lateral exchange relations. Figure 5.9 (Knoke, 2001, p. 207) illustrates an artificial example of one such internal network organization. The double-headed arrows denote recurrent communication exchanges, resource transfers, or collaborative projects involving inter-unit teams. Perhaps the production unit has the most exchange relations with six other internal departments. For example, production would have to secure resource input (hence, its tie with the Purchasing Department), but it also must deal with sales (hence, its tie with the Sales Department). Note that the absence of the traditional top-down

FIGURE 5.9 • Internal Network Organization



Note: Adapted from p. 207 of Knoke, D. (2001). *Changing organizations: Business networks in the new political economy*. Boulder, CO: Westview Press.

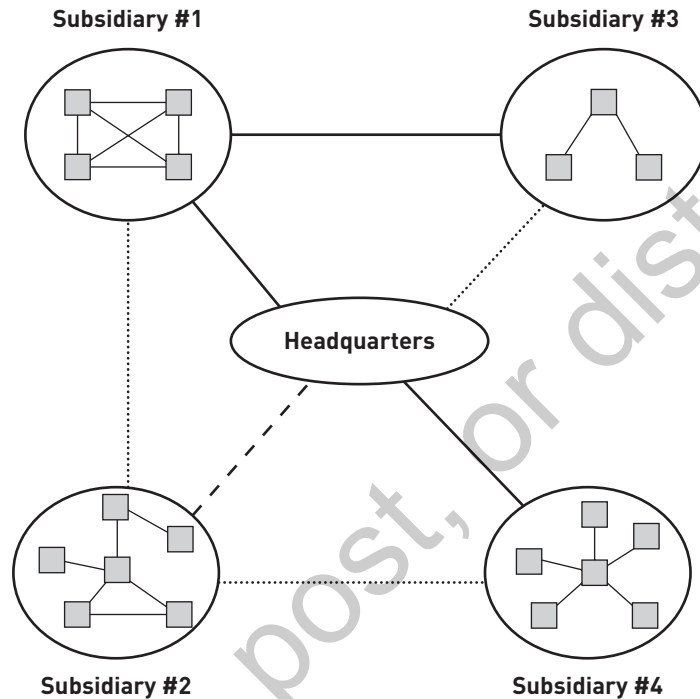
organizational chart is conspicuous. In this internal network organization, commands from CEOs or other executives only exist nominally. Senior managers lack detailed information to manage and monitor inter-departmental transactions, leaving them to the discretion of functional managers.

SOCIAL NETWORKS IN ACTION: DIRECT FROM DELL

One such internal network organization is Dell Computer, founded by Michael Dell in his dorm back in the 1980s. Dell's method runs counter to the traditional mode of production, in which manufacturers make and assemble the parts, ship them to distributors/retailers, and end with products sitting in the shelf to be purchased by customers. Instead, Dell uses the "Direct from Dell" model, in which a customized order from a consumer triggers the production process. Dell relays orders of parts to the suppliers, which ship the parts to Dell for final assembly and shipment to customers. Through such virtual integration of different segments of a production network, Dell ensures fast delivery of customized goods, while minimizing costly inventory.

The second most common intra-organizational network exists in MNCs. Figure 5.10 shows such multinational differentiated networks that depict the relations among various organizational subsidiaries and between those subsidiaries and their headquarter offices. One of the most researched MNCs is Philips N.V., which is headquartered in the Netherlands and has subsidiaries operating in more than 60 countries that are heterogeneous in their political regimes and economic developments (see Figure 5.11 for the geographic links among its subsidiaries). Subsidiaries exhibit a great level of variability in the complexity of their internal structures and sizes; some are small and single function, employing tens of workers, whereas others are large and complex, hiring thousands of employees. Ultimately, controlling and coordinating diverse acts between such a wide range of subsidiaries is a daunting task for headquarter officials. One line of research propagates the requisite complexity hypothesis, stating that optimal MNC structural complexity closely matches environmental complexity (Nohria & Ghoshal, 1997). The study in question investigated 41 MNCs, reporting that the 17 MNCs with good structure-environment fit achieve much better organizational performance than the 24 MNCs with poor fits to their environments.

Among all of the data flowing between different subunits within a given organization, knowledge or intelligence perhaps represents the most important resources. Knowledge transfers between units improve organizational and departmental performance by fostering capacity development and taking advantage of current competencies (Lane, Salk, & Lyles, 2001). Although knowledge transfers occur in both inter-organizational

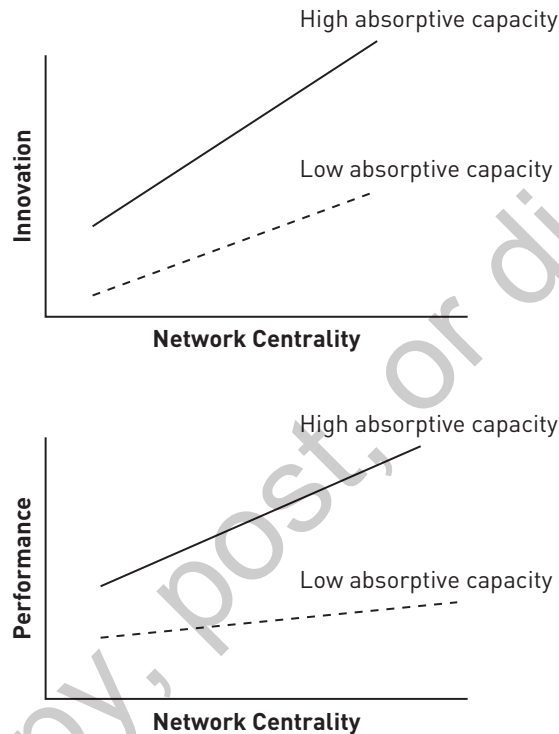
FIGURE 5.10 • Multinational Differentiated Network

Note: Adapted from p. 14 of Nohria, N., & Ghoshal, S. (1997). *The differentiated network: Organizing multinational corporations for value creation*. San Francisco, CA: Jossey-Bass.

and intra-organizational contexts, transfers within an organization are much more conducive to high organizational performance than are transfers between organizations. It is perhaps because firms can easily identify the relevancy of the knowledge transferring within the organizations and thus can refine and exploit the knowledge (Wijk et al., 2008).

Within a given organization, the extent to which knowledge transfers benefit subunits varies, depending on the network location and absorptive capacity of those subunits. In constructing the intra-organizational knowledge transfer network, researchers asked a representative of the subunit, "which units provide your unit with new knowledge or expertise when your unit is seeking technical advice inside your organizations" (Tsai, 2001, p. 1000)? The representative was presented with a list of all other business units within the company. The procedure was then repeated for all the business units within the company. In using such data, researchers constructed an intra-organizational knowledge transfer network. Another important variable is

FIGURE 5.12 • Contingent Effect of Absorptive Capacity on the Associations Between Network Centrality and Performance, and Between Network Centrality and Innovation



Note: Adapted from p. 1002 from Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *The Academy of Management Journal*, 44(5), 1002.

But the extent to which the high centrality increases the performance and innovation depends on the absorptive capacity. Figure 5.12 shows that for subunits with high absorptive capacity, the payoffs (in terms of having high levels of performance and innovation) to having high levels of network centrality are great. Nevertheless, for those units with low absorptive capacity, the returns to having high network centrality are not that great. It seems such differentials in returns to network centrality between high and low absorptive capacity are much more pronounced for performance than they are for innovation. The business units are better able to benefit from the intra-organizational knowledge transfer when they invest in their own knowledge absorption and creative abilities.

Although intra-organizational ties between different units are conduits for knowledge transfers, a high number of ties between subunits does not necessarily lead to efficient exchanges for all knowledge. An increase in intra-organizational ties only raises passages of codifiable knowledge. For tacit, complex knowledge, the strength of the ties, rather than the sheer number of them, matters in facilitating exchanges and absorptions (Maurer, Bartsch, & Ebers, 2011). So in addition to knowledge transfers, knowledge assimilation is a critical process the subunit must go through to capitalize on the benefits in the intra-organizational network of knowledge.

5.3 Inter-Organizational Relations

Before we discuss inter-organizational relations, we want to stress that the intellectual distinction between an intra- and an inter-organizational network only exists for conceptual clarity. Many intra-organizational exchanges, such as information flows, work flow interdependence, or even friendship and authority can be extended to inter-organizational relations. In fact, many inter-organizational relations perhaps start with inter-personal ties between boundary spanning personnel of different organizations. Those preexisting ties between boundary spanning personnel across different organizations are not only precursors of inter-organizational alliances, but also afford a competitive edge to those organizations seeking strategic partners (Galaskiewicz & Zaheer, 1999).

Despite the great variety of inter-organizational relations, we state that they can be grouped into two main forms: **interlocking boards** and **strategic alliances**. Interlocking boards connect organizations together as board members at one organization may come from multiple other organizations. It can occur unilaterally, such as organization A appointing personnel from organizations B and C to its board. It can also occur in mutuality, such as organizations A, B, and C appointing each other's personnel to their respective boards. Strategic alliances are another major form of inter-organizational relation, by which organizations join hands to deal with the primary strategic opportunities or challenges they are facing. The following two sections discuss these two main forms of inter-organizational relations in great detail.

5.3.1 Interlocking Board Directorate

Large organizations, especially those in the financial sector, would like to exercise control over macro-economic conditions. They often try to accomplish such goals by appointing to their boards of directors key personnel from other main organizations in the national economy. For example, by sharing board members with other key players in the field, large financial institutes receive rich and timely information on economic conditions, giving them guidance in making investment decisions (Mintz & Schwartz, 1985).

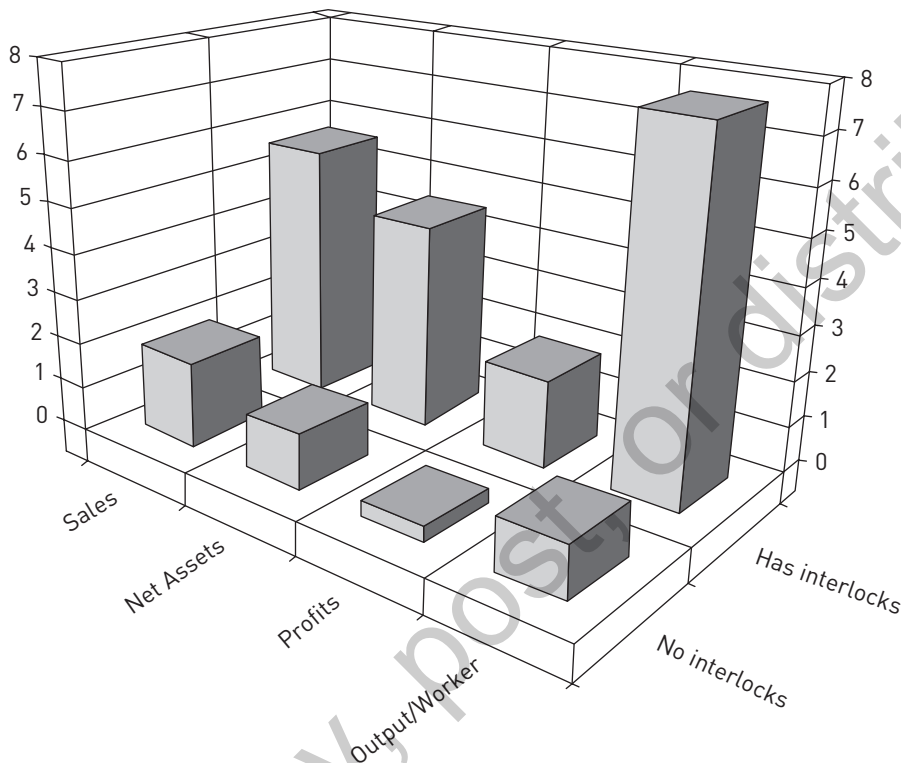
Do interlocking boards result in a congregation of power into the hands of a few social elites? After all, one may envision such interlocking boards would link

social elites from multiple domains, such as large corporations, military branches, and governmental agencies. Those at the top of those important social institutions would come to know each other, socialize with each other, and eventually develop a shared vision and agreement over many important issues. But in reality, such concerns are unwarranted as issues dividing social elites as numerous as those united them (Mills, 1956). Financial companies especially experience decline in their corporate powers as many companies are increasingly relying on the market for their commercial loans. This is the main reason behind banks' move into the securities underwriting business.

So what are the reasons that organizations engage in interlocking board relations? The most important reason is the information benefit: Board interlocks are a primary source of information. Companies linked with board interlocks are conducting "business scans" of the political economy to identify problems and come up with solutions (Useem, 1984). Second, companies may use interlocking boards to fine-tune their operating environments. For example, companies often invite executives from key suppliers or client firms to serve on their boards. By doing so, companies secure key suppliers and establish friendly ties with customers. In other words, the inter-organizational resource flows determine with which companies a focal company would like to have interlocking board relations (Pfeffer & Salancik, 1978).

The third reason behind corporate interlocking may relate to the power struggle between the current board and executives. Although CEOs like compliant board members, active boards may want to recruit assertive, outspoken members. Who eventually gets in depends on the outcome of battles between CEOs and the board. For example, Edward Zajac and James Westphal (1996) analyzed 491 large companies between 1985 and 1992, reporting two types of boards: low-control boards that add passive, management-oriented members and high-control boards that recruit active shareholder-oriented directors. Most companies have either low-control or high-control boards. Fourth, board members sometimes are being recruited simply because they are well connected. Those who serve on a lot of boards are likely to be mentioned as potential candidates (Davis, Yoo, & Baker, 2003). Often CEOs are targeted to be potential board members for other companies by virtue of their high visibility in business. Do CEOs adopt a pro-management style when they serve on other companies' boards, just to give their fellow CEOs a break? Not necessarily. They generally do adopt such a style, but with an important qualification: that they experience active board control in their own companies (Westphal & Zajac, 1998).

Does corporate interlocking generate economic benefits? Well, it depends on national origins and institutional differences, and research has produced mixed results. In the United States, although organizations may recruit outside board members to manage their operating environment, board interlocking does not seem to increase their profitability (Mizuchi, 1996). In transitional economies such as China, firms with interlocking boards outperform their peers without interlocking boards in sales, net assets, profits, and worker productivity (Keister, 2000; also see Figure 5.13). Besides economic performance, board interlocking is very consequential to other aspects of

FIGURE 5.13 • Interlocking and Performance of Chinese Firms

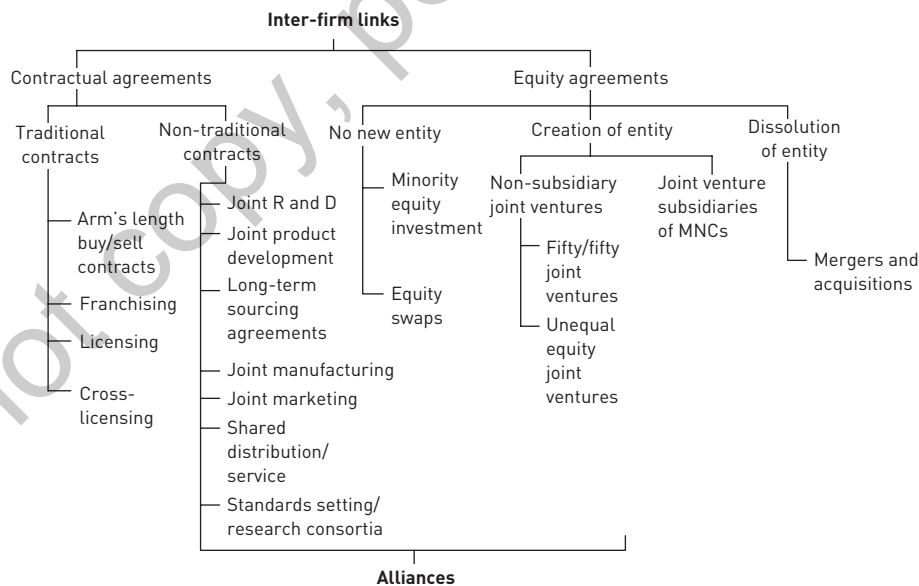
Note: Adapted from p. 182 of Keister, L. A. (2000). *Chinese business groups: The structure and impact of interfirm relations during economic development*. New York, NY: Oxford University Press.

organizational life. Well-connected CEOs engaged in more acquisitions in the 1960s and 1980s than their less-connected counterparts (Haunschild, 1993; Palmer & Barber, 2001). Executives of the companies in Minneapolis/St. Paul who have many contacts with philanthropists tend to make greater donations than do their peers with fewer contacts. Companies also adopt similar business practices to those with whom they have interlocking relations. For example, the adoption of a **poison pill** diffuses among organizations linked via interlocking boards (Davis & Greve, 1997). The so-called M-form structuration also spreads among organizations with interlocking board ties (Palmer, Jennings, & Zhou, 1993). Companies listed on Nasdaq often defect to the New York Stock Exchange when their interlocking partners have done so. Interlocking ties are an important medium by which organizations imitate each other's practice, a process vividly called a contagion, much like a contagion among individuals (Scott & Davis, 2006).

5.3.2 Strategic Alliance

A strategic alliance refers to a strategic partnership involving at least two partnering firms. It is strategic in the sense that the alliance is formed as a direct response to major strategic challenges or opportunities that the partner firms face (Child & Faulkner, 1998, p. 5). After the alliance is formed, the partner firms remain independent, share benefits and managerial control over the performance of assigned tasks, and make continuing contributions in one or more strategic areas (Yoshino & Rangan, 1995). Strategic alliances take on a variety of different forms, but we found that John Child (2005, p. 224) provided one of the best typology maps of inter-firm links in general, and strategic alliances in particular, which is shown in Figure 5.14. In the figure, inter-firm links run from left to right as partnering firms engage in the least intensive relations (arm's length contracts, franchising, licensing, and cross-licensing) to the most intensive relations (mergers and acquisitions). Strategic alliances take the form of nontraditional contracts, to equity agreements including those leading to the creation of no new entities and those leading to the creation of new entities. The following sections discuss those different types of strategic alliances in detail.

FIGURE 5.14 • Typology of Inter-Firm Relations



Note: Adapted from p. 224 of Child, J. [2005]. *Organization: Contemporary principles and practice*. Chichester, West Sussex, England: Wiley.

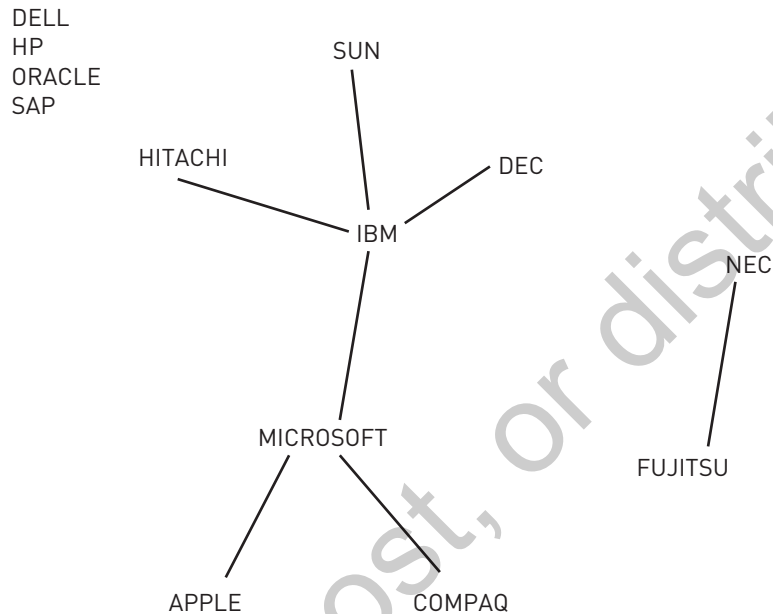
The most intensive partnership is **joint venture**, defined as “two or more legally distinct firms pool a portion of their resources within a jointly owned legal organization that serves a limited purpose for its parents” (Inkpen, 1995, p. 1). Joint ventures may involve 50:50 ownership between two parents or unequal shareholding among multiple partners. The Chinese government, for example, adopted the joint venture format to encourage collaborations between foreign companies and domestic Chinese firms to benefit from a foreign firm’s capital and technologies.

SOCIAL NETWORKS IN ACTION: A JOINT VENTURE BETWEEN MOTOROLA AND PANDA ELECTRONIC GROUP

One of these joint ventures was between Motorola and the Panda Electronic Group of Nanjing China. Established in 1995, the joint venture drew a 60% equity investment from Motorola and a 40% investment from Panda Group. For Motorola, this was an opportunity to expand its market in China, whereas for Panda Group, the joint venture allowed them to absorb more capital and advanced technology in the wireless industry. The Motorola–Panda Group joint venture, however, ended in 1997 when Motorola was unable to reach a license agreement with Apple Computer (Luo, 2000).

Equity investment occurs when one firm buys a direct financial stake in another through a direct stock purchase. It can be either majority stake purchase (more than 50%) or minority stake purchase (less than 50%). An **equity swap** occurs when two firms mutually purchase each other’s stocks. Equity investment or equity swaps do not create new entities. Instead, they provide a partner some financial stake in another company’s affairs. Equity investments or equity swaps often occur in high-tech industries such as computer or biotechnology when large corporations use financial means to gain access to key technologies held by small firms. A famous minority equity investment, however, happened between two airlines, KLM and Northwest (later merged with Delta). The two airlines announced their alliance in 1989 when KLM invested US\$400 million in the Minneapolis-based company. Despite the economic success of the alliances, the partners developed distrust of each other over the disagreement of policies, and the alliance ended in 1997 when Northwest spent US\$1 billion to buy back the shares from KLM (Knoke, 2001, pp. 120–121).

Strategic alliances also embody various forms of nontraditional contracts, such as joint R&D, joint product development, joint manufacturing, joint marketing, standard setting, shared distribution/services, and long-term sourcing agreements. The joint R&D alliances occur often in the high-tech fields such as biotechnology and the IT industry. Technologies in those industries are fast changing, engendering individual firms to pool their resources for R&D to stay current while avoiding the prohibitive costs associated with the R&D. Standard setting is another commonly occurred alliance between members trying to establish a standard for industrial product.

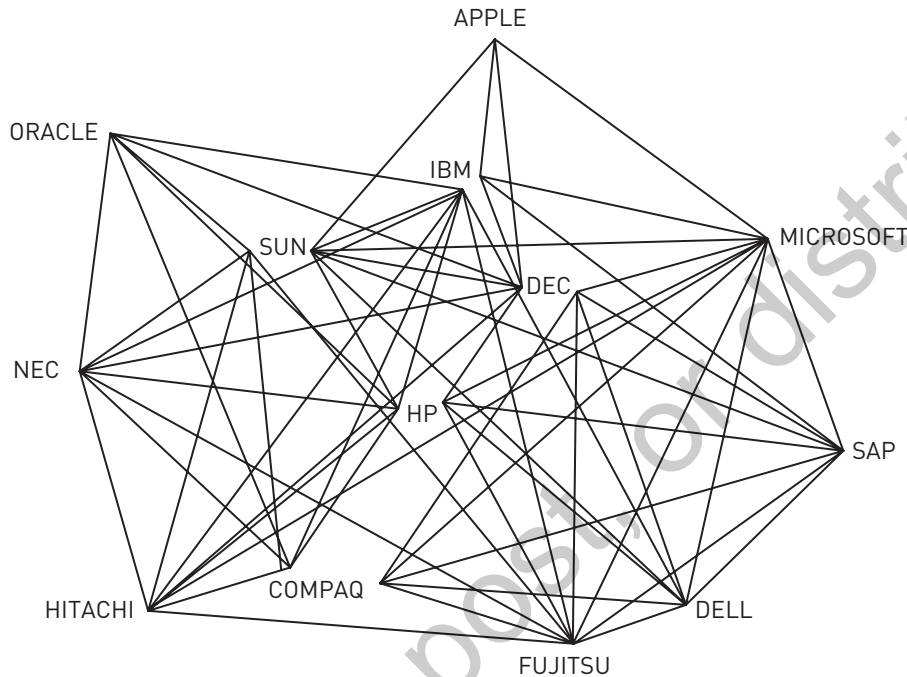
FIGURE 5.15 • Strategic Alliances Among 13 IT Firms 1990

Note: Adapted from p. 147 of Knoke, D. (2012). *Economic networks*. Cambridge, England: Polity.

SOCIAL NETWORKS IN ACTION: ORGANIZATIONAL ALLIANCES FOR ESTABLISHING INDUSTRIAL STANDARDS

The famous battle between Betamax and VHS for the standard of the home entertainment industry illustrates the importance of strategic alliances. Although Sony was behind Betamax and persuaded the Japanese Ministry of International Trade and Industry to endorse it as the industry standard, the strategic alliance led by JVC, which backed the VHS, joined by powerful allies Hitachi, Mitsubishi, and Sharp was a much stronger force than Sony. In the end, VHS won as the industrial standard format.

The strategic alliance as a new way to coordinate between groups of organizations to achieve collected outcomes has been flourishing since the 1980s. For example, in Knoke's (2012a, pp. 146–147) study of the Global Informational Sector, strategic alliances among 13 computer and software companies in 1990 appeared to be spotty, with a network density (see Chapter 3 for details of computing network density) of only 0.09 (see Figure 5.15). Nevertheless, ten years later in 2000, every firm was connected

FIGURE 5.16 • Strategic Alliances Among 13 IT Firms 2000

Note: Adapted from p. 149 of Knoke, D. (2012). *Economic networks*. Cambridge, England: Polity.

with other firms among the set, and the density reached 0.79 (see Figure 5.16). With the thriving of strategic alliances among companies, the traditional methods such as vertical integration (to be discussed in the following section) have been fading away as less viable choices for managing organizational operating environment. The chief reason behind such a transformation is the standardization of many previously complicated business practices. Such standardization enables the frictionless combination of many different aspects of a business, and integrating them into a unified whole.

SOCIAL NETWORKS IN ACTION: CIVIL AVIATION

Take civil aviation as example: The industry went through government deregulation post-911, which was intended to encourage competition. Many contractors rushed to offer the kinds of services needed for new start-ups, from writing applications for

(Continued)

(Continued)

government certification, to selling tickets, to staffing gates at airports, to catering the food, to even flying the airplanes. Many secondhand airlines also scattered in the Arizona desert, waiting to be purchased (Scott & Davis, 2006, p. 294). Venture capitalists seized the opportunity to provide seed money for the start-ups. As a result, small discount airlines flourished by the mid-2000s, with JetBlue, Allegiant Air, Frontier, Southwest, Spirit, and Sun Country airlines providing convenient daily flights connecting thousands of mid- to small-size metros across the United States.

Strategic alliances seem to be consequential to a firm's performance. For example, those investment banks involved in many strategic alliances tend to have the best long-term performance (measured by dollar amount underwritten). The active network alliances also lead to higher popularity and expanded participation in stock deals (Chung, 1996). Biotech firms with diverse portfolios of strategic alliances tend to become more central, grow much faster, and are faster to go public through IPO than their peers without such a level of strategic alliances (Powell, Koput, & Smith-Doerr, 1996). Nevertheless, the greater diversity in the format of strategic alliances makes the issue of how those alliances improve partnering firms' performances hard to assess. For example, when multiple partnering firms pool their resources to develop new products or technology, such an alliance may dissolve before or after the new product/technology is fully developed. Little is known about how each firm in the alliance could benefit from such a new collective outcome, and little is known as to whether such a collaboration yields higher returns than those available from alternative resources expenditures. Researchers tend to emphasize the positive synergies from networking, ignoring the potential risks of inter-organizational relations. Although lack of network connections may dampen firms' profitability, over-embeddedness (having too many network connections) is also detrimental to a firm's performance by limiting firm's adaptability (Uzzi, 1996). What is the optimal level of network connections for firms or organizations? Such questions will inspire much research and study in the variety of contexts defined by the combination of markets, institutions, and industries.

5.3.3 Inter-Organizational Relations Across Industries

At the industrial level, inter-organizational ties can occur within the same industry or across different industries. For example, a car manufacturer can establish ties with other manufacturers, or it can forge relations across industries with either supplier firms or client companies. Sometimes, the relationship between two firms becomes so intense that a merger takes place to integrate the two firms into one entity. Such a process is called **vertical integration**, and depending on the positions of two firms in

the value chain, it can be either *backward vertical integration* (a car manufacturer merges its part suppliers) or *forward vertical integration* (a car manufacturer purchases a car rental firm). Vertical integration was prevalent among business firms during the early and mid-20th century. The famous Ford River Rouge Complex built in the 1920s serves as a classic example of vertical backward integration. Facing tremendous demands of its cars, the Ford Motor Company purchased the supplier firms of rubber, glasses, and metal and made them internal subsidiaries of the company. Such backward integration ensured the input of key resources, while preventing integrated suppliers from holding out for higher prices or providing inferior products to Ford.

The process of vertical integration can also be reversed. For example, to expand shares in the rental car market, Ford purchased Hertz Rental in 1994 (forward vertical integration). But by 2005, financial hardship compelled Ford to sell Hertz to a group of private equity firms, which is a reversed vertical integration or vertical disintegration. The trend of disintegration accelerated so much that by the 1990s and 2000s, many companies experienced some forms of spin-off, disintegration/de-integration, or outsourcing. Several reasons may account for such a wave of restructuring: increasing customized markets, financial hardships, or stock market pressures. Nevertheless, from the corporate governance point of view, the chief reason for corporate disaggregation is the emergence of the network as a viable structure to deal with the issue of interdependence between companies (Powell, 1990). In other words, companies no longer have to face a binary choice between an arm's length market and vertical integration when it comes to managing interdependence. When recurring transactions between two companies necessitate a tie that is warmer or closer than the arm's length market, networked forms of governance replace vertical integration as a superior way (in many regards) to manage the relationship between the two companies. Many different forms of alliances (discussed in the previous sessions) replace vertical integration to regulate inter-firm relations.

At the industry level, the structural characteristics of a given industry have significant influences on its organizations' performance. One of the key industrial characteristics is the **four-firm concentration ratio**, defined as the proportion of an industry's output accounted for by the four largest producers in the industry. The four-firm concentration ratio is a measure of monopoly: the higher the ratio, the higher the monopoly, and the lower the competition of the industry. Different industries have different concentration ratios, and for a given firm, a desirable situation it wants to be in is that its own industry is concentrated (hence, less competition) while the industries of its suppliers and client firms are dispersed (low concentration ratio, hence, high competition). With such a structural configuration, a firm can maximize its interests by playing its suppliers or clients off each other, while facing little constraint within its own industry. Basically, companies can have structural autonomy to the extent their own industries are concentrated while their suppliers' and clients' industries are dispersed. An empirical study found exactly the predicted result that firms with great structural autonomy command higher profit margins (Burt, 1982).

SOCIAL NETWORKS IN ACTION: STRUCTURAL AUTONOMY AND PROFITABILITY

One real-life example is the Sealed Air Corporation (a manufacturer of bubble-wrap packaging materials) in the late 1980s. Its main suppliers were from the commodity chemical industry, and its buyers were every home or business that shipped fragile items. The company also had patents that protected it from significant competition from other firms within the same industry. Such structural autonomy allowed the company to reap a high profit margin of 50% in the 1980s (Scott & Davis, 2006, p. 302).

End-of-Chapter Questions

1. Social networks matter in job search processing. Under what conditions are weak ties important, and under which conditions are strong ties critical in facilitating job searching?
2. Discuss the four reasons why employers often use referrals for recruiting.
3. What are the main differences between the Chinese Guanxi network and Western interpersonal network? How do Chinese job seekers strategically use the Guanxi network to facilitate their job search?
4. Based on Burt's (1997) study, how do structural holes affect male and female managers' career advancement differently? Why there is such a difference?
5. How does employee turnover affect co-workers in the same or similar positions within the same company? How does turnover affect those who stay?
6. What is reputational power? How does reputational power affect leadership effectiveness?
7. Discuss the main reasons that organizations engage in interlocking board relations with each other.
8. How do the interlocking boards' ties affect organizations involved in the interlocking with each other?
9. Strategic alliances include equity investment, joint ventures, and organizational coalitions that establish industrial standards. Rank the three strategic alliances based on the involvement of partnering firms. Which one is the most intensive, and which one is the least intensive?
10. Based on Burt's (1982) research, what kind of structural position in an industry is conducive to high profitability for a given firm, and why?