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Six Myths About Informal Networks — and How To Overcome Them

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Informal Networks
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Informal groups of employees do much of the important work in organizations today. To help those networks reach their full potential, executives must come to grips with how they really function.

Rob Cross, Nitin Nohria and Andrew Parker

Over the past couple of decades, management innovations have pushed companies toward the ideal of the "boundaryless" organization. On the inside, delayering, reengineering and the rise of cross-functional teams have pushed decision making and accountability downward and made functional boundaries more permeable, increasing the flow of information in the process. On the outside, joint ventures, alliances and supply-chain integration have blurred borders between companies.

As a result of these changes, formal reporting structures and detailed work processes have a much diminished role in the way important work is accomplished. Instead, informal networks of employees are increasingly at the forefront, and the general health and connectivity of these groups can have a significant impact on strategy execution and organizational effectiveness.

Informal networks often, for example, provide the glue that holds together cross-functional process-improvement initiatives, alliances and mergers. They can also be significant contributors

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to new-product development; in the pharmaceuticals industry, for instance, the type of informal network known as a community of practice is critical to reducing drug development costs and to the more rapid introduction of new products. In addition, informal networks are important sources of job satisfaction and retention. Many employees today join and commit to local sets of relationships while feeling no particular allegiance to the corporation as a whole.

Many corporate leaders intuitively understand these facts — put an org chart in front of any executive today and he or she will tell you that the boxes and lines only partially reflect the way things are done in the organization — but few spend any real time assessing or supporting informal networks. Their very invisibility as formal organizational entities, combined with the absence of clear ownership, are major reasons for this neglect. And because they do not receive adequate resources or executive attention, these groups are often fragmented and their efforts disrupted by management practices or organizational-design principles that are biased in favor of task specialization and individual rather than collaborative endeavors.

Informal networks — also known as social networks — are especially important in knowledge-intensive sectors, where people use personal relationships to find information and do their jobs. This fact is supported by our own research and that of many others. One researcher who looked at this question for more than a decade, just to give one example, found that engineers and scientists were roughly five times as likely to turn to friends or colleagues for information as to impersonal sources.[1] Despite the explosion of information that is accessible through the Internet and databases, people still rely heavily on their networks for help with their work.

Because of the increasing importance of relationships in the workplace, we initiated a research program two years ago to determine how organizations can better support work occurring in and through informal networks of employees. Working with a group of Fortune 500 companies and government agencies, we assessed more than 40 networks in 23 organizations. In all cases, the networks provided strategic and operational benefits by enabling members to collaborate effectively.[2] We discovered, however, that executives had to make counterintuitive shifts in their thinking if they truly wanted to promote the health of these groups. In almost every organization we studied, management's decisions to intervene in a network were based on myths — deeply held assumptions — about what would, and wouldn't, make them more effective.

We saw that executives believed broadly in six myths about social networks. In the course of our work, we helped managers understand the myths and how they were misguided at best and harmful at worst. We also helped them operate according to reality checks; in other words, to find alternative ways of intervening in informal networks for the greater good of the organization. Senior managers who can separate myth from reality, and act accordingly, stand a much better chance of fostering the growth and success of these increasingly important organizational structures. We'll review each assumption in turn to explain how and why that is true.

Put an org chart in front of any executive and he or she will tell you that the boxes and lines only partially reflect the way things are done in the organization.

Myth: To build better networks, we have to communicate more.

Executives often assume that communication of any and all kinds — even pure socializing — is the essence of an informal network. As a result, they commonly conclude that uniting fragmented networks or developing sparse ones is simply a matter of more and better communication. Their thinking usually changes when they are asked, "Do you, yourself, want to attend more meetings or receive more e-mail?" Most executives cringe at the thought and start to see that more communication in a world of information overload is not the solution.

Extend the thought, and it's clear that the quantity of communication in any situation has no necessary bearing on its quality. It's easy to prove this by asking people two different questions and then mapping the resulting networks: With whom do you routinely communicate? and To whom do you typically turn for information to do your work? (These maps can appear forbidding to the uninitiated. For help in demystifying them, see the exhibit "How To Read a Network Diagram.") In our research, we found that answers to these questions yield very different diagrams. When the diagram of information seekers (second question) is subtracted from the diagram of communicators (first question), a web of people who say they are communicating but aren't exchanging useful information often comes to light.

Reality Check: To build better networks, focus on who knows what.

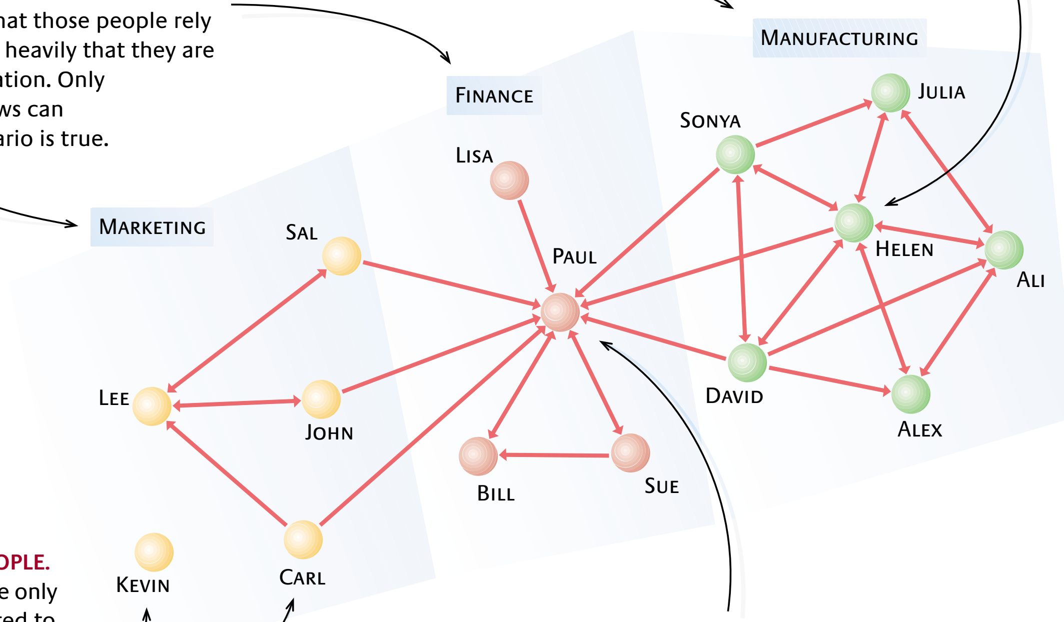
Managers should resist the tendency to equate communication and socializing with network building. They are better served by distinguishing between the actual achievements of a network — what it

How To Read a Network Diagram

Information collected from social network surveys can be used to create network diagrams that illustrate the relationships between members of a group. This example shows the flow of information within a globally dispersed product-development team.

SUBGROUPS. Groups within a group often arise along the lines of location, function, hierarchy, tenure, age or gender. In this case, the team is split by function; very little information is being shared among the three groups. Moreover, connections in marketing and finance are sparse, while the manufacturing subgroup is tightly knit. That can be a good thing or a bad thing. Perhaps the manufacturing people have developed communication practices that the team as a whole could use to its benefit. It's also possible that those people rely on one another so heavily that they are preventing integration. Only follow-up interviews can reveal which scenario is true.

LINES AND ARROWS. Each line indicates an information link between two people; arrows represent the direction of the relationship (incoming arrows show that the person is a source of information; outgoing, that the team member seeks information from the linked party). Thus Helen has two-way relationships with each member of the manufacturing group but limited or no contact with marketing and finance.



PERIPHERAL PEOPLE. Some people are only loosely connected to a network; a few may be completely isolated—members in theory but not in practice. In this network, no one goes to Carl for information, and Kevin is out of the loop entirely. As is true with central people, the diagram alone doesn't say anything about the value of peripheral people. Such outsiders often turn out to be underutilized resources, and integrating them can be critical to a network's effectiveness and efficiency. Of course, sometimes people are isolated for good reason: They lack the skills, social and otherwise, for the job. By identifying peripheral people, network analysis enables appropriate developmental action to be taken.

CENTRAL PEOPLE. Network diagrams make clear who the most prominent people within a group are. On this team, nine people rely on Paul for information. His colleagues in finance come to him, but so do people in marketing and manufacturing. Paul himself does not reach out to people outside of finance. The diagram alone can't tell us if Paul's impact is positive or negative. If the group is overly dependent on him, he may be a bottleneck, slowing the flow of information and holding up decisions. On the other hand, people like Paul often play a very positive role in a network — providing not only valuable information but also cohesion — and would render the group much less effective if they left the company.

has done or is currently doing — from its potential accomplishments. To do that, they must shift the question from Who is currently obtaining information from whom? to Who knows what? Answers to the second question will show fruitful connections that might be made in the future; the result of this analysis should be a network that can leverage its members' expertise in the face of new problems or opportunities.[3] This was the case in a recent merger between two financial institutions, where managers developed an awareness of who had unique skills and expertise at each organization. Such understanding is critical to the success of any merger involving knowledge-intensive organizations.

Beginning with who knows what also gives managers ways of building networks that can complement efforts based on assessments of current flows of information. Thus if they find that a network is sparse, they might apply technical solutions such as skill profiling to help employees search for expertise in the organization. (Skill profiling requires employees to record their expertise and experience in a central, searchable database, updating their file as new projects yield new skills or knowledge.) Companies can also leverage HR practices to improve awareness of who knows what. For example, they can bring together newcomers and experienced hands by scheduling lunches for that express purpose. Or the knowledge and skills of new people can be advertised by creating "baseball cards" that can be posted in common areas.

Companies may also benefit by changing staffing practices. One professional services firm attempts to have its people work on a project in another office at least once a year. The relationships that result from this practice benefit the firm as a whole by building connections between offices. They are often critical to the firm's ability to win new contracts and to deliver high-quality service on existing ones. The relationships help employees accomplish more than they could if they had to rely solely on their own expertise or that of local colleagues.

By working with networks that start from what people know, managers can intervene to sustain informal groups without adding the burden of more and potentially useless communications.

Myth: Everyone should be connected to everyone else.

In the course of our analysis, we frequently found that executives jumped to the conclusion that more connections within a network must always be better. However, in networks of any size it is not possible for everyone to be connected to everyone else, nor is it desirable. Rather than leading to improved collaboration and problem solving, an indiscriminate increase in connectedness can be a drag on productivity, as people get bogged down maintaining all their relationships.

Reality Check: People should be connected when a strategic payoff is likely. Instead of trying to develop a fully integrated network, managers will find it more fruitful to invest in developing and maintaining relationships that have strategic value. A tool called *social network analysis* can be applied to make clear where such critical junctures exist within the organization. (For a brief look at this tool, see "Conducting a Social Network Analysis.")

We found, for example, that many organizations were not getting the kind of cross-boundary collaboration they needed to take advantage of new opportunities. Mapping the pattern of information flow (or, more frequently, lack of flow) across functional barriers revealed where management should make efforts to promote strategically valuable collaboration. Defining these critical junctures in networks allows managers to take a targeted approach to improving collaboration. It's much easier to bring about change in this manner than to attempt it through broad, top-down mandates designed to get everyone working together, or through a full-scale organizational-learning intervention or by altering an entire organization's incentive schemes.

Consider how a focus on targeted collaboration based on strategic needs played out at a commercial bank. The sponsor of the project asked us to assess the network of the bank's top 62 executives; his goal was to create a more fluid leadership group so that employees in the organization could more effectively tap into their colleagues' expertise to respond to new lending or fee-based opportunities. He knew that such opportunities were often overlooked by his employees simply because they did not know that the organization had expertise to address them.

As we engaged in analysis of the network, we discovered that 49% of all pairs of individuals within the real estate lending division had collaborative relationships. In stark contrast, only 10% of all pairs in which one person was a member of the real estate division and the other a member of the commercial lending division were collaborating. Needless to say, given the organization's strategic initiative to integrate service offerings for key customers, this lack of collaboration was a real problem. Similarly, we found a lack of integration between the risk

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Conducting a Social Network Analysis

The most important managerial tool available for assessing patterns of relationships in informal networks is called social network analysis. By making critical patterns of interaction visible, *social network analysis* helps managers give informed answers to such questions as: Does information flow smoothly within a given network? Do functional departments or business units collaborate appropriately in taking their services to market? Is the collective expertise within a network being leveraged effectively? The result of such probing is likely to be improved collaboration at strategic junctures within an organization. Managers can carry out a social network analysis by following six steps:

PICK THE RIGHT GROUP

Although social network analysis can be applied to any group — from one consisting of a few people to an entire organization — it's best to focus on those that are strategically important. Examples include top leadership networks, groups operating in cross-company partnerships and alliances, teams involved with new-product development, and networks of people who cross core work processes. In general, groups that cross physical, functional or hierarchical boundaries are good targets for improvement.

ASK THE RIGHT QUESTION

Social network analysis can be used to find out a variety of things about the groups in an organization. Companies are usually most interested in the flow of information within a network (the overarching question, then, is, Who do you seek information from to help you do your work?) or in the interdependent nature of certain tasks (the question shifts to, Who do you rely on for input to complete your work?). Other questions can provide valuable information about networks that exist on the basis of trust, career advising, and even energy (when you interact with so-and-so, how does it affect your energy level?).

DESIGN THE SURVEY

In addition to questions about the network itself, the survey should include demographic questions about the respondent's time in the organization and in the group; it should also ask about geographic location, organizational function and gender. Answers to such questions can indicate impediments to the network's ability to surmount various boundaries. To reassure people about confidentiality, the survey should explain how the results will be used. Finally, it's advisable to keep the time needed to complete the survey to no more than 20 minutes; Web-based survey tools make this easier to accomplish. After 20 minutes, survey fatigue tends to set in.

COLLECT THE DATA

The quality of a network analysis is highly dependent on getting a survey response that lands in the 80% to 100% range. If a key person is omitted from the network because he or she did not complete the survey, the analysis will be badly skewed. To ensure a high rate of response, a strong project sponsor must be willing to send several e-mail messages reminding people to complete the survey. Inducements such as movie tickets, lotteries for prizes or time off can also help persuade people to respond. Note that network data can also be collected by analyzing e-mail or phone logs, and even through personal observation. But surveys are generally preferred because they can be used to ask targeted questions.

ANALYZE THE DATA

Once the data have been collected, they can be viewed using a variety of network-drawing packages. (These can be obtained easily by searching the Web and can range in price from free to thousands of dollars.) Similarly, network analysis software is available that can derive metrics from the data; for example, it can show through quantitative analysis who the central people are in a given network. On its own, the drawing software will reveal the overall pattern and key players of a small group, but quantitative analysis is especially important for analyzing larger networks.

SHARE THE RESULTS

Although much can be learned from interpreting the data, the full value of the analysis will be realized only after the results have been shared with the group or with executives who have a good awareness of the group. (Depending on the terms set out in the survey, names can be disclosed or kept confidential.) Sharing information provides a powerful stimulus to collective sense making and problem solving. Network information, then, is both a valuable diagnostic tool and an agent of change.

assessment unit and the lending divisions (collaboration with real estate, 7%; with commercial, 8%), despite the institution's recent restructuring to integrate risk assessment into the lending processes earlier in order to reduce rework and cycle time on loan applications.

As a result of the analysis, the bank made several policy and procedural changes. It established sales goals to ensure cross-selling between the commercial and real estate lending divisions. It required lending teams to include a credit analyst in the proposal stage. These and other changes had the desired effect: the cost of booking loans declined as time and energy spent on low-quality loans diminished, and revenues increased as a result of cross-selling to existing accounts.

> **When executives do attempt to promote collaboration, they usually turn to a technical solution.**

Myth: We can't do much to aid informal networks.

Many executives were either taught in business school or decided as a result of their own experiences that it's not possible to do much about the informal parts of an organization.[4] At the root of such thinking is the pervasive belief that network patterns are exclusively the result of personal relationships. Personality differences, executives say, are the reason some networks exist and others fail to form; thus two groups are not integrated because they are made up of "different kinds of people," and two other networks exist because of a feud between two managers. While such dynamics can be important, systemic forces create network patterns as frequently as personality clashes.

Reality Check: Informal networks can be aided by changing the organizational context. When executives do attempt to promote collaboration, they usually turn to a technical solution. In fact, most of the organizations we work with have a more than adequate but underused technical infrastructure which includes such elements as skill-profiling technologies and tools that allow people to work together in different locations. Rather than relying heavily on technology, managers should consider how changes in four areas of organizational context can improve collaboration in informal networks.[5]

The first area of context to consider is the organization's formal structure. To intervene in networks, managers must understand how the formal structure impedes group effectiveness. For example, in organizations with a strong top-down culture, informal networks themselves tend to closely mirror the prevailing pattern of hierarchy; as a result, they lack the flexibility to respond effectively to new opportunities. Some degree of empowerment is necessary in these situations if flexible networks are to evolve. In other cases, informal networks can be heavily constrained by functional or departmental boundaries as leadership, job design, information systems and performance-management practices promote collaboration within units but not between them. Creating time and space for cross-unit collaboration is a critical leadership challenge in these settings. A pharmaceutical organization in our study does this by building cross-functional projects into its annual budgeting and planning processes. By bringing together expertise on different drug compounds, the organization has become more efficient and realized new market opportunities.

Work management practices constitute a second important element of organizational context. The natural unit of work for a group is one of the most powerful levers available to managers who want to develop a network's effectiveness. In contrast to off-site events or team-building exercises, the development of relationships in this context occurs in the pursuit of organizational objectives and so is comparatively inexpensive.

Managers should be creative in thinking through ways to carve out assignments that can lead to effective collaboration. Several consulting firms, for example, have begun to put two or more people on projects even when it might be more efficient to have only one person involved for a longer period of time; they have found that the value of the relationships that develop outweighs the costs associated with starting up and marketing more projects. Morale is higher and turnover lower in such settings, and the consultants build stronger personal networks that they can tap into on future projects.

Employee management practices are a third area of organizational context affecting collaboration. Human resource decisions, which become institutionalized to the point of being taken for granted, often have long-lasting effects on collaborative activity. In addition, executives can take a range of actions that promote collaboration, from hiring people who have demonstrated collaborative practices to rewarding people for collaborative efforts. (Paradoxically, companies often use critical-incident techniques that require job candidates to describe actual scenarios in which they were collaborative; yet the same companies admit that they base hiring decisions purely on individual expertise.) Managers often have the latitude, at a minimum with targeted rewards, to formally recognize collaborative behaviors. Such recognition can be a powerful signal about what kind of work is valued by the company.

Finally, cultural values that prize individual accomplishment over collaborative endeavors and behavioral norms that keep people from sharing ideas until they are fully formed can result in sparse network patterns. Who is publicly praised in most organizations? The person who took a risk or overcame the odds to achieve something, or the one who involved others in solving a problem? Typically, the hero is noticed and networks suffer, often invisibly, as a result. Leaders can change that culture over time by publicly acknowledging collaborative work, rewarding those who go out of their way for others, and promoting such people along with the rainmakers.

Cultural values that prize individual accomplishment over collaborative endeavors can result in sparse network patterns.

The key for managers is to begin the process by defining the collaborative behaviors that have strategic importance; only then will they be able to reward people appropriately. For example, the managers of a technology company we worked with were concerned about the "not invented here" syndrome so prevalent among engineers. The organization had world-class expertise, but social network analysis revealed that people rarely reached out to colleagues outside their project teams. One step executives took to begin correcting the problem was asking — in every project review, update or planning meeting — who people on the team had contacted on the outside and what the team's plans were for continuing to leverage outside experts.

Myth: How people fit into networks is a matter of personality (which can't be changed).

It's commonly held that people who are good networkers fit a stereotype: They are extroverted, social and aggressive in the pursuit of their goals. The view that personality determines who is and who isn't likely to be an important member of a group contributes to the idea that little or nothing can be done to improve the effectiveness of informal networks. After all, executives often say to us, it's not really possible to change someone's personality.

Reality Check: How people fit into networks is a matter of intentional behaviors (which can be influenced). We have mapped personality scales such as the Myers-Briggs test on our social network analyses and found that the link between someone's personality and his or her position in a network is not as strong as one might think.[6] Even highly introverted people can, and often do, have robust personal networks. Managers should focus less on personality and more on the behaviors of people who wind up at the center of networks.

From our interviews with people in networks, we discovered that those who occupy pivotal positions do things differently from those who stay on the margins. Central people don't focus exclusively on getting tasks done; they also consider how to build relationships and get others involved in the work. In fact, because they realize the future value of relationships, they take the time to systematically build their own networks. Such people often include relationship building as a critical part of their professional development plans and always seem to have lists of people they are trying to meet or planning to call.

Network patterns, then, are a product of intentional behaviors rather than entrenched personality characteristics — and, in contrast to personality traits, behaviors can be taught or encouraged. Managers can take specific steps to leverage the expertise of peripheral network members, for instance, by having them work with better-connected colleagues and by having them answer requests for information directly (so that others will come to recognize what they know and will turn to them in the future). People can also be trained to learn how to assess, develop and support their own networks. (When executives thoroughly analyze their own networks, they often uncover a variety of biases; that is, they find that they turn only to people in the same function or in the same geographic location or of the same gender, and that they generally fail to reach down in the hierarchy, where the best information usually resides.) Thus network development can be embedded in an organization's routines by making it a critical component of orientation practices, professional development plans, learning exercises and staffing initiatives.

Myth: Central people who have become bottlenecks should make themselves more accessible.

People at the center of an informal network often work long hours at a grueling pace. Their very work ethic has, in fact, made them essential to the network's effectiveness, and they often feel that they must work harder and be more available, if necessary, to keep it running smoothly. What such people fail to understand, however, is that they frequently become bottlenecks who slow down the whole group.

Reality Check: Central people who have become bottlenecks should shift burdens for providing information and making decisions to others in the network. More accessibility and harder work on the part of pivotal people is not the solution. To understand why, consider what we learned by examining a global network of 218 people within a technology organization. The executive running this group had six direct reports (managing principals) based in various regions of the world; the rest of the organization reported to these people. One managing principal had 51 people indicating that they came to him for critical information to get their work done and another 48 saying they would be more effective in their work if they were able to communicate more with him. In short, the manager was working at his limits but had become a bottleneck for the group. His immediate world was one of fast decisions and action — things always felt like they were happening at an incredible pace — and he had no idea he was slowing down the group. It was not until we sat down with him and showed him the network analysis and results of our interviews that he became aware of how he was obstructing opportunities and holding up projects. He quickly determined that he could shed responsibility for owning certain information and decisions. As a result, he freed up his own time for efforts that drew on his expertise, and the network itself was less constrained by him.

Although this is an extreme example, we have consistently seen this pattern in a wide range of networks. Senior managers can intervene to correct the problem by reallocating information domains (that is, who's responsible for what information) and changing decision rights (allowing others to make decisions).

People often become central to a network because they know things that bridge different parts of the organization. But such people have to give up on the losing battle of trying to answer everyone's questions. Rather, they should learn to point people toward others in the network with the expertise to provide answers. Such action not only opens up the bottleneck, it also draws in peripheral people to the center of the network.

Defining a busy executive's information domains and considering ways to reallocate ownership of them can usually be done in a couple of hours, even over lunch. Start with the executive's role in directing the substance of meetings held during the previous month. In addition, it can be helpful to review the subject lines of e-mail messages from the same time period. These quick exercises almost always allow people to identify categories of informational requests that others in the group could own more productively.

Clarity about who gets to make decisions is an even bigger problem than how information flows in informal networks. People frequently let opportunities pass because they feel that the cost of getting a simple decision approved is excessive. Even worse, members of newly formed groups often don't know where to turn to get a decision made. They end up trying to get an audience with some busy executive, which only slows the process down. It also adds an element of risk: The organization can become too reliant on one decision maker, someone who is frequently too far removed from day-to-day issues to be able to make a well-informed decision.

Managers should focus less on personality and more on the behaviors of people who wind up at the center of networks.

The same analysis used on informational requests can be applied to decision categories. Again, many categories can be delegated. For example, travel approvals can easily be handled by an administrative employee or with a policy (a travel budget for each person, for example). Less routine decisions can also be effectively distributed to the experienced people in a network.

Myth: I already know what is going on in my network.

Executives often claim that they have a good understanding of who is in their network and how it operates. As far as their immediate circle goes, that is usually true, but it is false when applied more broadly to include all the people they interact with or manage. As a way of getting them to consider that next level, we ask, "When and how have you had your perception tested?" They usually can't answer. Studies show, in fact, that managers often have a limited understanding of the networks around them.[7]

Reality Check: Those who are most adamant in asserting that they know their network are usually the farthest off base. By virtue of their position in the hierarchy, managers are frequently far removed from the day-to-day work that generates an organization's informal structure and so may have a limited picture of relationship patterns. The problem is compounded by the fact that most executives do little to systematically assess and support informal groups. They spend vast sums of money for new information systems or to implement better and faster financial-reporting practices but seem less inclined to make the investments that would give them a clear picture of how work is getting done within their organization. That's usually because executives are bound by myths about informal networks and don't realize the potential of social network analysis to map important networks and the interventions that might emerge from this perspective.

In today's knowledge-intensive environment where organizations have been significantly restructured, creating healthier informal networks is a critical job of managers and executives. Collaboration across organizational boundaries is required, as people seek out innovative solutions to increasingly complex and interconnected problems. The key point for managers overseeing informal networks is that, contrary to conventional wisdom, such groups can be supported in ways that produce strategic and operational benefits for the whole organization.

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2. Our work with these networks was designed to test several relational and structural models of knowledge creation and sharing in social networks. We typically tested each empirical model in two to four organizations in order to generalize findings beyond a single network analysis (the prevalent mode in the scholarly literature). Just as important, we sought to develop managerial applications of social network analysis, a goal that has not been a central concern of the field. To do that we engaged with each company in four- to six-hour problem-solving sessions in which we fed back results of our assessments to executives and facilitated brainstorming sessions to develop insight into applications of social network analysis. Further, where possible, we conducted follow-up network assessments or in-depth interviews (or both) to get a true understanding of the impact of interventions in support of informal networks.

3. This notion was drawn from scholarly research on transactive memory in groups. For a review, see R. Moreland, L. Argote and R. Krishnan, "Socially Shared Cognition at Work: Transactive Memory and Group Performance," in "What's Social About Social Cognition?" ed. J. Nye and A. Brower (Thousand Oaks, California: Sage, 1996): 57-85. Other researchers have since begun to apply social-network techniques to further expanding this notion: S. Borgatti and R. Cross, "A Social Network View of Organizational Learning" (Washington, D.C.: Academy of Management Proceedings, 2001); and R. Cross, A. Parker, L. Prusak and S. Borgatti, "Knowing What We Know: Supporting Knowledge Creation and Sharing in Social Networks," Organizational Dynamics 30(2): 100-120.

4. Part of this problem also seems to stem from the focus on communities of practice and strong arguments that they must be left alone to emerge. We would suggest that forces we identify also affect the ability of a community to emerge effectively in a given organizational context.

5. For much more depth on these ideas. see R. Cross and A. Parker, "Toward a Collaborative Organizational Context: Supporting Informal Networks in Knowledge Intensive Work," working paper 43, University of Virginia, Charlottesville, Virginia, November 2001.

6. Other scholarly studies have found only slight relationships between personality characteristics and network position; however, these studies are rare and have not been replicated as this is an emerging area for management scholars. See A. Mehra, M. Kilduff and D.J. Brass, "The Social Networks of High and Low Self-Monitors: Implications for Workplace Performance," Administrative Science Quarterly 46 (March 2001): 121-146; and R.S. Burt, J.E. Jannotta and J.T. Mahoney, "Personality Correlates of Structural Holes," Social Networks 20 (January 1998): 63-87.

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