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CHAPTER 9

THE SOCIAL CAPITAL OF TWENTY-FIRST-CENTURY LEADERS

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The vision of the twenty-first century includes increased acceleration of change in technology and the environment, increased uncertainty, and increased information processing requirements. Such rapid change does not bode well for the traditional military-style organization, be it in the armed forces or the private or public sector business communities. When confronted with the rapid change of the next century, a bureaucratic/military organizational design, with rigid hierarchies of authority, unity of command, and vertical lines of communication, probably will not function as efficiently as it has in the past. Change is already occurring. Bureaucratic, vertically integrated organizations are being replaced by small, flexible organizations engaging in joint ventures. The private sector organization is downsizing and restructuring, and it is apparent that the government and public sector organizations, including the military, are decreasing in size.

Some have suggested the emergence of a new organizational form—the network organization (Baker, 1992; Krackhardt, 1994; Miles & Snow, 1986; Nohria & Eccles, 1992)—a temporary configuration of modular business units linked together by opportunistic synergies, borne of the necessity of rapid change (Snow & Snell, 1993). Leadership in a network organization will involve identifying, locating, and organizing the necessary competencies across organizational and international boundaries. Effective leaders will become human resource brokers, bringing together the right mix of people and technology to offer successfully a product or service. Needed resources will be contracted through an ongoing network of intra- or extra-organizational connections.

Leadership will require identifying and nurturing potential relationships, putting the right people together in the right place at the right time, only to realize that this combination of people, places, and times will soon change. Although forecasts of "internet organizations" and synthetic and computerized interaction have emerged, it is obvious that the network organization places additional importance on relationships.

Although it is unlikely that the army will become the non-hierarchical organization exemplified by a network organization, it is apparent that its mission in the twenty-first century will involve more joint ventures with other branches of the U.S. military, the armed forces of a variety of other countries (particularly NATO forces), and civilian populations throughout the United States and the world. In addition to wartime activities, the army will be involved in more peacekeeping activities, humanitarian relief missions, and providing order and relief following natural and man-made disasters (e.g., earthquakes, floods, chemical or nuclear spills). All these activities will likely be joint (involving other civilian and military organizations) and global (involving other countries). These joint, global missions will require teamwork, entrepreneurial initiative, and less reliance on traditional authority relationships. All indications point toward the importance of a more efficient use of social capital.

SOCIAL CAPITAL

Despite the acknowledgment that leaders spend most of their time interacting with others (Mintzberg, 1973), and despite the popular press prescriptions for networking, the social capital of leaders is perhaps the most ignored, under-researched aspect of leadership. In contrast to human capital (traits, characteristics, behaviors, styles), social capital refers to relationships with other actors, and the accompanying access to information, resources, opportunities, and control (Burt, 1992; Coleman, 1988). Social capital is the property of relationships; if either actor withdraws, the relationship and the social capital dissolve. Because organizational leadership involves accomplishing work through others, it is critical that we assess the social capital of leaders. Without social capital, human capital and financial capital (money, credit, and so forth) may be worthless.

Social capital is at the heart of social network analysis. The social network perspective begins with the assumption that actors are embedded in a complex web (or network) of interrelationships with other actors. These networks of relationships provide the opportunities and constraints that may be the causal forces of leadership.

LEADERSHIP

Accomplishing work through others has always been the essence of leadership. The myth of leadership is that it occurs in isolation. Despite decades of research

that focus on trait, behavioral, and situational approaches to the more recent attributional, charismatic, and transformational paradigms (Bass, 1990; Meindl, 1993; Yukl, 1994), largely ignored in leadership research is an approach that focuses on the structure of interpersonal relationships: a social network theory of leadership.

Many reviews of the research on organizational leadership exist (Graen & Uhl-Bien, 1995; Meindl, 1993; Stogdill, 1974; Yukl, 1994). Suffice it to say that with few exceptions, previous research has focused on leaders, followers, and situational contingencies. Beginning with the trait approaches, the predominant emphasis in organizational leadership research has been on the attributes and behaviors of leaders. The beatification of the leader has always been popular in the business press, and is recently illustrated by the transformational (Bass, 1990, 1996) and charismatic (House, Spangler, & Woycke, 1991) approaches. The emphasis is on human capital—the attributes, abilities, personality, intelligence, and creativity of the leader.

Likewise, the behavioral approaches, such as the classic Ohio State and Michigan studies, have focused on the skills and abilities of the leader (Kerr & Schriescheim, 1974; Likert, 1967). Leadership behaviors, often classified along some continuum from autocratic to participative, have also emphasized the human capital of leaders (e.g., Blake & Mouton, 1964; Tannenbaum & Schmidt, 1958; Vroom & Yetton, 1973). Although followers have been accorded much less attention (Meindl, 1993), the emphasis of these approaches has also been on human capital such as subordinate effort (Yukl, 1989), performance (Greene, 1975) and maturity (Hersey & Blanchard, 1977).

Although personal characteristics and behaviors have far outweighed situational factors, the contingency models of leadership attempted to account for the situational context. One of the most frequently considered situational variables is task structure, incorporated into path-goal theory (Evans, 1970), leadership substitutes (Kerr & Jermier, 1978), Fiedler's LPC model (Fielder, 1967), leader-member exchange (Graen & Scandura, 1987), and the normative decision model (Vroom & Yetton, 1973). The social network of leaders has yet to receive much contextual consideration despite laboratory findings that suggest that performance is a function of matching certain social structures with task structures. These same studies indicate that one's position in the social network structure of task performing groups is a powerful predictor of perceptions of leadership. Although these studies are limited in their generalizability, certain network structures resulted in more than 90 percent of the subjects listing the same name when asked, "Did your group have a leader? If so, who?" (Leavitt, 1951; Shaw, 1964).

Finally, as Yukl (1994, p. 223) has argued, "Influence is the essence of leadership." Recent social network studies of influence and power in organizations have demonstrated the usefulness of this relational approach (see Brass, 1992, for a review). To the extent that leadership has been defined as social influence, these results foreshadow the findings from a social network approach to leadership and it is to such an approach we now turn.

SOCIAL NETWORKS

Although many intuitive definitions exist, a network as we are using it here, is defined in the research literature as a set of nodes and the set of connections representing the existence of a relationship, or lack of relationship, between the nodes. In the case of social networks, the nodes represent people (individuals or groups), and the connections may represent any sort of relationship among the people. Relationships typically studied are flows of information (communication), affect (friendship, trust), goods and services (workflow), and influence (advice) (Krackhardt & Hanson, 1993).

We begin with the simple assumption and observation that people interact and communicate to make sense of, and successfully operate on, their environment. Each interaction involves the transmission of information, and it is information that continues to be the most critical and valuable resource in the technological and environmental turbulence of the future. Interaction can be purposeful, coincidentally random, or forced or constrained by factors such as the required workflow and hierarchy in organizations. When the interaction is repeated because it is helpful, or required, patterns of interaction emerge and social networks form. These patterns can change slowly and incrementally, or technological and environmental shocks may provide the occasion for major restructuring (Barley, 1986, Burkhardt & Brass, 1990). Such technological and environmental shocks may be the hallmarks of the twenty-first century.

We focus on the social network aspects of leadership, because as we noted earlier, individual attributes (traits, behaviors, attitudes, and so on) have previously been extensively researched in the study of leadership. In doing so, we do not mean to suggest that individuals do not differ in their skills and abilities and their willingness to use them; or that human capital is unimportant. Rather, we believe that the structural, social network aspects of leadership are equally as important and have been given little attention.

Just as leadership is a relational concept, the basic building block of social network analysis is the relationship. That is, the focus is on the tie, or lack of a tie, rather than on the individual actor. Several ways to describe dyadic (or two-way) ties, such as the strength of the tie, have been offered. However, of primary importance to social network analysis is the overall pattern of ties. The focus then is on the relationships among the dyadic relationships—the network. Although social network measures (such as centrality) can be assigned to individual actors, these measures are not attributes of isolated individual actors, or dyads. Rather, they represent the actor's relationship to the other actors in the network. They measure the relative position of the part within the whole.

The social network perspective assumes that relationships are important because they provide access to, and control of, valuable resources; resources which enable one to make sense of, and successfully operate on one's environment. Thus, the popular press has often noted the advantages of "networking." If

ties provide access to and control of valuable organizational resources (including information), it is logical to propose that leaders with extensive networks will be more effective than leaders with fewer network ties.

Thus, it would seem that bigger networks are better. However, one important qualifying assumption needs to be added: each link in a network has a cost attached to it in terms of time and energy. And, some links are more costly (in terms of time and energy) than other links. For example, maintaining a friendship requires more time and energy than maintaining an acquaintance relationship. Although the intuitive advantages of building a large network have seldom been questioned, only recently has systematic research addressed this prescription. Rather than simply building relationships randomly, we propose two possible strategies for gaining centrality in social networks (as elaborated upon below). They are (1) being connected to highly central others (we refer to this as the strong tie strategy), and (2) being connected to others who are not themselves interconnected (a weak tie strategy). Each provides a strategy for gaining centrality in the network and increasing one's social capital.

CENTRALITY

Centrality is the key component to social capital and leadership in organizations. One need not be an expert in social network analysis to predict that leaders are central to effective organizational networks. Likewise, most people can articulate an intuitive notion of centrality. They might suggest that the leader is at the center of the group, has access to all the other positions, or that the other positions are dependent on the leader. Thus, most people have an idea of what social networks are, what centrality is, and how both might relate to leadership. Consequently, few people would be surprised to learn that an association between central network positions and power and influence has been reported in small, laboratory workgroups, within organizations, across organizations, in professional communities, and in community elites (see Brass, 1992, for a review).

Increasing one's social capital by gaining a position of centrality and leadership in the network can be accomplished in several ways. If one has the time and energy, simply making lots of connections can be effective, if not very efficient. With the capability of new information technologies to link an almost infinite set of actors, it makes sense to consider some better strategies to make the best use of one's connections.

Connecting to Central Others—The Strong Tie Strategy

In social network terms, strong ties are differentiated from weak ties on the basis of frequency, reciprocation, importance, and positive affect (Granovetter, 1973). Strong ties are often characterized as friendships, while weak ties are often said to

connect acquaintances. Strong tie relationships involve actors who may be more credible, trusted sources of information (or other resources), more motivated to provide the resources, and more readily available to provide resources.

For example, valuable information is more likely to be shared with close friends than with acquaintances. One's attitudes and opinions are more likely affected by close friends than by casual acquaintances (Krackhardt, 1992). People are more likely to compare their perceptions of reality with similar others, and information from similar others is viewed as more credible (Erickson 1988). Thus, strong ties may be the primary medium for social influence. Strong links to others also provide social and emotional support. For example, mentoring relationships in organizations usually involve strong ties.

The functional, beneficial consequences of strong ties have often been extolled (at least indirectly) in leadership and management. These are the type of ties that build loyalty, trust, mutual respect, and emotional attachment between "a leader and his men," whether the leader and the followers are men or women. Strong ties develop the unit cohesion and morale necessary for "leading the troops into combat," whether in the military or on the international battlefields of competitive business. Leaders are central to their units by virtue of strong, direct ties to their direct unit and their superiors.

Aside from a leader's direct unit, a strong tie strategy can be used to increase centrality and gain valuable information from others both inside and outside the organization. Assuming a limit to the number of direct links that a leader can maintain, having strong ties to highly connected, central others is more efficient than links to peripheral others who are not well connected. The strong tie strategy allows a leader to be central by virtue of a few strong, direct links to others who have many direct links. The leader has indirect access to resources such as information via the links of the highly connected other. However, the reliance on indirect links creates a dependency on the highly connected other to mediate the flow of resources. Thus, this strategy requires the trust of a strong tie (a close, frequent relationship) with the highly connected other.

Connecting Others Who Are Not Connected—The Weak Tie Strategy

Despite the advantages of strong ties, there is an important disadvantage in addition to the cost in time and energy. People who are linked to an individual by strong ties are likely to be linked themselves (Granovetter, 1973). That is, friends of an individual are likely also to be friends. For example, we invite our friends to dinner, introduce them to each other, and they subsequently become friends. Several people linked by strong ties might be considered a clique, or a highly cohesive unit as was described above. Conversely, people who are linked to you via weak ties are not likely to be linked themselves. An individual's acquaintances are much less likely to be linked than an individual's friends.

The "strength of weak ties" (Granovetter, 1973) lies in the fact that such ties often act as bridges between different groups. As such, these weak relationships often are key sources of novel, divergent, nonredundant information or resources. People linked by weak ties are likely to travel in different social circles. On the other hand, two friends are more likely to be in the same social circle (your own clique) and subject to the same information and resources that are available to you. Thus, the important disadvantage of strong ties is that they may provide redundant information and resources and even lead to groupthink (Janis, 1982)

Weak tie bridges act as conduits for the flow of information between otherwise densely connected, cohesive units. Although the dense connections of strong ties within a group can foster trust and loyalty, a lack of weak ties outside the group can foster density-induced prejudice and mistrust of outsiders. The social psychological literature is rich with examples of ingroup-outgroup biases and stereotypes.

Weak Ties and Structural Holes

A weak tie strategy is advanced by Burt (1992) who suggests that entrepreneurial managers take advantage of structural holes that exist when the leader is connected to two people (or groups) who are not themselves connected. Burt (1992) has noted the advantages of the "tertius gaudens" (i.e., "the third who benefits"). Not only does the tertius gain nonredundant information from the contacts (the strength of weak ties argument), but the tertius is in a position to control the information flow between the two (i.e., broker the relationship), mediating synergistic exchanges, or playing the two off against each other. The tertius or manager profits from the disunion of others.

Burt (1992) has argued that the strength of the tie is less important than the presence or absence of a structural hole. For example, it is possible to have strong ties to disconnected others, and weak ties to highly connected others, although less probable than the reverse. However, the strength of the tie is included in our strategies because relying on a single, highly connected other may require the trust inherent in a strong tie relationship. The highly connected other mediates the resource flow between his or her direct connections and the leader. Thus, in order to avoid the necessity of a redundant connection (to increase reliability), the leader needs the reciprocated trust of a strong tie relationship.

Other things being equal, a leader with a greater number of links will be more central and more powerful than a leader with fewer a number of links. Most of the previous research on centrality and power (cf. Brass & Burkhardt, 1992) would suggest that larger networks are better than smaller networks. We do not mean to suggest otherwise. However, most leaders in organizations will have extensive networks. Very small networks, even if efficient, may not denote leadership. As the size of the network increases, the costs of time and energy become more pro-

nounced. Thus, the effective use of the above strategies will become more predictive of leadership as the size of the leader's network increases.

Expanding Weak-Tie Networks

Although traditional leadership research has focused almost exclusively on the leader and the group of followers, a logical extension is to include the social network structure of a leader's peers and superiors as well. Kotter (1982) and Kanter (1982) have argued the importance of building relationships with peers, both inside and outside the organization. Lateral relationships have been shown to be particularly effective for entrepreneurial managers attempting to implement innovative changes (Kanter, 1982, 1983).

In the case of the army, these lateral relationships to others outside the organization will become even more important as future missions become more joint and global. Vertical relationships to superiors within the organization are also crucial for obtaining valuable resources, particularly information. For example, Brass (1984, 1985, 1992) found that links to the dominant coalition in the organization (a clique of top executives) were strongly related to influence.

If only the immediate unit is considered, it seems intuitive to suggest that the leader develop strong ties with all subordinates. However, as joint, global operations increase, and the importance of obtaining necessary resources from peers, superiors, and contacts outside the organization increases, the difficulty of maintaining strong relationships with everyone increases. When we consider the social and emotional support from strong family ties and non-work related friends, it is the unusual leader who has time and energy to spare. Attempting to maintain too many strong ties can have disfunctional consequences when the expectations of others are not met. Thus, the above strategies, involving weak ties, provide insight on a more efficient use of social capital.

CONTINGENCIES

Both strong and weak strategies can be effective in increasing a leader's centrality and social capital, and both strategies can be used simultaneously in regard to different groups or individuals. However, certain contingencies may dictate the usefulness of one rather than the other. These include the surrounding network structure, career stage, boundaries to entry, rapidly changing environments and technologies, and the need for vision and innovation.

Surrounding Network Structure

In choosing between the strong and weak tie strategies, knowledge of the network structure of followers, peers, and superiors, as well as those outside the orga-

nization, may determine the appropriate strategy, and leadership effectiveness. For example, groups of others (peers, superiors, outsiders) may differ in the degree to which they are interconnected. Dense groups have many interconnections, while sparse groups are scattered, with few connections. As in everyday use, a clique is characterized as a relatively dense subgroup. If actors are naturally divided into cliques, it is efficient for the leader to form connections to at least one member of each clique. To concentrate the leader's connections within only one clique is disadvantageous for two reasons.

First, many connections to members of the same clique, who are connected to each other, will be redundant (Granovetter, 1973). The leader will not be getting new and different information from each of the time-consuming links. Second, since groups whose members have connections to the leader are more likely to cooperate with the leader, then leaving a clique without such connections reduces the leader's leverage over that group. By spreading ties out among the various cliques, leaders are maximizing their ability to mobilize all their followers and minimizing the chances that a disenfranchised group will resist or rebel.

If others are not themselves connected, it is efficient for the leader to form weak relationships (weak tie strategy) with them. This is the essence of the weak tie strategy—connecting those who are not connected. The scattered, unconnected pattern represents the entrepreneurial opportunities provided by structural holes, as suggested by Burt (1992). It would be far too time consuming to attempt to build strong ties with each of the scattered actors.

A centralized group is defined as one in which one or a few members are central in the network, while the remaining members are relatively peripheral. Prior research has found that individual centrality is strongly associated with power (Brass, 1984, 1992; Krackhardt, 1990). Thus, centralized groups have a few elite who are relatively powerful within the group, and the remaining members enjoy less power. If there is variance in the centrality among the actors, it is most efficient for the leader to be strongly connected (strong tie strategy) to the most central actors. This is the essence of the strong tie strategy—connecting to highly central others. These central players tend to be more knowledgeable and have access to more resources and relevant information that could be passed back to the leader (Krackhardt, 1990).

Career Stage

Kilduff and Krackhardt (1994) demonstrated the power of strong ties from a slightly different perspective. They found that a friendship link to a prominent person in an organization tended to boost an individual's performance reputation. They found that the network as perceived by others, rather than the actual network, significantly predicted reputations. Thus, it appears that individuals may acquire power by "basking in the reflected glory" of prominent others. Similarly, Brass

(1984, 1985) found that links to supervisors and the dominant coalition were related to promotions for a sample of non-managerial employees.

While being closely linked to a powerful other may result in basking in the reflected glory, it may also result in being perceived as second fiddle. In the latter case, one's own talents are diminished in the presence of a powerful other (i.e., one is perceived as riding the coattails). The difference in perceptions, and the difference in career advantage, may be the result of the stage of one's career. Early in one's career, strong connections to a mentor are perceived as an indication of potential success. Early in a career, the mentor provides access to the network. Later in one's career, one is expected to successfully perform on one's own and to mentor others, especially if one is to obtain leadership status.

Boundaries to Entry

Women, minorities, or newcomers may face barriers to entry in established networks (Ibarra, 1992, 1993) as Burt's (1992) analyses suggest. Using the criterion of early promotions, Burt (1992) found the weak tie strategy (presence of structural holes) to be more effective for a sample of 284 managers in a large, high-technology firm, except in the case of women and newly hired managers. For women, the strong tie strategy worked best. Thus, a strong connection to a powerful, well-connected mentor may overcome such barriers. This idea is consistent with Brass' (1985) results in a non-supervisory sample; links to the dominant coalition tended to be related to promotions for women as well as men.

Rapidly Changing Environments and Technologies

The dynamic environment and matrix organization in the high technology firm studied by Burt (1992) may partially explain the advantage of the weak tie strategy in his sample. Rapidly changing environments would naturally favor the diversity of information advantage of the weak tie, structural hole strategy. Consistent with this, Krackhardt (1990) found that power was related to a weak tie strategy (betweenness centrality) in a high-technology firm. Likewise, rapid changes in technology may provide leaders with opportunities to acquire power (Burkhardt & Brass, 1990). Rapid changes would naturally support a weak tie strategy in which the teritus gaudens can broker synergistic transactions between diverse others. Likewise, rapid change may make strong ties obsolete.

Vision and Innovation

The emergence of the "transformational" paradigm in leadership has resurrected interest in visionary, inspirational, charismatic leadership, emphasizing the personal attributes and activities of leaders (Bass, 1996; House, Spangler & Woycke, 1991; Kuhnert & Lewis, 1987; Yammarino & Bass, 1990). Rather than

appealing to the self-interests of followers, the transformational leader motivates followers to transcend their own self interests for the sake of the larger group. Recognizing the need for revitalizing the organization, the transformational leader inspires followers with a vision of a better future (Tichy & Devanna, 1986).

Although creating and disseminating an inspirational vision is an integral part of transformational leadership, this approach has largely ignored the communicative network paths through which such inspirational visions are formed and/or transmitted. Rather, the focus has been on the content of the vision and the personal attributes, values, and personality (the human capital) of the leader (Kuhnert & Lewis, 1987; Larwood, Falbe, Kriger, & Miesing, 1995; Westley & Mintzberg, 1989). An exception is Tichy and Devanna (1986) who suggest that the transformational leader develops extensive external networks to a diverse set of contacts.

Likewise Bennis and Nanus (1985) found that top-level organizational leaders did not develop these transformational visions in isolation. Rather, these top executives reported extensive contact, both within and outside their organizations, and attention to a diversity of viewpoints from others. Thus, when innovation and vision is required of leaders, they will be more effective in developing visions when they form extensive weak ties to diverse groups.

As noted previously, weak ties are more effective than strong ties for acquiring novel, innovative, non-redundant information. The acquisition of creative ideas (Brass, 1995b) may require contacts with a scattered, disconnected group of actors, including actors in different functional areas and actors outside the organization. Developing strong ties to the extensive, diverse group of actors that would be needed would be extremely time consuming.

Developing network paths for transmitting transformational visions throughout the organization may require a different strategy. It is difficult and time consuming for the leader to personally transmit the vision to each follower (although the electronic media can be effectively used). Rather, the diffusion of such information might be more efficiently and effectively accomplished through the strong tie strategy. The transformation leader can trust the strong tie link to central actors in each clique, or workgroup, allowing those central actors to translate the vision to others. Such a strategy transmits the vision to the greatest number of others in the shortest amount of time.

IMPLICATIONS FOR TRAINING AND RESEARCH

From a social capital perspective, perhaps the first and most important step in developing leaders for the twenty-first century is an awareness of social networks and their importance in gathering information, creating change, acquiring resources, coordinating activities or missions, and providing help in personal career advancement. Awareness of these possible benefits leads to an assessment of one's own network. This is not a simple task, as listing everyone who knows

you can be an extensive undertaking. Noting your indirect contacts (people whom your direct contacts know) is a practically impossible task. However, network research indicates that it is indeed a small world. Two randomly selected people can reach each other through a surprisingly few number of links, especially when these paths are composed of weak links (Travers & Milgram, 1969).

A less time consuming assessment approach is to identify the highly connected members of your organizations and assess your distance from them. Direct links count as 1, indirect links 2, and so on. The strong tie strategy involves reducing this distance. However, it is often not a simple task to create strong ties with prominent, highly central people, or members of the dominant clique in an organization. The reciprocal nature of strong ties require the use of good interpersonal skills in building relationships. Yukl (1994) provides several prescriptions: doing unconditional favors for others, appreciating favors done for you, becoming a valuable trading partner, and in general showing acceptance and positive regard for others. These are not shortcuts for building superficial relationships. They require sincere effort and a considerable investment of time and energy.

Opportunities for network ties are created by actor similarity, spatial and temporal proximity, and organizational structure, such as hierarchical reporting relationships and workflow interdependencies (Brass, 1995a). Networking beyond these organizationally structured opportunities may involve taking advantage of ceremonies, meetings, and social events, as well as joining outside groups such as professional associations and civic groups (Yukl, 1994). The advent of informational technologies such as electronic mail, cell phones, teleconferences, and networked simulations provides additional opportunities.

More difficult to teach is the weak tie strategy, connecting to those who are not themselves connected. A weak tie assessment can be made by considering the various other groups that might be instrumental in your career and job performance (both inside and outside your organization) and noting contacts or acquaintances in each group. Contacts in different, otherwise unconnected groups provide opportunities for leaders to act as a synergistic links between them.

The difficulty in forming weak ties is that we prefer to interact with those we already know, particularly those who are similar to ourselves. Similarity breeds attraction; attraction breeds interactions; and interaction breeds even more similarity. Thus, there is a comfort and ease of interaction with people who are similar to ourselves.

However, the army provides its leaders with a number of opportunities to develop and maintain weak-tie networks throughout thieir careers. For example, two otherwise unconnected groups, academic and military, were bridged by the symposium on which this volume is based. A variety of operational assignments including line, command, and staff positions, may be particularly useful in developing the weak-ties leaders the new army will require. Joint and combined exercises also provide opportunities to make contacts with U.S. Navy, Marine Corps, and Air Force personnel as well as leaders from foreign services.

Research is needed to determine whether these weak ties, formed during symposia and conferences, as well as short assignments, are maintained, and whether they foster the global, joint perspectives that lead to effective synergies in future activities. Likewise, further research is needed to determine whether strong tie strategies, such as assigning aids to high ranking personnel, are effective in providing access to established networks for women and minorities. Further work is needed to understand how to structure such assignments so that they are viewed as high potential rather than "second fiddle" or riding the coattails.

CONCLUSIONS

Although the social network approach can be viewed and tested as a competing explanation of leadership, the propositions here are based on the assumption that the social capital and human capital approaches can be best understood as simultaneous, complementary perspectives. Just as human capital may be useless without social capital, the reverse is also true. Potentially advantageous structural positions in the organizational network may not translate into effective leadership if the occupants have neither the skills nor willingness to effectively utilize their connections. Leaders must be active agents in transforming social capital into actual use.

If the visions of the twenty-first century are correct, the army as well as non-military organizations will be facing the technological and environmental shocks that may provide the occasion for major restructuring of required interactions and consequently, social networks. Social capital becomes more important as environments become more volatile and the boundaries to decision-making become more permeable. Information processing technologies, while providing virtually infinite numbers of connections, also emphasize the importance of the efficient use of these connections. Building random networks of connections becomes less and less efficient as the number of possible connections increases. Thus, the strategic use of both strong and weak ties becomes more important as we move into the twenty-first century.

The rapid changes may make strong tie strategies less useful than they have been in the past. Strong ties are resistant to change and provide redundant information that may be self-confirming within highly cohesive units. In facing the challenges of uncertain, changing technologies and environments, strong tie networks may offer few alternative perspectives or solutions to novel problems. Thus, weak-tie strategies may provide the necessary information and the ability to link diverse groups together in a cooperative, successful manner. Weak ties across groups can become trusted strong ties as useful interactions are repeated, and trust builds among actors. Under such circumstances, strong ties can link diverse groups and provide the mutual benefits of each. These are the patterns of social

capital that must be encouraged, and researched, in order to face the challenges of the next century.

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