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ABSTRACT
        Under the assumption that traditional approaches to
organizational structure have provided little insight into how
structure might affect individual attitudes and behavior, this paper
describes communication patterns within organizational structures and
develops a network approach as a means by which individual response
to traditional structural variables can be studied. Emphasizing
communication behavior forces the researcher to reconceptualize what
is meant by structure: structure comes to be viewed as stable
patterns of behavior, which characterize social systems.
Organizations then come to be viewed as systems of interaction,
overlapping networks of communication, influence, status, and
friendship. The paper concludes that the network perspective is an
effective approach to understanding structural determinants of
individual attitudes and behavior. (RL)

COMMUNICATION PATTERNS AND ORGANIZATION STRUCTURE

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Traditional approaches to organizational structure have provided little insight into how structure might affect individual attitudes and behavior. In 1965 Porter and Lawler reviewed literature relating structure to attitudes and behavior and concluded that, while associations exist, much had yet to be done to explain why the observed patterns occur. Recently, Herman and Hulin (1972) and James and Jones (1976) have come to the same conclusion. Although relationships have been observed and although there is widespread belief that structure determines attitudes and behavior, there is little theoretical detail describing why such relationships might exist. An exception, perhaps, is Hulin and Blood (1968) who postulated that at least one structural dimension, specialization, affects attitudes (boredom) and behavior (absenteeism) by reducing the level of skill required by the job and by decreasing the duration of the job cycle. The mediating variable in their model is the perception of monotony. At least two more general models have been presented. Indik (1968) has proposed a model in which structural variables are viewed as contextual factors determining first group dynamics and then individual behavior. James and Jones (1976) expanded on Indik's model by including additional factors such as sociocultural factors and the external physical environment. In both of these models, however, traditional structural dimensions (e.g., standardization specialization, formalization, etc.) are taken as given, and no additional theoretical insight is provided to explain why these factors are likely to lead to individual level differences in attitudes and behavior. The models, rather, appear to be conceptual organizing schemes for arranging and associating the many categories of variables which might explain individual differences in behavior and attitude.

One reason why traditional structural variables may be hard-pressed to explain individual behavior could be due to the fact that they were not constructed to explain such things. Most of the dimensions (e.g., formalization, standardization, specialization, and, somewhat inappropriately, centralization (Mansfield, 1973)) were abstracted from Weber's writings. Yet Weber was attempting to explain societal rather than individual level events. Other traditional structural dimensions, what Porter, Lawler, and Hackman (1975) term "anatomical structure (e.g., size, shape, configuration)" seem to have come out of scientific management where the concern lay with organizational efficiency rather than with individuals per se. There is no theoretical reason for limiting what is called structure to these historically determined constructs. There also is no a priori reason for including these variables in models directed toward understanding structural determinants of individual behavior and attitudes. Given the difficulties associated with bridging the gap between them and individual phenomena, perhaps it is time to take a step back and assess our conception of structure. By entertaining the possibility of redefining organization structure, it may be possible to find a way around (or a bridge over?) the chasm. This paper is dedicated to exploration in search of such a route. By trying to develop a notion of structure specifically designed to help us understand individual attitude and behavior change, we may even come up with an approach which can incorporate the traditional variables.

Communication and Interaction in Organizations

It is often salutary to walk shop floors and speak to the people who do the work in American industries. Here the pre-conceptions about organization structure are not conditioned by historical academic tradition. Complaints

often revolve around individual level phenomena; however, there is usually
a healthy appreciation for structure. In a plant I currently am studying,
most of the problems are chalked off to "communication." Communication pro-
blems, of course, cover a multitude of ailments, including interpersonal pro-
blems, problems of skill mix, the organization of work, and so on. We are
conditioned to view these problems as symptoms of other problems, usually ones
we happen to have more knowledge about. However, there is a disturbingly
large residue of "communication" problems left over after the symptoms have
been allocated to traditional problem areas. In my plant, people say they
do not get needed information on time. Sometimes the people who seek out
advice talk to those who are in no position to know. Other times the experts
are not in positions of influence; on still other occasions, those who have
formal influence are not provided with sufficient information to apply this
influence effectively. Such problems are difficult to allocate to more tra-
ditional substantive areas. As someone trained in a structuralist perspec-
tive, I wonder why we have so little material dealing with communication struc-
ture or the structure of interactions in the workplace. Chester Barnard had
a good feeling for the centrality of communication in organizations, even for
organization theory. He stated, for example, that

> In an exhaustive theory of organizations, communication
> would occupy a central place, because the structure, ex-
> tensiveness, and scope of the organization are almost
> entirely determined by communication techniques. (1938,
> p. 91)

Yet, almost forty years later, Porter and Roberts (1976) and Rogers and Rogers
(1976) correctly observe that communication has played only a marginal role in
organization theory. What is known has often been borrowed from other dis-
ciplines or areas. Because it is under-researched and because of its obvious
theoretical and practical significance, it is possible that communication can

provide a bridge between individual and organizational level events. Com-
munication, after all, is what links individuals to their social context;
perhaps communication is the common denominator for social relations. In
any case, communication is as promising a place as any to start our search
for ways to connect organization structure with individual attitudes and
behaviors.

Once commication is put in the spotlight, we find ourselves forced to
back off a bit from the traditional view of organization structure. We must
take a broader view. One that comes to mind is often used to study social
(as opposed to formal) organizations. It defines structure as stable patterns
of relationships among social actors. Williams, for example, defines struc-
ture as "an appreciable degree of regularity and relationship (1956:20)."
Smelser and Lipset define structure as "recurrent and regularized interaction
among two or more persons (1966: 2)." Recently, Rice and Mitchell, criticizir
traditional approaches to structure in formal organizations, define structure
as "...a set of elements and their interrelations...the elements of the struc-
ture are the individual persons who work in the organization, irrespective of
their formal positions or roles (1973: 57)." Perhaps the most extensive use
of this general approach is found in March and Simon, who view structure as
consisting "...simply of those aspects of the pattern of behavior in the or-
ganization that are relatively stable and that change slowly (1958: 70)."
Communication structure, under this definition, would refer to enduring pat-
terns of communication behavior.

At this point, we run into difficulty. Structure conjures up the image
of a social system, yet communication behavior in organizations is carried ou
by individuals. The patterns of behavior, therefore, must somehow mirror sys
tem properties. Communication structure appears to be a global property of

social systems (Larsfeld and Menzel, 1968); yet its only concrete manifestation is in individual behavior. We must be careful to avoid misplaced concreteness. We must not attribute to the system what in actuality is simply an aggregate of member characteristics. On way around this problem is to view communication behaviors as essentially relational that is, communication and its behavioral referent, interaction, cannot be understood except in a social context. Communication behavior cannot be exhibited by individuals alone; communication patterns are not attributes of individuals; rather, they are properties of relationships among individual members of a social system. Stable patterns of communication/interaction behavior, therefore, are attributes of the system; they are not attributes of the members of that system. Yet they can only be observed by observing individual behavior. They are therefore the patterns themselves, the templates, or what March and Simon (1958) call programs. Distinct from March and Simon, however, these programs are social properties. Although they may be stored in the heads of individuals, these patterns are shared and essentially social rather than individual. They are the communication rules, norms if you will, or the "deep structure" which underlies communication behavior.

It is extremely difficult to observe communication. Information usually is an intangible; moreover, as Lou Pondy is fond of pointing out, communication probably covers much more than just the transfer of information. Capturing the richness of the content of communication, therefore, may be next to impossible for researchers concerned with empirical comparative study. The observable referent for communication, therefore, must be interaction. Patterns of interaction conjure up images of networks describing who initiates interaction to whom, who receives interaction from whom, and so forth. The picture is reminiscent of sociograms (Moreno et al., 1960) and lends itself to the

sorts of variables described in graph theory (Harary, Norman, and Cartwright, 1965). For example, one might be inclined to refer to the density of an interaction network or to its interconnectedness--the average number of steps which must be traversed in order to connect the most removed and isolated individuals. This perspective also lends itself to descriptive variables which characterize individuals' places in the network. Rogers and Rogers (1976), for example, refer to link pins, gatekeepers, liaisons, cosmopolites, centrality, and substitutability. Davis (1953) and Sutton and Porter (1976), identify roles in the network such as initiator, relayer, terminator, and isolator. Presumably, these also could be inferred from the interaction structure. Little has come of graph theory, however, and sociometric measurements have been limited almost exclusively to small groups. Early attempts to apply these notions to organizations were promising (e.g., Jacobson, Seashore, and Weiss, 1951); however, these were not followed up. Recently, however, Laumann and Pappi (1973) have applied this approach to the study of communities and several researchers tied in one way or another with Michigan State have begun to re-apply it to organization studies. More importantly, perhaps, the Michigan State researchers appear to have solved the technical problems associated with specifying sociometric networks for organizations which employ hundreds of people (Rogers and Rogers, 1976). The approach seems promising and apparently is gaining in the number of its adherents.

Communication Patterns and Organization Structure

Our initial purpose was to find a theoretical path linking organization structure to individual attitudes and behavior. It may seem that we now have strayed somewhat. We started thinking that communications might offer an acceptable bridge between these two domains, but we then looked in some detail

at communications and communication structure. To do this, we moved away
from the traditional approach and redefined structure. To bring us back to
our initial focus, however, we ought to begin to tie up this new perspective
with more traditional notions. First, we will look at how classical struc-
tural variables might help describe communication patterns in organizations.
Second, we will identify a few other types of networks and speculate about
how they might affect communication patterns. Finally, we will look at how
these other networks might interact with communication or interaction networks
to affect individual attitudes and behavior.

Once communication patterns are viewed from the network perspective,
several of the traditional structural concepts become useful descriptors of
network characteristics. Formalization, for example, can be viewed as the
extent to which interaction/communication behaviors are specified in written
rules and regulations. Specialization might refer to the extent to which there
are communications specialists in the organization; a more intriguing possi-
bility, however, might be to view specialization as referring to the number of
discreet interaction clusters. It would them be a measure of the extent to
which interaction patterns in an organization are differentiated into mutually
interacting subgroups which have relatively few interactions with each other.
Standardization could refer to the "programmedness" or stability of the inter-
action patterns, and centralization might refer to the location in the authority
network at which decisions to alter interaction (reporting?) patterns are made.
Several of the anatomical structure variables also may be applied. For, instance,
size might refer to the number of participants in each interaction cluster,
rather than simply to the number of employees in organizationally defined sub-
units. Configuration might refer to the number of links the least connected
employees must travel to communicate with the employees who are most removed

from them. Vertical differentiation could refer to the number of levels which appear in the communication network when the network is cut from top to bottom. Horizontal differentiation could refer to this same count when the network is cut cross-wise.

Differentiation, size, centralization, formalization, and the other traditional variables seem to be applicable to this new perspective. By applying them here, however, we alter their meaning. For example, specialization, standardization, etc. no longer refer to all aspects of organizational life; rather, they become specific to the communication network or to others which might come under investigation. These networks would then constitute subsystems, and it would become possible to view organizations as being highly specialized or standardized with respect to some, while being unspecialized and unstandardized with respect to others. Traditional concepts, therefore, would not only be altered conceptually; they also would be refined to refer to subsystems (networks) rather than to the organization as a whole. These changes do not seem to alter the basic thrust or theoretical power of the traditional notions. By refining them and making them subsystem specific, it may even be possible to resolve some of the difficult reliability and validity problems which plague this area of organization studies (Dewar, Whetten, and Boje, 1976; Moch, Cammann, and Cooke, 1977).

The possibility that traditional structural variables could be applied to assess characteristics of other networks suggests the possibility that the perspective outlined here for communication might be applied wholesale to other structural attributes of organizations. Taking our cue from Guetzkow (1965), for example, we might identify status networks, friendship networks, interdependence or expertise networks, influence networks, and so on. These networks are likely to have distinct properties. For example, expertise and

status networks seem to involve one-way orderings of individuals; while communication and friendship networks allow for two-way connections. This difference is analagous to the distinction between vector and scalar quantities. Some networks are likely to order individuals in ways which inform the observer about relationships among those who are not explicitly ordered. If person A is of higher status than person B, and if person C is of higher status than person B, then we could say that person C is of higher status than person A. This sort of inference would not be possible with, say, friendship networks. If A and B are good friends and if B and C are even better friends, we cannot say that A and C are the best of friends. Networks may also be distinct in the sort of traditional variables which can be used to describe them. It does not seem appropriate, for instance, to assess the degree to which friendship networks are formalized. Despite these sorts of differences, however, it seems promising to identify a number of different types of networks and to view organization structure as composed of sets of networks. While communication may be central, organizations are more than just communication systems.

Different networks may have different effects on individual attitudes and behavior. Employees' locations in different nets is likely to determine in part the problems they face, the information they have, the advice they receive, and their ability to act in ways they deem appropriate. Networks, however, are also likely to affect each other. Several examples of this come to mind. Hage, Aiken, and Marrett (1971) found structural differentiation (number of subunits in the organization) to be associated with the relative frequency of horizontal as opposed to vertical information flow. Carzo and Yanouzas (1969) reported a negative relationship between the height of the formal structure (authority network?) and the speed of communications.

Individuals' positions in networks also may affect their interaction behavior.
Simpson (1959) found that employees lower in the formal hierarchy were more
likely than higher-ups to engage in horizontal communication. Long ago, Blau,
and Scott (1962) found that employees often communicated with their peers
rather than expose their ignorance to superiors. This potential problem
seems reflected in O'Reilly and Roberts' (1974) finding that favorable in-
formation tends to move horizontally. One's position in the formal hierarchy,
therefore, is likely to determine in part how and with whom one communicates.
Other relationships between communication nets and other types of nets are
likely. For example, it would not be surprising to find people in organi-
zations communicating more with their friends than with others. The number
or even accuracy of such predictions, however, is not the main point here.
We are primarily interested in establishing the likelihood that different
networks—and employees' positions in them—are likely to affect each other.
If these networks in turn determine individual attitudes, and behavior, iden-
tifying such relationships is going to be crucial if we are to achieve our
goal of understanding structural determinants of individual level phenomena.

Different networks may also interact to affect individuals in organi-
zations. Employees who depend upon others to provide the material they need,
may find themselves in trouble if they do not or cannot communicate with those
upon whom they depend. If they communicate with their friends, rather than
those in appropriate positions with respect to them in the workflow, they
might get answers and advice; however, they are unlikely to resolve problems
when they arise. Similarly, they might talk with those who have more know-
ledge than they do about problems they face. If these individuals are not
in appropriate positions in the influence network, however, they may not be
able to help them. Position in networks, therefore, may be important;

FIGURE I

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AUTHORITY NETWORK
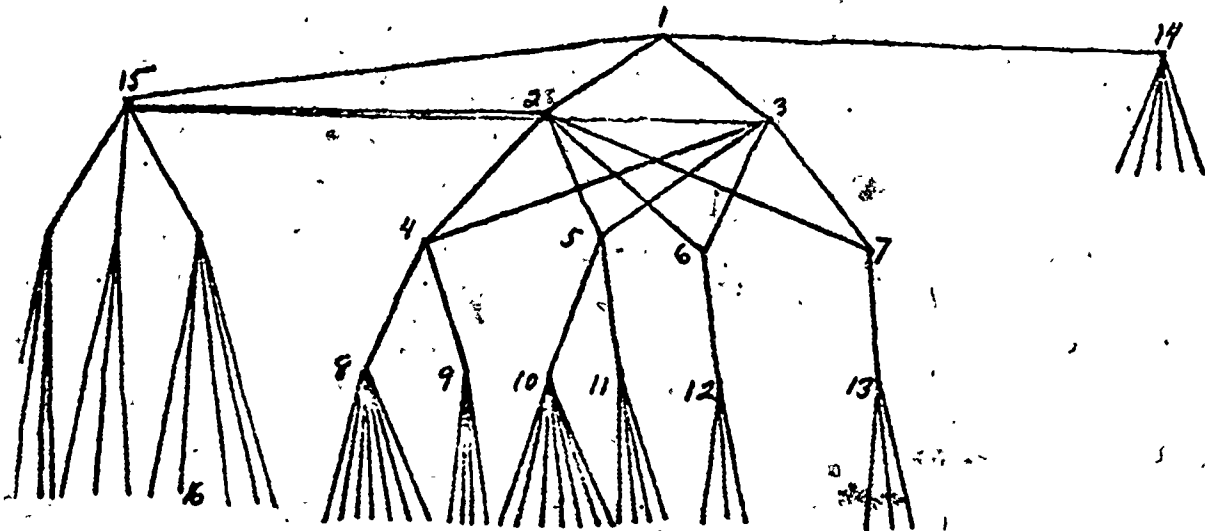
1. Plant Manager
2. Assistant Manager (day shift)
3. Assistant Manager (night shift)
4. Production Supervisor
5. Distribution Supervisor
6. Maintenance Supervisor
7. Supplies Supervisor
8. Production Foreman (day shift)
9. Production Foreman (night shift)
10. Distribution Foreman (day shift)
11. Distribution Foreman (night shift)
12. Maintenance Foreman (day only)
13. Supplies Foreman (day only)
14. Office Manager
15. Maintenance Department Supervisor
16. Union Officer, Maintenance Department

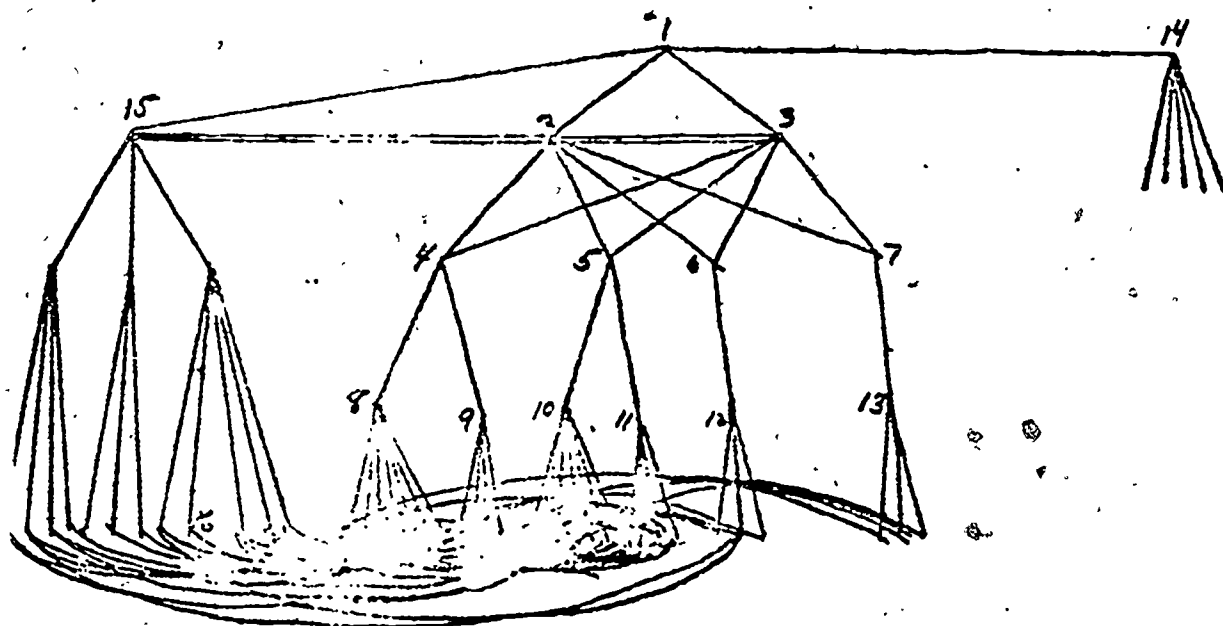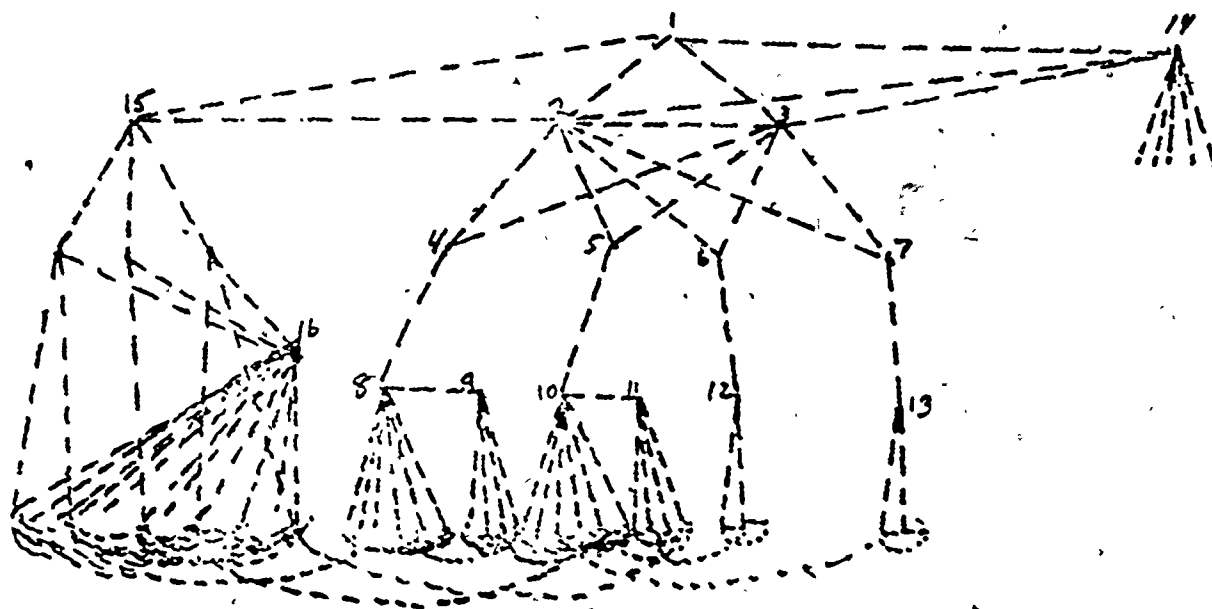# FIGURE II

WORKFLOW INTERDEPENDENCE
NETWORK

FIGURE III

COMMUNICATION/INTERACTION

NETWORK

however, simultaneous positions in multiple networks may be even more impor-
tant. For this reason, those who have ties to more than one group may provide
critical links between them. Even if such channels are infrequently used,
even if they are "weak ties" (Granovetter, 1973), they may be vital ones.
Those who occupy critical points in multiple networks may be at least as cri-
tical as those who link clusters of participants within network types. I
recently came across an example of this in the plant I am studying. A com-
mittee was searching for a critical piece of information. All the authorities
had been consulted to no avail. One of the lower status members of the com-
mittee was alerted to the problem and promptly provided the answer. It turns
out that she is married to one of the figures central to the issue at hand.

Let us use a fictitious case to illustrate the potential importance of
overlapping memberships or connections in a more general way. Take the author-
ity network, the communication network, and the workflow interdependence net-
work as a case in point. Figure I details the authority network. The figure
describes what could be actual authority relations rather than just formal
ones. Our fictitious plant manager has two assistants, one for the day shift,
and one for the night shift. There are four departments in the plant: pro-
duction, distributic , maintenance, and supplies. Each department has an
overall supervisor who reports to both assistant managers and to the plant
manager. Each department supervisor has two foremen; one for each shift.
These foremen supervise the activities of hourly employees. In addition to
this relatively simple arrangement, there is an office manager who supervises
record-keeping, personnel, etc. There also is a large maintenance department.
The maintenance personnel are tradesmen, while the production and distribution
employees operate machines which require relatively little skill. Maintenance
and supply also require little training or skill, and are relatively peripheral

activities. The supervisor of the maintenance department reports to the assistant managers and the plant managers; however, his contact with them appears to be much less frequent than are those of the other supervisors.

Figure II presents interdependencies among employees which are established by the organization of the work. Production and distribution are highly interdependent. The product being produced cannot be stored, so it must be prepared for distribution immediately after it is produced. A delay in production means waste in distribution. Moreover, a problem in distribution also can curtail production as the product accumulates on the line. The production and distribution departments have their primary interdependencies within shifts; however, failure of the distribution department on one shift to clear the product can cause problems for the next distribution shift. Both production and maintenance depend heavily upon personnel in the maintenance department. Production and distribution employ heavy machinery which tends to break down or otherwise malfunction. When the maintenance people fail to repair the machinery immediately, the affected line department loses valuable time. The entire production and distribution system can be affected.

By comparing Figures I and II, we already see some potential problems. For example, people in production and distribution report to different supervisors. The authority network is arranged at ninety degrees to the workflow interdependence network. People who are interdependent do not report to the same supervisor, and coordination, therefore, must involve communication among two or more supervisors. The interaction network, therefore, is likely to be critical for understanding how this organization works. It is presented in Figure III. Here, with the exception of the maintenance supervisor, interaction patterns are depicted as rather complete through the first three levels of management. The department supervisors, however, work during

the first shift. They communicate directly with the day shift foreman, but the night shift foreman often is left with instructions from the day foreman. The interaction between the department supervisor and the night foreman in both the production and distribution departments is minimal. Foremen, however, interact frequently within shifts, and the increasing frequency of horizontal relative to vertical communication observed by Simpson (1959) seems to occur at this level. Interdepartmental interdependencies are managed more by communication among foremen than among supervisors. This makes the link between day shift foremen and supervisors particularly critical, because the supervisors are the only ones in a position to solve on-going problems in a systematic way. Foremen, on the other hand, generally must manage problems in ad hoc ways as the problems arise.

Communication patterns among foremen appear to be even more critical, because there is almost no cross-department interaction among lower-level personnel in the production and distribution departments. The departments are physically separated by a large wall, so even visual contact is absent. In our fictitious plant, it is not unusual for foremen in production to visit the distribution department for the first time only after they join management. Such situations, incidentally, are not that unusual in "real life." But to get back to our fictitious case, because of these inter-action patterns--considerable intra-department interaction but almost no inter-department contact--the links provided by the foreman became even more crucial. Save for the occasional visits or calls by foremen in distribution to foremen in production, the workflow interdependencies might not be managed at all. Department supervisors engage in scheduling and planning; they talk primarily to day-shift foremen. First level personnel engage

primarily in day-to-day work; they talk mostly to each other and only occasionally to foremen. The foremen, therefore, seem to carry almost all the burden of inter-departmental day-to-day coordination.

The simultaneous locations of foremen at critical points in the interdependence and communication networks highlights their importance. Foremen in production and distribution have interaction patterns at least acceptably commensurate with their location in the interdependence and authority networks. They generally get the information they need to manage interdependencies and to fulfill their job responsibilities. There are problems, and the communication is thin and can easily break down, but the work generally gets done. The situation with the maintenance department, however, is quite different. The supervisor of the maintenance department appears to have relatively few contacts with the employees who actually carry out the tasks. Moreover, the employees in this department have a different union from the rest of the employees, and the union officer seems to have considerably greater contact with employees than does the department supervisor. This officer does not view interdependency management as one of his union's responsibilities. He communicates only infrequently with the department supervisor. In addition, neither the union officer nor the supervisor has frequent contacts with the plant manager, the assistant plant manager, or with any of the department foremen. Almost all the contacts between member of the maintenance department and other personnel occurs when employees or foremen in the production or distribution departments seek out maintenance personnel directly, and these contacts almost always are brought on by machine failure. The union officer concerns himself primarily with reviewing activities to insure their compliance with the contract. The supervisor is concerned with implementing management policies; however, his interaction

patterns often prevent him from getting the information necessary to carry these policies out. The maintenance supervisor, therefore, seems ineffective precisely because of a mismatch between the influence/responsibility network on the one hand and the communication/interdependence patterns on the other. Isolated from others, he often is unable to respond to management directives or to manage interdependencies between his employees and other departments. As a result, these interdependencies are managed in a haphazard fashion by the mechanics themselves. Besides the workflow disruptions this mismatch causes, the mechanics acquire considerable power in the overall system. By end-running the authority network, mechanics prevent management from altering the communication patterns. The centralized administrative system breaks down, and change becomes difficult if not impossible to administrate.

The example of this plant, though fictitious, is not particularly unusual. The events I have described, and others like them, happen all the time. The important point here, though, is not whether the example is or is not realistic. Rather, I am trying to demonstrate the potential utility of observing simultaneous positioning of individuals in different networks. By overlaying the communication network on the authority and workflow interdependence networks, we may be able to identify link pin individuals, to anticipate some organizational problems, and to explain others. The perspective seems to have considerable potential for diagnosing organizational problems. Our intention here, however, is to investigate its utility for explaining individual attitudes and behavior in organizations. It is to this issue that we'll now turn.

Structural Networks and Individual Attitudes and Behavior

The possible associations between location in the communication network and individual attitudes and behavior is perhaps the easiest to specify.

People get a good deal of what they view as reality from their interactions with others. This is especially true when physical cues are ambiguous or unavailable. Those who cluster together in communication networks, therefore, are likely to have views similar to one another and different from the views held by members of other clusters. This is especially likely to be the case when the clusters themselves have stable patterns of relationships with one another. In the plant I currently am studying, for example, there are on-going cliques which are internally cohesive but have strained relations with each other. When members of one clique decide one way, members of other cliques seem almost duty bound to believe (and state) the opposite. This is not unusual; however, it illustrates the potential utility of identifying communication networks when trying to understand and explain individual level phenomena in organizations.

It also may be useful to focus upon relationships among networks. My organization, I think it is fair to say, operates on a traditional "theory X" philosophy. The hierarchical structure operates from the top down, and, con-sistent with reports by Julian (1966), Rosengren (1964), and others, it exper-iences blockages in upward communication as a result. There are expressions of distrust, and frequently people at lower levels withhold information that would be of value to management. By altering this structure, management presumably could alter these dysfunctional communication patterns. In fact, currently it is trying to do so. By establishing a joint labor-management committee and by giving this committee considerable influence, management has already altered interaction and communication patterns.
Its too early to tell whether this change will change many people attitudes and behavior; however, the signs are that it will. Already some have become aware of the opinions and perspectives of those with whom they previously

had had only marginal contact. This seems to have broadened the views and even altered the behavior (e.g., who sits with whom in the cafeteria) of some employees, particularly the members of the committee.

Changes in structural arrangements could effect changes in individual attitudes and behavior in yet other ways. Returning to our fictitous example, considerable pressure is placed upon foremen, because they are the only links for managing interdepartmental interdependence. What would happen if the authority network were not organized at ninety degrees to the workflow inter-dependence network? What if all employees who were interdependent in their work were to report to the same supervisor? The entire complexion of the organization probably would change. Individual foremen would then become critical links intergrating the activities of their own subordinates, rather than links between their subordinates (who are not themselves interdependent) and the subordinates of another foreman. Interaction patterns, presumably, would move more vertically, and, overall, the interdependence and authority networks would be more compatible. This would put much less burden on the communication network and, perhaps, the communication problems would decline in frequency and impact. The foremen would feel less pressure; they would be interacting more with their own subordinates; and, perhaps, they therefore would be more likely to share common perspectives with them rather with other foremen. This, of course, may be too facile a solution. The workflow might have been orgainzed at ninety degrees to the authority network for a reason. For example, cultural differences might preclude effective direct cooperation among employees in production and distribution. The suggested alteration may simply exchange tension between the workflow and authority networks for tension between the authority network and a status network which is imported from the culture in which the organization is imbedded. Moreover, a communi-cation network might not be able to manage the latter tension nearly as well

as it could the former.. If such a change occurs, however, it is almost cer-
tain to affect individual attitudes and behavior -- for good or ill. As noted
earlier, it would affect the information people receive, the opinions they
hear, the problems they face (and who they face them with), and their ability
to act in ways they feel is right. Without going into detail specifying these
dynamics, let me report on two findings we have made which document the utility
of the proposed approach. Neither of them deal with communication networks,
but both of them look at some of the implcations of overlapping networks for
individual job satisfaction.

Both these examples are taken from an organization we have been studying
for some time. The organization produces complex engineering designs. One
of the problems encountered in preparing these designs is the integration of
the thousands of specifications so that the final product will work properly.
Conduit sizes must mesh with load requirements; switch boards must anticipate
the direction of input and output wiring; structures must be designed to sup-
port and house equipment. Whenever even a single specification is changed at
the last minute, there are hundreds and sometimes thousands of additional
changes which must be made to accomodate this one alteration. In short, the
people who put these designs together are reciprocally interdependent (Thompson,
1967). Anything one of them does can affect what each of the others must do
and vice versa. Thompson argues that people who are reciprocally interdepen-
dent must be allowed to manage their own interdependencies through a process
of mutual adjustment. This means that the engineers we were studying had to
be free to change their plans as they saw fit. From the network perspective,
the influence network had to map onto the interdependence network. The au-
thority and interdependence networks also have to be "in sink". We studied
both of these overlaps.

We speculated that engineers who were highly reciprocally interdpendent would have to have a high degree of influence over their own work activities if they were to be satisfied in their jobs. Otherwise, they would be strung out between the demands of their jobs and their inability to respond to these demands. In addition, those who had influence over their own activities and were reciprocally interdependent were likely to have a great deal of leverage in the organization. They would be able to get others, their supervisors and co-workers, to respond to their needs and wishes. Others would be depending on them and they would be in a position to exercise discretion over how they responded to this dependence. Without going into detail, this is precisely what we found. Engineers who had influence over their own work and were reciprocally interdependent with others tended also to feel that their supervisors and co-workers were responsive. These engineers also were more satisfed with their job. When engineers were not in highly reciprocal relationsips with others, influence over their own work was not associated with either satisfaction or with others' responsiveness to their needs and wishes. From a network perspective, when the influence network matched the needs specified by the interdependence network, employees received the responsiveness they required and were more satisfied with their jobs. When the patterns of interdependence did not require that personnel be able to manage their activities through a process of mutual adjustment, their location in the influence network was unassociated with others' receptivity or with their own satisfaction. (For a more detailed description of the study and these findings, see Feather and Moch, 1976).

Flushed with the success of our initial findings, we set about to look at another type of overlapping membership: that which matched work interdependence nets with authority nets. Supervisors in this organization often

found themselves in a bind. They were responsible for getting the design completed, yet the r employees dependend heavily upon engineers outside the supervisor's immediate jurisdiction. Supervisors could not demand that their subordinates perform well when their subordinates' performance depended primarily upon someone over whom the supervisor had no control. In short, the necessities of the workflow often forced a mismatch between the authority network and the interdependence network. We were interested in finding out what implications this had for supervisory style. We speculated that engineers who were higly interdependent with others outside their own work group would need supervisors who were facilitative rather than directive. Directive supervisors, we felt, would be more effective when employees were not dependent on others outside their supervisors' jurisdiction. Unfortunately, the data did not support our hypotheses; however, there were some very interesting differences. When engineers were highly interdependent with others outside their supervisor's immediate jurisdiction, either delegative or controlling supervisory styles were associated with smooth coordination. Facilitative behaviors had no impact. It was almost as though supervisors caught in the authority-interdependence mismatch could delegate authority or exercize control. Either way could work, so long as one strategy of the other was applied. Just being helpful, however, had no effect. Things were exactly the opposite when the authority and the interdependence nets were congruent. When engineers were not highly interdependent with others outside their own work group, facilitative styles, rather than either delegative or controlling styles, were associated with smooth coordination. It appeared that supervisors in this organization could effect smooth coordination by being facilitative, but only when they were not faced with subordinates who depended upon (or were depended upon by) people outside their jurisdiction. Overall, then, the impact of supervisory style

seemed to depend upon the match or mismatch between the authority and workflow interdepend nce networks. We have only reported the impact of style on the extent to which employees felt that work activities were smoothly coordinated. Employees who felt that their work was well coordinated with others also that they had good relationships with people in their own and in other groups, and these people also were more satisfied with their jobs. The interface between the authority and interdependence networks, and the implications of this overlap for supervisory style, therefore, seemed to have significant implications for individual attitudes on the job. (For a more detailed description of the study and these findings, see Moch and Feather, 1976)

These two examples, where the influence and interdependence nets overlapped and where the authority and interdependence nets overlapped, do not prove the utility of a network perspective for understanding individual attitudes and behavior. Since neither example dealt with communication networks; they also don't prove the utility of identifying such networks for explaining individual level phenomena. On the other hand, the examples are very suggestive. They represent the first two times we have applied the network perspective, and this viewpoint has allowed us to observe significant individual differences in the workplace. Empirically, we to date have dealt only with the authority, influence, and interdependence networks. It was our success with these that got us thinking of expanding into communication and other areas. As noted earlier, communication networks play a central role in our current research, and we expect them to add significantly to our understanding of the impact that organization structure has upon individual attitudes and behavior.

Summary

Traditional structural variables have not lent themselves to explaining individual level phenomena in organizations. While associations between

structure and individual attitudes and behavior have been observed, much needs to be done to explain why these relationships occur. Observing organizations and seeing some of the problems they face first-hand, it appears that individuals are affected by those whom they talk to, by their workflow interdependencies, and by other stable systemmatic relationships in which they find themselves. One such set of relationships reflected in communication or interaction behavior, has been overlooked and underresearched; it seems that this area might offer a particularly useful bridge between structural and individual level concerns.

Traditional structural dimensions tend to reflect global attributes of whole organizations. Communication behavior, on the other hand, is essentially relational, mirroring attributes of relationships among social actors. Emphasizing communication behavior, therefore, forces the researcher to reconceptualize what is meant by structure. Structure comes to be viewed as stable patterns of behavior which characterize social systems. As an attribute of the system rather than a characteristic of individual members, structure becomes as essentially relational as communication behavior. Communication behavior in specific and structure in general come to be viewed from the organizational point of view as networks which specify relationships among members. From the members' point of view, structure referrs to individuals' places within the networks. Given this, traditional structural dimensions may be reconceptualized to refer to characteristics of discreet networks, rather than attributes of entire organizations. Organizations then come to be viewed as system, of overlapping and interacting networks such as communication, influence, status. friendship, and so on.

Networks in organizations might affect individual attitudes and behavior both directly and through interaction with other networks. Directly, the

communication network determines who people receive their information from.
This information, along with the tendency for groups to construct their own
versions of reality in the absence of clear-cut physical cues, is likely to
play a large role in determining individuals' responses to the workplace.
The interdependence network is likely to play a role in determining the pro-
blems that individuals face at work. Some are overlaoded with interdepen-
dencies; others are perhaps "underloaded", with too few interdependencies to
make them feel that they are needed. The authority network determines the
locus at which decisions can be made to alter structural arrangements. It
can have a significant impact on individual behavior.

Interactively, networks might affect individual attitudes and behavior
by virtue of the fact most individuals hold different positions simultaneously
in more than one network. The supervisor who has authority but is not in a cen-
tral position in the communication network is not only likely to exhibit frus-
tration and a sense of powerlessness; he/she also may attempt to exercize
authority with insufficient information and adversely affect others' behavior.
Lower-level persons upon whom many others are dependent can affect others'
behavior by virtue of their location in the communication network. If they
are central to the network, they might convert others' dependence into their
own power. If they are not, they may base their actions on what little infor-
mation they have , and this will be determined in part by who they communicate
with.

A network approach to conceptualizing organization structure is not new;
nor are the hypotheses this perspective generates particularly insightful.
The surprising thing about the network approach is not its novelty but the
fact that it has so seldom been tried. Recently, several researchers have
begun to move in this direction. The network perspective promises to help

us understand structural determinants of individual attitudes and behavior.
For those who are convinced that structure affects individuals in systematic
ways, the network approach might help close the gap between structural and
individual level variables.

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