A Study of Inter- and Intra-Organizational Networking Activities Among Business College Administrators

Augusta C. Yrle
Department of Management
University of New Orleans
New Orleans, LA 70148
(504) 280-6481

Sandra J. Hartman
Department of Management
University of New Orleans
New Orleans, LA 70148
(504) 280-6481

Charles Grenier
Department of Management
University of New Orleans
New Orleans, LA 70148
(504) 280-6481

Olof H. Lundberg, Jr.
Department of Management
University of New Orleans
New Orleans, LA 70148
(504) 280-6481

This study examines how deans and associate deans of a group from similar universities use networking. Specifically, we consider whether the deans, traditionally considered to perform boundary-spanning functions, make more use of external networking than do the associate deans, who are their subordinates. We examine the relationship between accuracy in perceiving a network and influence in the network. Finally, we consider the relationship between reports of networking outside the sample and influence within the sample. We find support for our first two propositions and raise several issues related to our final one.

In this study, we examine the internally and externally focused activities of college administrators, deans, and associate deans, in dealing with an environmental issue—changes in procedures by the accrediting body. Our specific interest is in investigating networking activities by these individuals. The study of the networks which form among individuals has received continuing attention over a number of years, both by sociologists and by managerial researchers who have been concerned with the implications of networks for organizations. Reflecting, perhaps, differences in orientation among the researchers themselves, examination of the literature involving networking reveals questions. Is the purpose of a given study the creation of knowledge about the characteristics of the networks themselves and gaining information about how networks operate? Such studies as those dealing with strong and weak ties and strongly and weakly coupled systems appear to fall into this category (i.e., Granovetter, 1973, 1982; Orton & Weick, 1990; Schwartz & Jacobson, 1977). Alternatively, an emerging body of more applied research is often less concerned with the creation of basic knowledge about networks than with using network ideas to answer questions about organizational functioning. Work by Burns and Wholey (1993) on matrix adoption, Duncan and Feisal (1989) on humor, Burkhardt (1994) and Rice and Aydin (1991) on networks and technological change, Krackhardt and Porter (1986) on investigation of turnover, Brass, Butterfield and Skaggs (1998) on the study of networks and unethical behavior, and Nelson (1992) on Woodward's propositions illustrate the range of what is being done. In studies such as these, networks are hypothesized to be vehicles for gaining power, influencing others, and affecting communication.

Even the more applied work, however, typically attempts to do a little of both—answer interesting questions about organizations while at the same time working to broaden our understanding of what networks are and how they operate. Our study falls into this category. We use networking to consider a series of questions about how a set of individuals with organizational roles involving boundary spanning differ from those with more internally oriented duties, as well as how they differ among themselves. Specifically, we examine how a group of deans of business colleges uses networking as a way of dealing with changes in AACSB

International accreditation procedures, and compare their activities to those of their subordinates, the presumably more internally-focused associate deans. Note we are operating under the assumption that readers are aware the Association to Advance Collegiate Schools of Business (AACSB International) has recently revised the standards used for accreditation of colleges of businesses. Moreover, we take as a given this change provides an external threat/opportunity to colleges which should impact those performing boundary-spanning functions. Thus, the accreditation process can represent a threat if the college faces losing accreditation because this may jeopardize potential funding and impair competitiveness in attracting quality students. Similarly, gaining accreditation may increase opportunities for funding and improve the university's competitive advantage in recruiting and retaining capable students and faculty alike. As a result, we expect boundary spanners to facilitate the process in positive ways – by gaining information about AACSB International criteria, for example. This study also extends the literature on network functioning by considering internal and external networks within and among a group of organizations and examining how these may support and influence each other. It also, we hope, will increase the relatively sparse literature on inter-organizational networking to consider measurement of power in such networks.

Boundary-Spanning Roles in Organizations

Dating from the recognition that organizations are systems which must transact with their environments to survive, the management literature has concerned itself with the requirement for ***boundary spanning*** (e.g., At-Twaijri & Montanari, 1987; Jemison, 1984; Thompson, 1967). Dating at least from Thompson's groundbreaking work, theory development has centered on the boundary-spanner's role. The boundary spanner has been seen as responsible for environmental monitoring and for serving as a link between the organization's technical core and environmental pressures. The need for executives to perform boundary-spanning functions has been well documented (Lawrence & Lorsch, 1969; Mintzberg, 1983). Recent work has also emphasized the importance of boundary spanning in dealing with organizational stakeholders, and in organizational learning and change (e.g., Donaldson & Preston, 1995; Miner, Amburgey, & Stearns, 1990; Westphal, Gulati, & Shortell, 1997). To be effective in these activities, we should expect boundary spanners would report more extensive use of external contacts than those in the same organization whose responsibilities are more internally oriented, especially when an environmental threat or opportunity arises; but, is this actually the case? Accordingly, our first hypothesis is:

H1 Executives with boundary-spanning responsibilities (in this study, deans) will report more external contacts in dealing with an issue arising from the environment than will their subordinates (assistant/associate deans).

What qualities lead some boundary spanners to be more effective than others? And how is the boundary spanner's effectiveness to be measured? Issues such as these were originally raised by Thompson (1967) and by Lawrence & Lorsch (1969) and continue to interest researchers at the present time. Recently, the networking literature has raised some possibilities in the consideration of accuracy of network perception and its impact on network centrality and power. Krackhardt (1990) has shown those who accurately perceive the operation of the network within a small organization were also rated as more powerful. Could something similar happen with the boundary spanner, when operating *among*, rather than within organizations? Specifically, can those who have a more accurate estimation of their own functioning in the inter-organizational network also be shown to be more influential? These questions lead to the second hypothesis investigated in our study.

H2 Accuracy in estimating one's function in the inter-organizational network (as measured by accuracy in estimating reciprocal relationships) will be positively related to Salancik's (1986) measure of influence in a network.

A related question will involve how these individuals make use of a network. In this research, we deal with a network which was selected on the basis of commonality—the schools in our sample were considered similar because they were of roughly similar size and were targeted at similar markets. While it is difficult to say whether the networking literature (i.e., Krackhardt, 1992, Lorrain & White, 1971) would regard them as ***structural equivalents***, it is at least clear their deans occupy functionally equivalent positions and should be interested in how others similar to them view a common threat/opportunity. But will there be differences? Of deans acting as boundary spanners, some may have linkages outside the immediate group (i.e., to deans outside the region) while others may rely heavily on another set of sources, such as AACSB International staff or those in the business community. Of importance is recent work by Kraatz (1998) in examining network influences upon activities such as the adoption of professional programs by small liberal arts colleges. Kraatz' findings suggest that adoption is positively influenced when the network is relatively small and primary sources of influence are from more similar rather than more prestigious institutions. These ideas may indicate, in external networking, access to a large number of contacts outside the network itself may be relatively unimportant. In contrast, the "weak ties" literature has found linkages *among* organizations (weak ties) to be important in integrating individuals into the larger context and permitting the organization to respond in a flexible manner (Granovetter, 1973, 1982; Orton & Weik, 1990; Painter, Isaac-Henry & Rouse, 1997).

The intra-organizational networking literature suggests similar ideas. This literature emphasizes some individuals gain importance through their position as it relates to the ability to influence other groups (Krackhardt, 1990; Schwartz & Jacobson, 1977). Similarly, the sociological literature contains examples of individuals who are important because they serve to link groups to each other (e.g., Burt, 1977, 1978, 1982; Mitchell, 1969). Taken as a whole, then, much of

the literature appears to view linkages beyond the network as a potential source of power and importance. Accordingly, our third hypothesis is:

H3 Individuals reporting links to groups outside the inter-organizational network will have more power, as measured by Salancik's (1986) importance measure than those not reporting such links.

Methodology

Subjects: Twenty-six universities in the south-central United States supplied subjects for this study. A survey was sent to as many as three individuals in each university: (1) the dean of the college of business; (2) the associate dean—graduate programs for the college; (3) the associate dean—administration/students for the college; or (4) the associate dean for the college, if one individual performed both associate dean roles (i.e., 2 and 3 discussed previously). The 26 universities were ones which recognized themselves as similar in terms of criteria which included: student enrollment, professor salary averages, geographic region, having AACSB International accreditation, and having similar two-year and four-year programs. They exchanged information among themselves for "benchmarking" purposes and appeared to be useful candidates for a study of this type. Of the 26 sets of surveys sent (i.e., as noted above, for each university, surveys were sent to the dean and one or more associate deans, depending on how the administrative responsibilities were configured), 20 sets were returned, for a response rate of 77 percent. Note, however, the deans and associate deans in two universities reported they neither had contacts nor were contacted. Missing data on other surveys further reduced our sample to as low as 17 in one analysis. Additionally, the other categories of subjects included 12 associate deans—graduate programs for the college; 11 associate deans—administration/students for the college; and 11 associate deans for the college, where one individual performed both associate dean roles.

Survey Instrument: The survey used in this study asked respondents to list the other individuals from among the 26 universities who served as their contacts when discussing AACSB International questions. They were asked whether they primarily asked questions, gave advice, had no contact, or both asked questions and gave advice when contacting each individual. They were also asked about contacts outside the group of 26 universities and about internal contacts within the university. Furthermore, they were asked whether or not they agreed with the AACSB International changes and how strongly they felt. Finally, they were asked about contacts outside the individuals indicated on the questionnaire. Open-ended questions asked for additional comments.

The Importance Index: Computation of an "importance index" was a central concern in this study. We adapted Salancik's (1986) methodology for determining importance in the network to fit our research design. A value was given to each subject's response, determined by whether he gave advice, had no contact, gave advice and asked questions, or asked questions only. This value is representative of the importance each subject plays in the network based upon ideas of resource dependence. In effect, the more one is sought out by others as a source of information, the more important the individual (see Salancik, 1986, for a detailed discussion). The values used ranged from 1 (asked for advice) to 4 (had no contact). Next, a 20 x 20 matrix was designed to represent the relationship each subject played in the network. The equation used to define the importance of the 20 subjects—here, the deans—can be more concisely written in terms of matrix algebra. Note with this technique, any number of subjects can be observed. We can derive the importance (IMP) value of each subject by using the following group of equations:

$IMP_j = [D_{ij}] + IMP_j + INT_j$ where $[D]_{ij}$ is [1] an inverted matrix of the dependencies of each subject, upon each subject; and is a vector of the intrinsic significance that each subject might have independent of its contact with other subjects. Because we cannot derive a general criterion for differentiating each subject from the others, we assigned the intrinsic value of one to each subject. Lastly, we assigned a value of 0 to d_{ij}, inside the dependency matrix $[D]_{ij}$. We did this because our concern was to develop a generic index of structured power, which is defined by the dependencies on other subjects. We use these equations to derive the unknown vector, IMP; and based upon this vector, we were able to give a value to the importance or dependency each subject had upon the other(s). To solve for IMP, we collected all terms that are alike to one side, simplified them, then divided (multiply by the inverse) the factor [I-D] into the term on the other side INT:[4] $IMP = [I-D]^{-1}$ INT, I is the identity matrix.

Other Measures: In addition, we used reports from our subjects to determine accuracy in identifying the network. We compared subjects' reports of their contacts to reports of contacts by others to develop an accuracy ratio. For example, if a subject reported contacts with individuals at eight of the other universities, but only two individuals in those universities reported contact with that person, the ratio would be $^2/_8$ or .25. We omitted from this part of our study two individuals who reported no contacts and also had no one reporting contact with them.

Results

Our first hypothesis proposed, as boundary spanners, the deans in this study would report more use of external contacts than would their subordinate associate deans. Recall the associate deans fell into three categories: associate deans for graduate study, associate deans/administration, and individuals having both sets of responsibilities. We used t-tests to examine differences in the mean number of internal and external contacts reported by each group. Table 1 provides the results.

Table 1 suggests both the deans and their subordinates report relatively high use of internal contacts (intra-contacts) and there is no difference in use of internal contacts for the groups. However, as predicted, there ***were*** differences in use of external contacts (inter-contacts). We found the deans reported significantly more external contacts than do their subordinates ($p < .01$ to .001), a finding consistent with hypothesis 1.

Our second and third hypotheses

TABLE 1
Inter- and Intra-organizational Contacts
Deans and Associate Deans

df=28 **TABLE 1A**

	Dean Mean	Assoc Deans-Grad study Mean	T-Score
Inter-Contacts	5	.8	3.4**
Intra-Contacts	7.5	7.5	0**

df=27 **TABLE 1B**

	Dean Mean	Assoc Deans-Admin Mean	T-Score
Inter-Contacts	5	1.2	3.2**
Intra-Contacts	7.5	8.3	1.1

df=27 **TABLE 1C**

	Dean Mean	Assoc Deans-Grad and Admin Mean	T-Score
Inter-Contacts	5	.33	3.9***
Intra-Contacts	7.5	6.6	1.2

Note: ** p<.01 *** p <.001

dealt with accuracy in estimating one's function in a network and number of external contacts and their relationships to power. In the first hypothesis, we suggested those with more power in the organization would also be those with better ability to estimate their role in the reciprocal relationships comprising the network. Our measure of accuracy was the extent to which any individual correctly identified other deans as contacts. Thus, if Dean A reported dealing with Dean B on AACSB International matters and if Dean A was also identified by Dean B as a person Dean B dealt with, Dean A was considered to have correctly identified the relationship. However, those who said they dealt with another dean, but that dean did not claim contact with them, were considered to have misestimated the relationship. We then developed ratios of claimed contacts to reciprocated contacts for each dean. Next, we correlated the ratio with the "importance ratios" for each dean (see our discussion in the **Methodology** section). (Note, incidentally, in our discussion of this and the following hypothesis, we use only the deans as our sample. We did this because we found in our test of hypothesis 1 the deans were far more externally oriented than their subordinates, therefore, we believed the deans were the more appropriate sample for testing questions involving outside influence.)

The data resulting from importance index computations, as well as the accuracy ratings and reports of external contacts for the 17 deans in this analysis are shown in the Appendix. Table 2 below provides the correlation matrix showing the relationships among importance ratings, accuracy ratings, and reports of external contacts, with the correlation between accuracy and importance of interest in considering the first hypothesis.

Table 2 provides support for hypothesis 2, in that we find a high, positive correlation (r<.01) between importance and ability to estimate function in the network (as we have operationally defined it). Those deans who more accurately described their external contacts were also higher in power, based upon Salancik's measures. Obviously, however, these results tell us virtually nothing about generalizability or directionality. Do deans become more influential ***because*** of their ability to perceive reciprocal relations in the network, or are those who are more influential in the network the people whom others are more likely to claim (perhaps because of their prestige) as their contacts? Clearly, more investigation remains to be done.

Our final hypothesis dealt with the relationship between importance in the network and number of contacts ***outside*** the network. It was our contention those

TABLE 2
Relationships Among Importance, Accuracy and External Contacts for 17 Deans

CORRELATIONS

		Importance	Accuracy	External Contacts
Importance	Pearson Correlation	1.000	.648**	-0.053
	Sig. (2-tailed)	-	0.007	0.826
	N	20	16	20
Accuracy	Pearson Correlation	.648**	1.000	0.111
	Sig. (2-tailed)	0.007	-	0.681
	N	16	16	16
External Contacts	Pearson Correlation	-0.053	0.111	1.000
	Sig. (2-tailed)	0.826	0.681	-
	N	20	16	20

** correlation is significant at the 0.01 level (2-tailed)

reporting a higher number of contacts outside the network would be more influential because their ability to tap outside information would represent an example of power based on access to information. To test this hypothesis, we totaled each dean's reported contacts ***outside*** the network and correlated it with the dean's importance rating (the correlation between number of contacts and importance rating at Table 2). Contrary to our expectations, Table 2 does not show a significant relationship between importance and number of external contacts reported.

However, a close inspection of the data itself (see Appendix) suggests some interesting possibilities. Note, with few exceptions, those who report a relatively high number of external contacts appear to have ***low***, rather than ***high*** importance. Figure 1 below shows a scatterplot of the data and suggests the relationships may be inverse or u-shaped.

Figure 1 suggests several possibilities for further study. Is it possible the very fact some individuals are active in other groups lowers their influence in the focal group (i.e., a perception the individual is a "traitor")? Alternatively, these results may be suggesting something similar to Kraatz' (1998) theory that influence is greater where there is more similarity and a smaller network, indicating ties beyond the network may be relatively less important. Perhaps the relationship is, in fact, u-shaped, with high importance afforded those who are the "good soldiers" and not involved beyond the network, ***but also*** to certain individuals who act as boundary spanners for the network. Possibly something of this sort is occurring with the individuals who are both influential in the network and heavily connected to other groups. If an inter-group boundary spanning function is being performed, are certain deans granted "idiosyncrasy credits" for this involvement? At this point, we can only speculate. Clearly, this is a case where much more investigation remains to be done.

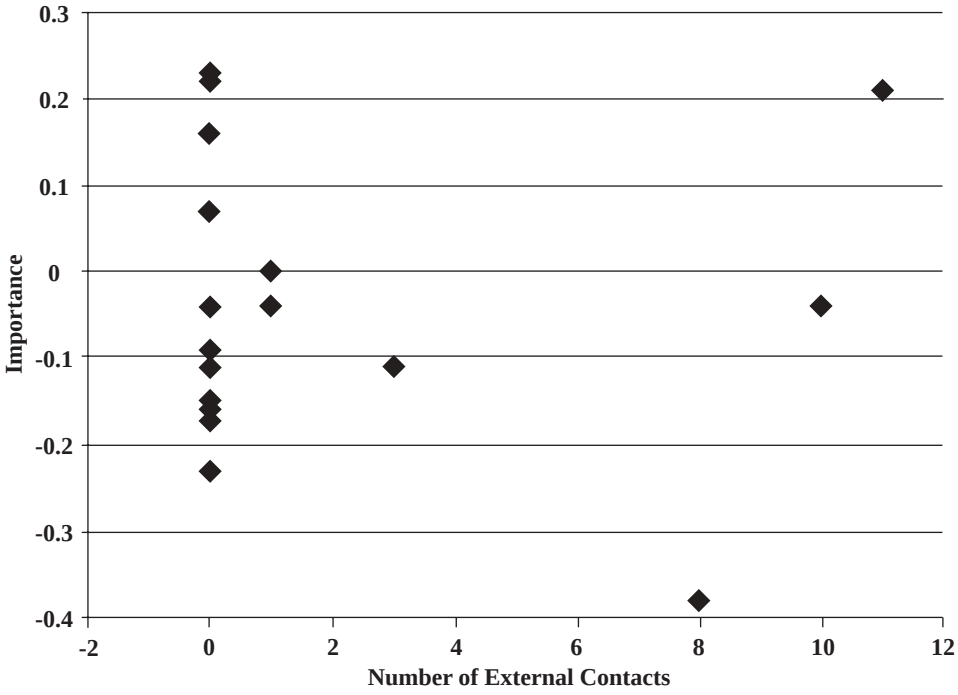
Summary and Conclusions

The findings in this study have raised a number of issues. When considering our first hypothesis, we have provided support for the idea individuals with boundary-spanning functions report being more externally oriented than those who do not have such functions. However, other questions arise as we think about college deans and their functions as boundary spanners, at least to others in the inter-organizational network. Specifically, our findings lead to the assumption all deans will act as boundary spanners and will seek information. But is this always the case? What about the two individuals in this study who reported neither contacting nor being contacted? In fact, our personal observations, supplemented by the literature on individual differences, suggest that differences will exist and not all deans will act as boundary spanners, in the traditional sense. Is it possible for deans who do not engage in boundary spanning to be effective? Under what circumstances? Again, more research is needed.

We also see those who perceive the network more accurately (at least within the limits of our definition) are also more influential, based on Salancik's (1986) index. However, the issue of directionality remains unanswered. It would certainly be of interest for future work to investigate whether accuracy of perception causes influence, as is Krackhardt's (1990) contention, or whether some other explanation provides a better fit. Similarly, while our data show no evidence of a linear relationship between influence and extra-network contacts, we speculate that research with larger samples and more diverse groups may reveal some form of non-linear relationship or may suggest, in fact, there is a negative relationship between influence and extra-network contacts.

An additional area for future research arose when we further considered the methodology used in this study. Recall we limited ourselves to a specific issue and asked respondents how they received advice about it. Thus, in this study, we are examining what may be a subset of an advice network by focusing respondents' attention on a single issue—AACSB International changes. The traditional approach to developing friendship and advice networks (i.e., by asking, for example, "list the people who you would consider your friends" or "list those to whom you go for advice") assumes an individual would be used as

FIGURE 1
Relationships between Number of External Contacts and Importance for 17 Deans



a source of advice on a variety of issues (see especially Krackhardt & Hanson, 1993). However, theory development dating from at least as early as French and Raven's (1968) discussion of power suggests the advice of experts extends to—and should be sought in—only their perceived area of expertise. Perhaps investigation that identifies and tracks the presence of a variety of advice networks represents another possibility for future research.

Sample size and generalizability have historically been a problem in networking studies, and our research is certainly no exception. Perhaps the best—and only—approach to the issues raised in our study, as well as to considering the extent to which our results will generalize is further research. Both replication and the kind of longitudinal work which will enable us to tease out causality are needed and can offer much to increasing understanding in this area.

References

At-Twaijri, M. I. A., and Montanari, J. R. (1987). The impact of context and choice on the boundary-spanning process: An empirical extension. *Human Relations, 40*, 783-798.

Brass, D. J., Butterfield, K. D., and Skaggs, B. C. (1998). Relationships and unethical behavior: A social network perspective. *Academy of Management Review, 23* (1), 14-31.

Burns, L. R., and Wholey, D. R. (1993). Adoption and abandonment of matrix management programs: Effects of organizational characteristics and inter organizational networks. *Academy of Management Journal, 36* (1), 106-138.

Burkhardt, M. E. (1994). Social interaction effects following a technological change: A longitudinal investigation. *Academy of Management Journal, 37* (4), 869-897.

Burt, R. S. (1977). Position in multiple networks. *Social Forces, 56*, 106-131; 551-575.

Burt, R. S. (1978). Stratification and prestige among elite experts in methodological and mathematical sociology Circa 1975. *Social Networks, 1*,105-158.

Burt, R. S. (1982). *Toward a Structural Theory of Action*. New York: Academic Press.

Donaldson, T., and Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review, 20* (1), 65-91.

Duncan, J. W., and Fiesal, J. P. (1989, Spring). No laughing matter: Patterns of humor in the workplace. *Organizational Dynamics*, 18-30.

French, J. R. P., and Raven, B. (1968). The Basis of Social Power. In D. Cartwright and A. Zanders (Eds.), *Group Dynamics* (3rd ed.). New York: Harper and Row, 259-266.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360-1380.

APPENDIX
Raw Data on Importance, Accuracy and Number of External Contacts

	Importance	Accuracy	Number of Contacts
1	0.22	0.00	0.00
2	-0.15	0.00	0.00
3	0.00	4.00	1.00
4	-0.23	0.00	0.00
5	-0.09	1.00	0.00
6	-0.38	0.00	8.00
7	0.21	4.00	11.00
8	-0.04	0.00	1.00
9	-0.17	1.00	0.00
10	0.16	4.00	0.00
11	-0.11	1.00	3.00
12	0.23	6.00	0.00
13	-0.16	0.00	0.00
14	0.07	2.00	0.00
15	-0.11	3.00	0.00
16	-0.09	1.00	0.00
17	0.23	*	0.00
18	-0.04	*	0.00
19	-0.04	*	0.00
20	-0.04	*	10.00

*Missing data

Granovetter, M.S. (1982). The strength of weak ties: A network theory revisited. In P. V. Marsden and N. Lin (Eds.), *Social Structure and Network Analysis*. Beverly Hills, CA: Sage.

Jemison, D. B. (1984). The importance of boundary spanning roles in strategic decision-making. *Journal of Management Studies, 21*, 131-152.

Kraatz, M. S. (1998). Learning by association? Inter-organizational networks and adaptation to environmental change. *Academy of Management Journal, 41* (6), 621-643.

Krackhardt, D. (1990). Assessing the political landscape: structure, cognition, and power in organizations. *Administrative Science Quarterly, 35*, 342-361.

Krackhardt, D. (1992). Unpublished remarks, *Academy of Management Symposium on Networking*.

Krackhardt, D., and Hanson, J. R. (1993, July-August). Informal networks: The company. *Harvard Business Review*, 104-114.

Krackhardt, D., and Porter, L. W. (1986). The snowball effect: Turnover embedded in communication networks. *Journal of Applied Psychology, 71* (1), 50-55.

Lawrence, P. R., and Lorsch, J. W. (1969). *Organization and Environment*. Homewood, Illinois: Irwin.

Lorrain, F. P., and White, H. C. (1971). Structural equivalence of individuals in social networks. *Journal of Mathematical Sociology, 1*, 49-80.

Miner, A. S., Amburgey, T. L., andStearns, T. M. (1990). Inter-organizational linkages and population dynamics: Buffering and transformational shields. *Administrative Science Quarterly, 35*, 689-713.

Mintzberg, M. S. (1983). *Power in and around Organizations*. Englewood Cliffs, New Jersey: Prentice-Hall.

Mitchell, J. C. (1969). The Concept and use of social networks. In J. C. Mitchell (Ed.), *Social Networks in Urban Situations*. Manchester, England: University of Manchester Press.

Nelson, R. E. (1992). A network study of Woodward's propositions on technology and organization. Unpublished manuscript.

Orton, J. D., and Weick, K. E. (1990). Loosely coupled systems: A reconceptualization. *Academy of Management Review, 15* (2), 203-223.

Painter, C., Isaac-Henry, K., and Rouse, J. (1997). Local authorities and non-elected agencies: strategies, responses, and organizational networks. *Public Administration*, 75 (2), 225-246.

Rice R. E., and Aydin, C. (1991). Attitudes toward new organizational technology: Network proximity as a mechanism for social information processing. *Administrative Science Quarterly, 36*, 219-244.

Salancik, G. R. (1986). An index of subgroup influence in dependency networks. *Administrative Science Quarterly, 31*, 194-211.

Schwartz, D. F., and Jacobson, E. (1977). Organizational communication network analysis: The liaison communication role. *Organizational Behavior and Human Performance, 18*, 158-174.

Thompson, J. D. (1967). *Organizations in Action*. New York: McGraw Hill.

Westphal, J. D., Gulati, R., and Shortell, S. M. (1997). Customization or conformity: An institutional and network perspective on the content and consequences of TQM adoption. *Administrative Science Quarterly, 42*, 161-183.