A COMPARATIVE INVESTIGATION OF ORGANIZATIONAL COMMUNICATION PRACTICES

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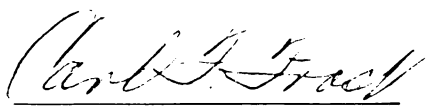

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ABSTRACT

A COMPARATIVE INVESTIGATION OF ORGANIZATIONAL COMMUNICATION PRACTICES

By

Alan L. Siegel

Organizational communications has received a considerable amount of attention in the literature. Most of the works have been theoretical in nature, emphasizing the importance of communication in the work setting. However, there has been a disproportionately small amount of empirical research on this topic.

The purposes of the research investigation were twofold. First, this study investigated the effects of participative theories of organization on communication practices. A specific implementation of the participative decision making approach (Scanlon Plan) was compared to more traditional methods of organization (Non-Scanlon Plan). Secondly, the research was exploratory in nature. Communication practices in organizations were studied in an attempt to increase understanding in this area since relatively little research had been conducted to date.

The communication variables investigated included the following: number of communication contacts; frequency of 3 types of communication-production, innovation and maintenance; subordinate initiation of production and innovation communication; communication satisfaction; and 4 categories of direction of communication.

A greater frequency of each type of communication among employees of Scanlon Plan (SP) as compared to Non-Scanlon Plan (NSP) organizations was predicted. It was also expected that the magnitude of the difference

in frequency of communication in SP and NSP organizations would be greater for innovation and maintenance communication than for production communication. A greater ratio of subordinate to supervisory initiation of communication in SP as compared to NSP organizations was hypothesized. It was also predicted that there would be greater satisfaction with communication in SP than NSP organizations.

Multivariate analysis of variance was used. Two hundred and sixty one employees of 4 medium size Midwest furniture plants were used in the investigation. Two of the plants were SP and two were NSP. A questionnaire employing a pseudo-sociometric approach was used. Subjects were grouped into supervisor and non-supervisor subgroups so that the direction of communication could be investigated.

A significant multivariate Groups main effect(SP/NSP) was obtained in the supervisory subgroup analysis. Inspection of the univariates yielded significant F-ratios for the production and maintenance communication variables. Means on these variables were higher for the NSP group. A significant Groups main effect for direction of communication was found in both subgroup analyses. In both cases all 4 univariates were significant. In addition, the Groups X Direction interaction was significant in the non-supervisory subgroup analysis. Post-hoc comparisons yielded several significant contrasts with the Direction main effect and the Direction X Groups interaction. The hypothesis concerning the magnitude of differences in frequency of communication was not confirmed. Communication satisfaction was found to be greater in the

SP group.

Alternative explanations for these results were discussed and recommendations for future research in organizational communication were suggested.

A COMPARATIVE INVESTIGATION OF ORGANIZATIONAL COMMUNICATION PRACTICES

By

Alan L. Siegel

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INTRODUCTION

The importance of communications in work organizations has consistently been emphasized by scholars, practitioners and researchers. As a topic, communications has been stressed in such diverse areas as psychology, business management, sociology and the communicative arts. The ubiquitousness of the term is illustrated by the almost generic use of the phrase "communications problem" both within and outside organizational confines.

Barnard's (1938) classic treatise was one of the first in a long line of writings to emphasize communications. He stated that:

> In an exhaustive theory of organization, communication would occupy a central place, because the structure, extensiveness, and scope of organization are almost entirely determined by communication techniques.

Communication was viewed as central to his theory of authority, which was perhaps the major contribution of his pioneering work. The importance which he placed on communication is also evident in his dictum which stated that: "the first executive function is to develop and maintain a system of communication."

Since the appearance of Barnard's work, the same theme has reappeared in the works of many other theorists. . .(Heron, 1942; Pigors, 1949; Cook, 1951; Bavelas and Barrett, 1951; Davis, 1953; Dorsey, 1957; Simon, 1957; Leavitt, 1958; Rothstein, 1958; March

and Simon, 1958; McGregor, 1960; Likert, 1961; Thompson, 1961; Etzioni, 1961; Thayer, 1961; Walton, 1963; Katz and Kahn, 1966; Hall, 1972). These writings indicate that there is little lack of testimony to the importance of communication in organizations. The "how to" and "avoiding pitfalls" publications constitute a voluminous area of literature in themselves. Articles by corporate presidents, managers, consultants, etc. fill the literature with personal accounts of past, present and future communications problems, and insights into possible therapeutic solutions. Although there is some diversity in the content of the statements, a common thread is the belief that communications is the vital linkage mechanism between "individual and individual, individual and group, individual and activity, group and group, group and activity, and activity and activity." (Scott and Mitchell, 1972). Whether one agrees with the more extremist views regarding the importance of communication, or takes a more moderate stand, it is probably a safe assumption that communication processes are worthy of investigation in an attempt to understand organizational behavior.

The purpose of the present research is to examine the effects of different management styles and assumptions on organizational communication practices. Specifically, are there differences in communication practices between organizations with a management style that is participative in nature and those with a non-participative style? The implications of various organizational styles for communication practices will be explored and hypotheses will then be generated. Part of this research effort will be purely investigative in nature and tangential to the

testing of specific hypotheses. This second purpose reflects the need for exploration in this area because of the scarcity of empirical research. For all of the attention and apparent enthusiasm the area has generated, there is a disproportionately small amount of empirical research compared to the infinite number of pages devoted to armchair speculation. This next section will attempt to provide a comprehensive review of the previous empirical studies purposely avoiding material in the former categories.

II. PREVIOUS RESEARCH IN ORGANIZATIONAL COMMUNICATION

Although it was not a part of its initial purpose, the studies at the Hawthorne Plant of Western Electric during the late 1920's and 1930's, served as an invaluable catalyst to future communications research. In trying to determine the effects of working conditions on employee efficiency, considerable information was obtained concerning the social organization of employees and informal horizontal interaction. Even though these studies cannot be considered communication studies per se, they did usher in a tradition in which the value of communications has been emphasized and has led to much of the scarce research which will be reviewed. These first studies reviewed have been clustered together because they are the most descriptive in nature. They seem to have little further intent than to provide a "photograph" of an organization's communication practices. Their grouping merely reflects this author's viewpoint, and the need to unravel the confusion by providing the reader with some systematic treatment of the literature. It is probably reflective of the noticeable lack of theory in this area which has hindered integration.

A. Studies Primarily Descriptive In Nature

Quite a few of the studies have essentially focused on delineating just what communication activities take place in an organization. One of the first was conducted by Burns (1954) in a British engineering factory. Using a self-recording technique, his limited sample of 4 took note of daily interactions during a 5 week period. Information on who initiated, whom the communication was with, and whether it involved obtaining

giving, systematizing or recording information was obtained. Subjects were found to both over and under estimate time spent on various executive functions and to restrict communication within their department. A marked tendency was also noted for interaction to be initiated downward and for discrepancies in subordinate perception of what was being communicated by their superiors. Although Burns did find out that 80% of the subjects time was spent in conversation,he concluded that there was still inadequate answer to the questions of what topics and with whom, executives spend their time.

Hinrichs (1964) also used a self-recording technique in which 232 subjects could indicate method of communication, topic of interaction, who participated and initiated and total time spent communicating. Technical and supervisory personnel from 6 levels of a research and development organization took part. The technique was slightly different than the one cited above, in that random times were pre-selected for the subjects to take note of what they were doing and record the data. As Burns (1954) had found, communication constituted a large part of the daily activities in an organization (61%). Oral communication was a major component (35% company wide) of all communication activities. Similar to the above study there were discrepancies between estimated and recorded time allocation.

Wickesberg (1968) was interested in similar aspects of communication behavior but in addition wanted to make comparisons between managerial and non-managerial personnel. Ninety-one MBA students holding positions in 35 organizations participated in the study. A self-recording technique was utilized for a 5 day period. Type and content of communication was logged along with amount of time and whom the interaction was with.

Results indicated that the informational purposes of communication constituted the highest frequency (54%) with instructional purposes (22%) next. He reports that there was little difference in frequency of composition between manager and non-manager. There was also little variation between the manager, non-manager groups in terms of direction of communication flow analyzed by purpose of interaction. This finding is not surprising since both groups had interactions with far more members than traditional theory or organizational charts would suggest.

A communications "audit" was conducted by Odiorne (1954) in which he also wanted to find out what communication processes were going on in an organization. Specifically, he was interested in discovering the accuracy and direction of communication within a particular organization at a particular time. Discrepancies in response to questions administered to top management and to research engineers indicated that management consistently overestimated the adequacy of information given to the engineers. Most engineers felt that they had an inadequate opportunity to express ideas because they lacked sufficient information about management's plans. They also felt that the channels of communication were inadequate.

This problem of adequacy of communications was attacked from a slightly different perspective by Dahle (1954) in one of the few attempts to objectively determine the effectiveness of different methods of communication. His experiment utilized college students, workers in a plant, and employees of a service organization, in an attempt to compare communications. Analysis indicated that there were differences in effectiveness of information transmission in all 3 situations. A combination of oral and written communication was found to be most effective in all 3 samples. Like many of the above studies the results are far from earth-shattering

but could be of practical importance.

Walton's (1959) research parallels the Dahle investigation in that he too was interested in discovering effective means of communicating downward to employees. The research site was a U.S.Naval Test Station. Not surprisingly, the grapevine was found to be the speediest disseminator of information, with supervisory communication ranking second. As in the above studies, oral communication played a major role . In terms of greatest overall effectiveness (the meaning of which was left to the respondent's interpretation) the station newspaper ranked first. The author stated that this was probably due to the desire for "offical communication" right from the top.

Goetzinger and Valentine (1963) used a "communications flowsheet" which is a method similar to the Burns and Hinrichs techniques. Like the previously discussed investigations, the main part of the study was solely to find out what communications were taking place, this time in an Air Defense Command Station. The far from startling results were that conferences and telephone calls consitituted 39% and 19% respectively of the channels utilized. In regard to direction of flow, 37% of the interactions were upward and 26% lateral.

Similar to the above study in its simplicity but containing slightly more theoretical perspective was a study by Wade (1968). Data were collected in 5 divisions of the U.S. Bureau of Budget using a sample of 61. Wade hypothesized that high levels of personal activity in an organization communications net would be positively related to high level of involvement in other organizational communication nets. This hypothesis merits attention until it is found that it was operationalized in such a simplistic manner. The author looked at the

relationship between receiving telephone calls and initiating calls. It was also hypothesized that a high level of personal involvement in communication nets is associated with effective job performance. Both of these propositions received support.

Simpson (1959) was interested in verifying the frequently asserted proposition that work related communication is more vertical than horizontal. Using an unreported number of supervisors in a textile mill he obtained data on the frequency of contact between all pairs of supervisors. His obtained results were compared to "expected" proportions of vertical and horizontal interactions to determine if the distribution conformed to chance expectancies. The results could not be cited as either confirming or negating the hypothesis. Simpson found that the communications were mainly horizontal but that this was an artifact of the mechanized nature of the work environment.

Davis' (1953) study fits in with the essentially descriptive nature of all the above studies. It was unique in that its focus was primarily the informal communication system or grapevine of an organization. In addition, Davis pioneered in the use of a research technique which he termed ECCO analysis.

> Briefly, the basic approach was to learn from each communication recipient how he first received a given piece of information and then to trace it back to its source... And when the data from all the recipients was assembled, the pattern of the flow of communication emerged (1953)

It was found that the grapevine was fast, selective, location specific (work) and tended to be jointly active or inactive with the formal system. The predominant communication flow was downward or horizontal. The identification of liasons and isolates, which was to become a major focus of later research, was also accomplished.

B. Studies Emphasizing Superior-Subordinate Communication

The bulk of the communications research literature is concerned with elements of hierarchical communication. Superior-subordinate communication, whether focusing on upward, downward, one-way or two-way processes is at the heart of most of the studies to be reviewed below. It bears repeating that much of this emphasis possibly stems fron the Western Electric studies which gave rise to a human relations tradition that still has its hold on many facets of industrial and organizational psychology and practitioners of management theory. The importance of accuracy and "openess" in communication to this theoretical perspective is documented by the output of studies in this area and the theory which will be discussed at a later point.

One of the most ambitious investigations of superior-subordinate communication practices was conducted by a Maier led University of Michigan research team for the American Management Association (1961). Using patterned depth interviews, data from 58 superior-subordinate pairs in 5 companies were analyzed. All superiors held high middle-management positions and selected the subordinate half of the pair themselves. The investigators were interested in the percent of aggreement-disagreement among the pairs on issues such as job duties, job requirements, anticipated job changes, and obstacles to performance. In other words, could the superiors accurately identify and rank order the statements about these areas of the subordinates job, when compared to the actual responses of the subordinates. Three raters, using

developed rating guidelines, took part in a content analytic approach to determining degree of agreement. Results were far from encouraging. Of the 4 areas, the only one in which there was even moderate agreement was job duties. Eighty-five percent agreed on half or more of the job duties comprising the subordinates job. For each of the other categories agreement was lower. In summary, superiors disagreed with subordinates as often or more often than they agreed in almost 75% of the cases. Even in the area of job duties in which agreement was moderate, there is no assurance that this indicated very much about actual communication. The results could have been due to mutual but independent knowledge of the job description. To add to the negativism of this finding was the fact that there was not much variance in agreement from company to company. An analysis of variance was performed to see if there were any significant differences among the companies in any of the 4 job areas. All F's were non-significant. This inescapable fact of vast perceptual differences in superior-subordinate pairs will be mirrored throughout the literature.

Likert (1961; 1967) further substantiates the above findings. He states that his data overwhelmingly indicates the communications problems which management itself is aware of. He reports that 4 of 5 managers state that downward communication is the greatest concern they have. The inadequacies of both upward and downward communication are cited. A research study conducted in 1951 indicated that there was a serious discrepancy between superior-subordinate perceptions of what is reasonable production. His data shows that there were also marked discrepancies as to how well the communication processes were

being performed. Likert also reports a total lack of understanding between superior-subordinate concerning job obstacles. This is in agreement with the Maier results.

A study by Boyd and Jensen (1972) also echoed these findings. It attempted to determine if differences exist in the perception of first-level manager authority as viewed by the incumbent and his immediate supervisor. The investigation was carried out in a randomly sampled group of 989 Midwest companies employing 50 or more people. The most critical finding was that, on the average, there was a 50-50 chance of first and second level manager disagreement over the 39 items tapped. The first level manager either consistently under or overestimated his authority. The authors concluded that the superior ineffectively communicates to his subordinate and that there is little if any information seeking for purposes of clarification.

Blau and Scott (1962) also discovered elements of the vertical communications problem in their investigations of a federal law enforcement agency. If the agents, who were free to arrive at their own decisions, encountered problems they were expected to confer with supervisory personnel. However, the authors report that agents were reluctant to go to a supervisor since this would reveal their ignorance and possibly have a negative effect on their evaluations. Consultation among peers became the tolerated procedure. Similar results have been obtained by Zaleznik (1956) and Argyris (1953). In a separate study Blau (1962) also reports how operating directives became distorted as they filtered from high to low levels of the hierarchy.

Davis (1968) investigated whether high level managers passed information down through the chain of command when they were told to do so. An additional feature was a comparison of oral and written communication of different kinds of information. Using his ECCO analysis for two groups of 60 managers each, he found that communication began to deteriorate at the third level (level 5 was lowest level). All received the information but few passed it on. This downward filtering has been reported earlier by Blau (1962) and Sanborn (1961). Use of the two different types of information, production oriented and personal oriented, indicated that what does get through the hierarchy depends on content.

In one of the more sophisticated studies in this area, Berkowitz and Bennis (1961) dealt with the interaction within and across hierarchical levels of nurses in an out-patient department. Respondents indicated superiors, peers and subordinates with whom they frequently interacted. Who initiated the interaction, and the content (which has not been a focal point in many studies) were also noted. T-tests and ANOVA were used to analyze the data. The results generally indicated that there was an inverse relationship between both frequency and self-initiation, and the hierarchical level of the other person. Initiation typically goes from superior-subordinate ($F = 9.77$). Data also indicated that it isn't that people don't communicate across levels, but "rather they are more apt to transmit certain types of content, determined by the nature of organizational lines to be crossed" (1961). Communication across hierarchiacal levels was concluded to be subject to a filtering action as though it were passing through a semi-permeable membrane.

Organizational content tended to go upward rather than sideward or downward. Interpersonal content tended to go sideward (peers) rather than in any other direction. The data on task content indicated that it tends to flow upwards and sideward leading to the conclusion that all communication is restricted downward. However, the reliability and validity of the task data were seriously questioned by the authors. The importance of the interaction was perceived differently depending upon the position of the other person. Interactions with superiors were judged of most importance ($F = 3.28$). Those with subordinates were less satisfying than interactions with peers ($F = 9.06$). As the authors conclude, these results "seem to highlight an inherent problem of organizational life" (1961). Initiations with superiors are perceived as most important and satisfying but are the least likely to be self-initiated.

Lawler, et al. (1968) conducted an investigation in the area of superior-subordinate communication. His study tried to gather data that could provide a link between managerial attitudes and behavior episodes. A sample consisting of 105 middle and lower level managers from five organizations filled out self-recording forms at the conclusion of each behavioral episode. This was done for a five day period. Type of contact (letter, phone, etc.), activity (production, finance), position of interactor initiator, purpose, and attitude toward episode were obtained. The data showed a fairly even balance of initiation between self and other (55%, 42%) with few interactions perceived as being jointly initiated. As expected there was a general tendency for self-initiated contacts to be more positively evaluated than other

initiated. It was also shown that managers feel more positive about contacts with their superiors than with their subordinates. The conclusion drawn should be of great interest to management. The superiors least valued interactions are those in which a subordinate comes to him. It is probable, as the authors indicate, that the superior communicates these reactions to his subordinates. Therefore, it may not be too long before the subordinate learns to reduce initiation of this type of interaction.

There have been quite a few other studies which have dealt with this same hierarchical communication issue, but included additional variables in an attempt to refine the problem. One of the most frequent treatments deals with hierarchical communication in terms of social status. The "substitute locomotion" theory has had an influence on quite a number of studies. Briefly this states that individuals derive vicarious status elevation by association with superiors. This striving for upward communication may be a substitute for actual locomotion when it is impossible.

Kelley (1951) was one of the first to investigate this problem, being interested in the forces that act upon communication in status hierarchies. A sample of 118 college students were utilized in an investigation which focused on written communication. Subjects were placed into High and Low status groups with and without the possibility (expectation) of locomotion. Various instructions were administered to produce the differential perceptions in the treatment conditions. The author reported that there was evidence of a status differential having been produced, but no data about the mobility or locomotion

manipulation was obtained. The written output of the group in performing their task was categorized into relevant and irrelevant content. Results indicated that the more unpleasant the hierarchical position, the stronger the forces to communicate task irrelevant content. Kelley proposed that irrelevancy provides an escape from an unpleasant position. The addition of high mobility to low status decreased unpleasantness of the position while low mobility and high status increased it. The data generally indicated that communication can serve as a substitute for upward locomotion but this occurred only for low mobiles who had the desire to move up. The hierarchy tended to produce forces which restrain the communication of criticism against people of other levels. However, high status allows an individual greater freedom to express these criticisms. It should be noted that this study only dealt with written communication and in addition the type of task may also severely lessen the generalizability of the findings. Regardless of these qualifiers, the study did spur additional investigations.

Cohen (1958) contributed another laboratory study which added a power variable to that of status in an attempt to clarify the differences between the two low status groups. He offered an "instrumental theory" of upward communication. This essentially states that a power definition of hierarchical rank creates a functional dependence of lows upon highs. Therefore, the lows behave toward the highs in the interest of need satisfaction and "not merely in their attempts to approximate status in either fantasy or wish fulfillment" (1958). This leads to the predictions that a low group

for whom upward mobility is possible will make considerable efforts to produce good relations with highs; however where upward mobility is not probable, these efforts will be less intense. Two groups of college students each were utilized in the study. As in the Kelley (1951) investigation the messages written by the subjects constituted the data. Results indicated that the low mobiles were more concerned with task centered communication to the upper levels than were the low non-mobiles. The low mobiles appeared to be behaving in a manner more conducive to their being rated favorably by the highs. Non-mobiles were more critical of highs, and a good deal of their communication was devoted to irrelevant comments. These findings were considered to be consistent with the researcher's propositions.

In a further refinement of the Kelley (1951), Cohen (1958) research, Read (1962) focused on the attitudes and motives of subordinates as these effect the accuracy of upward communication. The major hypothesis was that a negative relationship exists between upward mobility and accuracy. Going a step further, Read proposed that the subordinate's interpersonal trust of his superior and the subordinate's perception of his superior's influence over his career, modify the relationship; the negative relationship between mobility and accuracy is greater when interpersonal trust is low and the perceived influence is high. Unlike the Kelley (1951) and Cohen (1958) studies, this was a field investigation. Fifty-two third-level supervisors and their corresponding subordinates were sampled from three major industrial organizations. One unit from each company was used. Accuracy was operationalized as the degree of superior-subordinate agreement about

subordinate problems. Three parallel but independent measures of mobility were used - mobility need, work-life and inter-generational mobility. Two, four item Likert type scales, with questionable inter-item correlations (-.07 to .68), were used to measure trust and influence. Two of three r's between accuracy and the measures of mobility were significant (-.38, -.41). To test the moderators the distributions of these scores on the conditioning variables were dichotomized into high and low. Results indicated that the accuracy-mobility relationshop was significantly moderated by trust but the difference between groups on influence was non-significant. There was less communication under the joint low trust, high influence condition. As in the other studies, these results generally support small group research (Festinger, 1950; Kelley, 1951, Thibaut, 1950; Back, 1950). These studies have all found that individuals in hierarchies tend to screen information passed upward and filter that which is potentially threatening to the communicator's status. As Read (1962) suggests, the results indicate that free and accurate communication exchange may depend significantly upon harmonious relationships between organizational members.

Another study which utilized the variable of interpersonal trust was conducted by Mellinger (1956). His position was similar in that he felt an individual is likely to distort his own attitudes in communicating them to people that he distrusts. The principal goal of interaction with a distrusted person therefore becomes the reduction of one's anxiety - not accurate communication. Data was collected in a government research organization. Interpersonal trust was measured by

a three item scale, with accuracy based on A's estimate of B's answers to questions. The major hypothesis was that for those B's that trust A, A's estimates should be more accurate than in the case of B's with whom there was no communication. In addition there will be few cases in which A drastically over or underestimates agreement. However, in the case of B's who distrust A: communication does not increase accuracy, because the communication is probably inaccurate. Findings supported the prediction that if B distrusts A and is motivated to interact with him, the communications will conceal attitudes toward an issue. In other words, communication was associated with increasing accuracy only under conditions of B's trust of A.

The studies cited all point to the difficulties involved in hierarchical communication - particularly in regard to superior-subordinate relationships. There seems to be the implication that the "climate" in which the interaction takes place may be an important variable.

C. Newer Sociometric Techniques in the Investigation of Communication

Several of the most recent studies have grown out of the recognition, previously mentioned, that there is often a discrepancy between the actual flow of communication and what the organization chart would imply. Extensive use has been made of a methodology which attempts to circumvent this problem.

The basic idea stems from research advanced by Jacobson and Seashore(1951), Weiss and Jacobson (1955) and Weiss (1956). As Jacobson and Seashore stated:

> The communication structure is seen as existing in the patterns of actual contacts which occur among individuals in the organization, and in the patterns of contacts among sub-groups that are established by the inter-individual contacts. Relationships implied in such patterns of contact may be different from the relationships specified by the formal organization, and they are susceptible to measurement without reference to the formal charts.(1951)

Using a sociometric procedure, a Personal Contact Checklist obtained information concerning interaction in the organization without regard to formal role prescriptions. The authors stressed how these techniques could be useful in identifying subgroups, key elements in the organization such as liaison individuals, perceived status differentials and the location of power in the system. Essentially, a differentiated typology of a communication structure could be obtained.

This idea of key individuals in the communication structure was investigated by Walton (1963) in testing his "magnetic theory of organization communication". His assertion was that communication networks are dominated by a number of magnetic centers which draw messages onto themselves. Using a questionnaire and communications log with his sample of 30 employees, he was able to identify "centrals" and peripherals. He hypothesized that the former would be higher on measures of authority power, expertise, sociability and satisfaction. Only the influence or

power hypothesis was confirmed.

Direct extension of this work has been conducted by Schwartz (1968), MacDonald (1970), Jain (1970) and Amend (1971). As an outgrowth of the earlier Jacobson works, these studies have all attempted to provide a generic communication structure; a picture of the extant communication networks based on analogues in graph theory. A two step approach has been used in which first the extant structure is mapped, enabling one to locate any individual in the organization "from his set of previous message transaction linkages with other members..." (Schwartz, 1968). Next, the meaning of the individual's location can be determined. Schwartz (1968) in his comparison of liaison and non-liaison individuals, found that the former's contacts in the organization were greater, more structurally diverse and more important. Liaisons were also perceived to be more influential in the power structure.

MacDonald (1970) logically extended the above research by investigating the concept across content-functional areas. Berlo's categorization of production, innovation and maintenance functions was used. It was found that the number of liaison individuals was greater in the production network. Non-liaisons perceived liaisons as having more communication contacts, greater influence, more production and non-production information and higher potential message flow control. Aside from the descriptive knowledge gained from the above works, a major contribution stems from the development of computer techniques. These have greatly extended the feasibility and practicality of the use of earlier described sociometric methods to large scale organizations and social systems.

D. Effect of Communication on Other Organizational Variables

None of the studies previously reviewed has focused primarily on the effects of various communication variables on other organizational factors. As McCroskey (1971) states:

> Thousands of isolated attitudes and opinions concerning communications and organizational performance have been gathered from business executives. The term "isolated" refers to the absence of any attempt to relate the attitude to other measures of performance of behavior.

While there are undoubtedly many studies in the organizational psychology, management literature which have included communication items on questionnaires, there are relatively few which have made their consequences the primary emphasis.

Likert's (1961; 1967) work is probably the most extensive, while not being exclusively devoted to this area. Throughout his works he states that evidence confirms that "good communications and high performance go together" (1961). The accuracy of perceptions, and ease of transmitting ideas upward were both found to be associated with measures of departmental effectiveness. It was also reported that high producing managers have more favorable attitudes and better communications in their units than do low producers. From the items used in his questionnaire it can be inferred that the ambiguous label "better" communications refers to direction, amount, adequacy, and accuracy of the communication processes in the organization.

Tacey's (1960) work is similar to Likert's in that he also focuses on the practices of ineffective and effective employee foremen. The study is different from most of those reviewed in that it takes advantage of the critical incidents technique. Those in the sample of 106 who were rated high in productivity had more favorable attitudes toward communication and more self-confidence in being able

to communicate. Similarly, Simons (1962) was able to identify communication attitudes which would distinguish "successful" and "unsucessful" supervisors.

Habbe (1951) conducted one of the only field experiments which investigated the effects of changes in communication processes. He was interested in the effects of the implementation of a two way communication system. An experimental and control plant were used with the chief difference that one plant had regular meetings with employees and the other didn't. The experimental group reported greater knowledge of what was going on in the company (present and future), more interest in the company's annual report, greater identification with the organization, and greater overall satisfaction with the company.

In relation to the above investigation two laboratory studies were conducted which focused on one-way versus two-way communication. Leavitt and Mueller (1951) were concerned with the transmission of information from A to B and how this is influenced by the return of information from B to A. Using a series of geometric patterns to be communicated, 80 students were divided into 4 feedback conditions. The two most relevant for this discussion were a free feedback and a zero feedback condition. The difference was in the ability to ask questions, interrupt, etc. in only the former. The hypothesis was that when a receiver is free to ask questions he can obtain a better understanding of what the sender is trying to communicate. In addition both should feel more confident about the accuracy of sending and receiving. The findings supported these hypotheses.

A more recent investigation by Haney (1964) parallels the results

reported above. Three hundred and ninety eight subjects were distributed into 18 groups whose task was to reproduce a drawing communicated verbally by the sender. Results indicated that bilateral communication (free feedback) generated more accuracy, less frustration, more recipient confidence, and more group willingness to act on the basis of the information, than the unilateral condition. However, as mentioned in connection with a prior study, the generalizability of these two laboratory investigations which employed tasks unusual to non-labaratory settings, is seriously questioned.

Brown and Neitzel (1952) were concerned with the effects of communication variables on morale. Utilizing 86 female employees from 3 supervisory levels they studied the estimation and communication of responsibility (R), authority (A), and delegation of authority (D). The R,A, and D scales were borrowed from Stogdill's work. The subjects estimated R,A, and D in relation to their position in the organization. The authors hypothesized that a discrepancy in individual estimates would be due to the communication effectiveness between levels and to the degree to which management has clearly defined R and A for each level. Disparity scores representing differences between an individual's estimation of R, A, and D for oneself and one's superior or assistant's estimate were used to measure the communication of these factors. Morale was an index of supervisory attitudes toward company policies. The correlation of .54 between morale and disparity score indicates that closer agreement between supervisor and subordinate is associated with higher supervisory morale.

Perry and Mahoney (1955) also investigated morale and communication behavior. But the communication variable of interest was how much actual knowledge employees had about company history, product, finances, work

rules, etc. Supervisory and non-supervisory and office personnel in 5 firms were interviewed. The index of morale was a 15 item form of the Industrial Relations Center Triple Audit Attitude Scale. Only 3 of 28 R's (all in 1 firm) were statistically significant. There was no support for the proposed relationship between how much an employee knows about the company and employee's attitudes toward the organization. These results probably should not be taken as indicative of a total lack of relationship between the variables. It is probably a safe assumption that content and style and not simply quantity of communication affects attitudes.

One of the most recent investigations tackling "openness" in communication and its effects was conducted by Burke and Wilcox (1969). They wanted to see if different patterns and degrees of openness in superior-subordinate communication would affect subordinate satisfaction. The sample consisted of 323 female telephone operators. It appears that their operational definition of "openness" has not added any clarity to the concept since they indexed the variable by simply asking the following: "How free and open are you in communicating your feelings and ideas to your superior?" Three items tapping satisfaction with company (inter-item r's ranged .29 - .57), 12 - satisfaction with company (.07 - .69), and 8 - satisfaction with supervision (.12 - .68) were used. Twenty-five different patterns (various combinations of superior-subordinate responses on Likert type Scale) of openness emerged from the data. Greater openness of either supervisor or subordinate or both was related to greater subordinate satisfaction. The greater disparity in the superior-subordinate openness, the less the satisfaction.Perceived openness of supervision was positively related

to the stated openness of the subordinate to his superior. Therefore, in general the results indicate that open communication is beneficial to the organization, at least in regard to employee attitudes.

Dealing more in the realm of employee behavior than attitude, an ambitious project was undertaken by Berlo (1970). It was designed to investigate communication practices and their relationship to employee manpower-performance characteristics. The source of the data was unstructured interviews with 125 supervisory and non-supervisory personnel, and 600 structured interviews with a representative sample of employees. Personnel information (turnover, attendence, performance evaluation) was obtained 1 year later on 91% of the sample. It was hoped that communications practices would differentiate employees categorized as high or low on the above variables. Employees who left the organization were more likely to have had shorter conversations with their 1st level supervisors, and not to have received any communication about why others had previously left the work group. Level of attendance could also be distinguished by amount of contact with supervisors and co-workers, and amount of information about the organization. Performance evaluations in terms of salary increases were more frequent when there was greater and more open communication contact at the 1-2-3 step supervisory level. Supervisor interest in subordinate's work and personal problems and subordinate participation in the organizational information system also differentiated on this variable. No data was provided regarding the statistical significance of the differences, which were reported in percentages. The authors blanket statement that "there is a clear, consistent, positive relationship between superior-subordinate communication practices and employee behavior," may not be

totally warranted.

Farace and Connelly (1971) also attempted to demonstrate a relationship between employee attitudes and communication variables. Using structured interviews with 379 non-supervisory personnel, they investigated communication correlates of work satisfaction a la Herzberg. Chi-square was used to test hypotheses of differences between work satisfied and dissatisfied employees. Berlo's functional categorization of communication content into production, maintenance and innovation functions was employed. Work satisfied employees reported rapid attention by superiors to work problems. However, predictions regarding subordinate initiation of interaction and perception of openness were not confirmed. In the area on innovation communication, the two groups could be distinguished by their perception about the satisfactoriness of information received about company plans and policies. Maintenance communication also differentiated the groups. Rapid attention to personal problems by supervisors, and subordinate's perceptions of supervisor's interest in personal problems were the key variables.

Several conclusions can be reached from having reviewed the literature: 1) Considering how much has been written about the importance of communication there are relatively few research investigations devoted to this area. 2) General agreement seems to exist about the inherent problems of superior-subordinate communication in organizational life. 3) Advances in application of computer techniques to communication studies are being implemented and offer promise for further development of the area. 4) There are virtually no studies comparing communications practices across different organizations. 5) Point number 4 is probably a result of mostly atheoretical approaches

in the area of communications. There have been few serious attempts to intergrate organizational theory and communication concepts. It is these last two points which will be specifically addressed in this research investigation.

The next two sections will be devoted to an attempt to more fully integrate and link the field of organizational behavior with communication concepts and practices.

III. IMPLICATIONS OF ORGANIZATIONAL THEORIES FOR COMMUNICATION PROCESSES

Much of the literature review would lead one to infer that communication processes influence many other processes in an organization. Although not explicitly stated, communication has been viewed for the most part as an independent variable determining other processes in the social system. It seems just as likely that communication processes themselves are greatly influenced by the particular organization theory or management orientation espoused by the leaders of the company. A cyclical effect may be created in which communications in turn affect the climate of the organization. Whether consciously thought out and verbalized or not, many of the day to day decisions and standard operating procedures of an organization are grounded in theories of the nature of man (Schein, 1971) and prescriptions of how to organize. While many of the organization theories do not explicitly deal with communications concepts and issues, it is certain that each has direct implications and guidelines for communications practices. There has not been much work devoted to a systematic treatment of the similarities and contrasts in communications processes contained within each of the prominent theories. Farace and Russell (1971) present a concise exposition of this topic. The following discussion borrows heavily from their work.

Weber's (1947) bureaucratic model has probably received greater attention and elicited more writing than any other organizational theory. Weber viewed the world as becoming more and more rationalized, and demystified. Correspondingly, a new rationalized, mechanistic, and depersonalized form of organization was to follow - a bureaucracy. It was to be the ideal form of organization, inducing

an impersonal and rational orientation toward tasks which is conducive to efficient administration. The following characteristics described by Weber (1946) are representative of a bureaucracy:

> There is the principle of fixed and official jurisdictional areas, which are generally ordered by rules. . .laws or administrative regulations. Regular activities of the organizational structure are distributed in a fixed manner as official duties. Any and all authority required for the discharge of these rules is stably distributed and also delineated by rules. Methodical provision is made for continuity in the fulfillment of these duties. The organization is goverened by the principles of office hierarchy and levels of graded authority. Thus, there exists an ordered system of super and sub ordination in which high offices supervise lower ones, and monocratic organization is the rule.

The above description refers to a condition in which a position exists regardless of its incumbent. Office management is based upon written documents. It follows general rules which are fairly stable and exhaustive communication necessary for fostering inter-departmental dependencies are not at all emphasized. In fact, the individual is given no indication of where he fits into the larger organizational picture. Of all the theories by which organizations could be governed, the implications for restrictive, hierarchical communications are greatest with this form.

While Weber's conceptualization ignored the informal organization, this became the focus of more "human relations" oriented theory stimulated by Mayo (1949) and Rothlisberger (1946). Their studies brought the social factor to the attention of the industrial psychologist. It became apparent that networks of informal relationships and groups are frequently found in organizations and profoundly affect output variables. According to Mayo 1) man's basic motivations are social in nature; 2) management's use of controls and incentives are not nearly as effective as the social forces which the peer group can bring to bear

on the individual. However, man will be responsive to management to the extent that his supervision meets his social and acceptance needs.

This picture of organizational life, including communication practices, is vastly different from the previous bureaucratic model. In contrast to the strict reliance on hierarchical communication, there is a more direct emphasis placed on horizontal communication. The minimization of formal rules and stress on interaction between peers leads one to assume that there would be a heavier emphsis on oral communication. The amount of communication would tend to be greater with this model, with the largest share devoted to the socio-emotional type. Messages dealing with production matters are limited and little attention is given to communication dealing with new ideas and suggestions. It is also expected that initiation of communication would be considerable at all levels with increased flexibility in linkages over the previous model. While this discussion has stressed actual communication behaviors, it is probable that differences would exist in attitudes toward communication with the various models.

Of the participative-management theorists, McGregor (1960) has probably achieved the most fame although he has not written extensively. His Theory X, Theory Y dichotomy is founded in a slight modification of Maslow's need hierarchy work. His major contribution has consisted of well written criticisms of traditional organization theory, and the elaboration of new concepts. His attack on traditional theory begins in deemphasizing the critical importance of authority as a means of social influence. Most of the key principles of organization such as span of control, line and staff, and unity of command are based on the central importance of authority. This emphasis

serves to focus attention on upward dependence-dependence of subordinates on superiors. It slights downward dependence and lateral dependence. This condition is in stark contrast to the real need for interdependence.

> Not only are subordinates dependent upon those above them in the organization for satisfying their needs and achieving their goals, but managers at every level are dependent upon all those below them for achieving both their own and organizational goals (1960).

As Mayo had done, McGregor summarizes the basis of his theory in a series of assumptions (Theory Y) regarding human nature. The following are most relevant to this discussion: 1) The average individual learns under proper conditions not only to accept but to seek responsibility.; 2) The capacity to exercise a relatively high degree of imagination, ingenuity and creativity in the solution of organizational problems is widely, not narrowly distributed in the population.; and 3) Under the conditions of modern industrial life, the intellectual potentialities of the average individual are only partially utilized.

The principle of integration, by which both the individual's and organization's goals are achieved derives from this Theory Y. It results as a consequence of a managerial point of view which includes confidence in subordinate potentialities, awareness of management's downward dependence, and creation of conditions under which people can influence decisions affecting them. The importance of the climate of the superior-subordinate relations is emphasized. Subordinate confidence in the integrity of the superior and confidence downward, become important elements in the establishment of this climate. In discussing the application of Theory Y, McGregor (1960) refers to management by objectives under which the superior's role is markedly different from the conventional boss stereotype. The bulk of the responsibility during the process is assumed by the subordinate. The superior offers advice

and information but does not direct and control in the usual sense.

The focus is undoubtedly on the individual, his self-direction and resultant self-actualization. As a result of this tendency to steer away from external direction one could expect a minimum of formal rules and written messages. As in the above model the emphasis would lean towards oral communication. However, unlike Mayo's model, peer or horizontal communication is not stressed. Independent effort is idealized with the consequence being a limited volume of communication. The idea that most communication will be initiated by subordinates seems integral to this philosophy. Equal weight is given to messages from all members of the hierarchy with directionality for messages therefore well balanced and interaction patterns flexible. In terms of functional use of messages, there is probably a balance here also, since innovative content is advocated really for the first time.

As previously pointed out, Likert's (1961, 1967) writings are the most empirically based of the participative management theorists. With his "science-based" system of management he is able to differentiate 4 systems of management, empirically as well as theoretically. Stated briefly, as an organization moves from system 1 (exploitive authoritative) to system 4 (participative group) it begins to more closely resemble the ideal. The key concept in the system 4 approach is the utilization of a group system of organization. Group linkage and functional interdependence are of critical importance. Under a system 4 philosophy the following conditions and climate would be strived for:

1) high confidence and trust by superiors in their subordinates
2) subordinate perception of being able to freely discuss work related matters
3) seeking and implementing of subordinate's ideas and suggestions
4) high level of communication with groups and individuals
5) multi-directionality of communication - up, down, across

6) freedom to question downward communication
7) motivation to accurately communicate
8) interdependence and cooperative behavior across the organization

Because he stresses the importance of communication to an organization, the implications for communication practices are more explicit than in any of the previous theories. The value of cross-organization communication comparisons also becomes more evident. There is an absence of formal rules with a bias toward oral communication. The high amount of communication would be manifested in all directions. Superiors would be eager to solicit information from subordinates, with initiation symmetrical. Although production messages might dominate, there would also tend to be a high amount of maintenance and innovative messages. A group hierarchy is maintained but the general climate of freedom of control would presume a moderate amount of pattern flexibility. It is quite obvious that this system 4 approach is on the opposite end of the continuum from the bureaucratic model initially discussed.

It is clear that each of these organizational theories has different implications in terms of communications practices. As pointed out, the comparison is perhaps most clear when looking at the bureaucratic model (Weber) vs. the human relations model (Argyris, Likert & McGregor). One of the most novel attempts to take the latter participative-oriented models from the realm of theory to practice has been the Scanlon Plan. The next section will briefly describe the Plan in terms of its philosophy and structural mechanisms. Its implications for communications practices will also be discussed.

Description of the Scanlon Plan

McGregor (1960) may have most aptly summed up the Scanlon Plan with his statement that: "The Scanlon Plan is not a formula, a program,

or a set of procedures. It is a way of industrial life - a philosophy of management. . ." Without attempting to proselytize, it can be stated that there are many factors which differentiate a Scanlon Plan from other cost reduction plans.

While the cost-reduction sharing mechanism is a basic part of the Plan it is only one of its three basic features. The other elements are a philosophy of participation and cooperation, and utilization of a system-wide suggestion system. We will examine the features in that order.

The cost-reduction aspect of the Plan provides for employees to share in any improvements in the ratio between total labor costs and sales value of production. A distinguishing feature of the scheme is that factors irrelevant to employee efforts are not integral to the measurement. This allows employees to see the direct connection between their behavior and organizational achievement. These increases in production or savings in labor costs are paid to the employees in the form of monthly bonuses. The bonus is designed to emphasize to both labor and management, the variables that are critical to organizational productivity. As Puckett (1958) states, the formula can therefore have both reinforcing and educational value if its purpose is really understood.

> Merely understanding the cause makes it much easier than when the worker thought all adversity started with a bum decision by management. . . What better education can the worker get than by living, feeling, and working with the most basic problems of the particular enterprise of which they are a part.

Before installing the Plan the company attempts to determine the normal labor costs. This information is then used as part of the ratio that is calculated. The formula that is used is not a set,

predetermined guideline that follows adoption of every Plan. Each company determines its own formula and the factors that are reflected in it.

The second feature of the Scanlon Plan is of greater concern to this discussion and research. Greater participation and cooperation by all members of the organization is one of the ultimate goals of the Plan. Its philosophical orientation espouses a change in the power structure of the organization. This is manifested in attempts to increase participation by rank and file employees in organizational decisions, and decrease the usual emphasis on hierarchical authority. All of the above changes are based on the belief that the rank and file members of the organization have valuable inputs to make and that when the proper conditions exist they will share this information with management. But this is not a one-way exchange. Management also has a great deal of information which if shared with all employees gives them the means to collaborate. The worker is seen as a valuable resource that is instrumental in achieving the system's goals and affecting the bonus. As Whyte (1955) states, the philosophy of teamwork which the Plan tries to develop is implemented via "1) a social process whereby suggestions for productivity improvements can be made and carried out; and 2) a formula for sharing the fruits of productivity improvement on a plant-wide basis." This second feature of the Plan is interwoven with the third element - the suggestion system.

The suggestion system is an integral part of the Plan by which employees can communicate and participate in organizational processes. The formal mechanisms established for transmission of suggestions is intended to reduce secrecy and dysfunctional competitive behavior

that is often the norm in traditional organizations. The individual is encouraged to develop and improve ideas with the help of others in the organization. Cooperation is made feasible since the goal is total organizational effectiveness. As Strauss and Sayles (1957) remark:

> This suggestion system is the communication scheme which makes the Plan work...it should result in an unleashing of hidden ideas and energies and a transformation of the factory from a system of bureaucratic-hierarchical control to a system of democratic teamwork and cooperation.

McGregor(1960) adds that the economic gains are shared, but the social and ego satisfactions are the employee's alone.

The transformation of the ideas and suggestions into action is accomplished through the use of Production and Screening committees. These committees are also integral to the second element of the Plan in that they provide a mechanism for increased participation and cooperation. Although there is no rigid format and these structures may vary from company to company, it is typical for Production committees to be established in every department throughout the organization. Representatives from both labor and management are included. They are structured such that the foremen and peer elected representatives from each functional department meet to discuss means to increase department efficiency. Anything which might pertain to the departmental work can be discussed if it does not involve a substantial monetary expense or is likely to affect the work flow or procedures of other departments. If the suggestion falls into either of these last categories it is referred to the Screening committee. The Screening committee is established at a higher level, composed of an equal number of

representatives selected from Production committee representatives and representatives from top management. It is this body's function to review the bonus level, transmit such information to the employees and review and decide upon submitted suggestions. Complete information is to be available regarding exactly what factors determine the current bonus level. The meetings also allow for an exchange of information regarding what areas can be focused on to improve individual and departmental productivity.

What has been emphasized in the discussion is the development of an organizational climate in which the interdependent nature of the organization is recognized. The key elements of the Scanlon Plan are built on this idea and help to reinforce it. In addition, the worth of the individual to himself and the organization is stressed. Each individual is accepted for the ingenuity and know how he brings to the system. Thus, a degree of confidence downward can be generated as the managers realize this human resource potential. As Lesieur states:

> This means that this (the best department) is a department where the people are not afraid to speak up. They are not afraid to participate and to say just how their job might be done easier and better. The old idea of the boss doing all the thinking and the employees just doing the work is dead.

IV. INTRODUCTION TO THE PROBLEM AREA

The previous discussion has attempted to build a rationale based mostly on theoretical grounds,for the investigation of communication practices under different organizational systems. As emphasized, these stated differences in communication under the different organizational theories have not been generated from empirical research. The area is fertile for data-based investigations of these differences. Likert(1961,1967) is one of the few theorists whose work has even tended in this direction. His data provides profiles of various organizations, ranging from system 1 to system 4, on many different variables including communications. However, this research has not been focused exclusively on communication variables and depth of information has been sacrificed. The literature has indicated that studies comparing communication practices between organizations are essentially non-existent. Comparative organizational studies are rare in general. But the problem inherent in such investigations should not deter or devalue further attempts at this type of research. An additional problem cited in the review was the atheoretical nature of communications research. Research looking at differences in communication variables under various "types" of organizations would not be solely descriptive in nature as most of the previous studies have been. This type of research would start from a somewhat more theoretical ground-work leading the investigator to expect particular differences in communication variables. It would also serve to integrate the fields of organizational behavior and communications to a greater extent than has been done in the past.

The problem of locating organizations to serve as research sites

and then defining what organization theory they are operating under is simple in the abstract and frustrating in reality. How does one go about differentiating organizations in terms of the variables discussed in the last section? The Scanlon Plan was described because it offers a concrete, functional application of one of the theoretical orientations discussed. In theory it helps us to identify an organization which is attempting a "more participative-oriented" approach to management and organizational design. It has been pointed out that the Scanlon Plan operates on assumptions which may be totally foreign to companies which do not have the Plan or similar participative mechanisms. If we can find companies that subscribe to the Plans tenets and utilize its mechanisms for increasing participation and communication, and companies that do not have the Plan or a similar participative orientation, we might expect to find the differences in communication previously alluded to. This is the purpose of the present study - to bring this area further into the realm of <u>empirical</u> investigation. It will attempt to determine if differences in communication variables do exist between traditional, non participarive-oriented organizations, and more participative-oriented companies such as those having a Scanlon Plan. Most of the hypothesized differences in communication variables stem from three sources: 1) the writings of "human relations" (PDM) theorists; 2) writings of individuals closely involved with the implementation and maintenance of participative-oriented plans such as the Scanlon Plan; and 3) intuitive assumptions based on understanding of what advocates of the Plan are attempting to accomplish. A more detailed examination of the problem area and hypotheses are presented in the next section.

Problem Area and Hypotheses

Previous investigations have yielded data regarding overall amounts of communication, and have provided some useful information. However, these studies have not gone far enough in trying to determine particular uses of communication in organizations. Distinctions have been made between formal and informal communication with functional differences an implicit assumption. But explicit breakdowns of communications into content areas has been more a theoretical than empirical concern. If information concerning the amounts of each of these specific functional types of communication could be obtained, the usefulness of such data would be greatly increased. The data could be a source of content-specific suggestions on how to "improve communications" in particular organizations.

Berlo's (1970) categorization in which he distinguishes between three functional types of communication can provide a useful starting point for an examination of these differences. He differentiates between production, manintenance, and innovation communication. His schema is useful due to its simplistic but yet fairly inclusive nature. The production function refers to the use of communication in providing an instructional pattern. As Berlo (1970) states: "It's the use of communication for control, for maximally efficient repetitive output of the system." Messages that dictate amount and type of output, agreement with designated specifications etc. are included in this category. Also included are those communications which deal with any work (production) problems. As such, most of these messages would probably flow along pre-established authority and hierarchical lines.

Innovation messages are primarily concerned with a search for

new things to do and new ways to do things. This is in contrast to production communication which focuses on on-going activities. The concept of implementing formal suggestion systems in organizations epitomizes this category. Innovation refers not only to the generation of new behavior, but also to its subsequent implementation. It is integrally related to employees having greater opportunity to participate in organization decisions and changes and making use of these new opportunities. As a category it has been continually stressed by theorists and practitioners who note its importance to continued long term health of the organization.

Maintenance communication is different from the first two categories in that it does not refer to communication for system outputs. "It is communication designed to maintain the system as an ongoing system and to maintain the human components of the system."(Berlo,1970) Berlo discusses three subfunctions of maintenance communication: maintenance of self-concept;maintenance of interpersonal relationships; and maintenance of the production and innovation functions. A clear distinction theoretically or empirically between these subcategories is not apparent. Messages dealing with encouragement and recognition, employee worth to the whole organization and those dealing with the "consideration" end of the consideration-initiating structure paradigm would seem to fall into this category. In essence this category expresses the emphasis of the human relations, participative-oriented management theorists of the last 15 years. It is concerned with the worker as an individual, as a resource to himself and the organization. This category emphasizes social-interpersonal factors not considered by the more task or content oriented categories mentioned above.

The participative-oriented theories of organization echoed by PDM theorists (McGregor, 1961; Likert, 1961; Argyris, 1964) have emphasized the untapped value and worth of man to work organizations. The employee has not been viewed or used as a resource to the fullest extent possible. Human ingenuity has been wasted. Through greater participation in the organization both the individual's need fulfillment and organizational productivity can be enhanced. Suggestion systems, if properly instituted, are seen as a viable mechanism for creating greater employee input into the system. The emphasis on the suggestion system as an integral part of the Scanlon Plan has already been discussed. With this type of philosophy operating and the formal mechanisms which the Plan has for suggestion transmittal, one could expect to find an emphasis on innovation communication in such organizations.

These philosophies or theories of organization which have been termed participative-oriented also place a great value on satisfactory relationships within the organization. The role of the organization in helping employees develop positive self-concepts, and appreciating their worth to the whole organization, is a point often mentioned in PDM literature and particularly in connection with the Scanlon philosophy. Employees should receive encouragement and recognition for jobs well done. They should also feel free to discuss "people problems". People maintain the system, and it is this type of communication which supports effective interrelationships among employees so that the system can operate most efficiently. An emphasis on maintenance communication in a system in which people are valued highly would therefore seem to be a logical operationalization of this type of organizational philosophy.

It is in the area of production communication that the expected differences between participative-oriented organizations and less participative oriented organizations are not as clear cut. It is quite natural that production matters be discussed in any organization. However, the emphasis on multi-directional communication in participative-oriented organizations might serve to increase the total level of production communication in such an organization.

Having discussed the rationale for expected differences in communication practices, these can now be stated in hypothesis form. The terms Scanlon Plan (SP) and Non-Scanlon Plan (NSP) are used below for convenience. These labels may serve to indicate inherent differences in operating policies and procedures between organizations. A detailed description of the various organizations used as research sites will be presented shortly so that similarities and contrasts between them can be judged by the reader.

H1: The frequency of production communication will be greater among employees in SP organizations than in NSP organizations.

H2: The frequency of innovation communication will be greater among employees in SP organizations than in NSP organizations.

H3: The frequency of maintenance communication will be greater among employees in SP organizations than in NSP organizations.

It should be noted that these differences in communication practices between employees of the different organizations are stated to hold regardless of the direction of communication investigated. Communication was viewed as flowing in 4 possible directions: 1) toward supervisory personnel;2) toward subordinates; 3) toward co-workers in the same work group; and 4) toward workers in other departments.

Also of interest is the magnitude of these differences within

each of the three types of communication. Specifically, it is hypothesized that:

H4: The magnitude of the difference in frequency of communication between employees in SP and NSP organizations will be greater for innovation and maintenance communication than for production communication.

A reorganization of the power structure of the organization is a key concept in PDM literature and in Scanlon Plan functioning. Increased participation by rank and file members and decrease in hierarchical control are operational signs of this change. The typical one-way vertical flow of information which parallels the lines of organization chart authority, is recognized to perform many, but not all functions required for effective use of participative decision making techniques in an organization. Subordinates as well as supervisors have important information and are a resource that can be of value in determining departmental and system wide effectiveness. Participative theories of management would suggest that in organizations in which participative decision making has been achieved, there would be less of a tendency for individual A to always initiate communication when interacting with individual B. Initiation refers to who decides what is to be discussed, when, and who comes to whom to do the discussing. In essence, this variable indexes the degree to which the communication relationship is dominated by either member of the dyad. Specifically, a participative philosophy would not advocate a position in which superiors always initiate communication with their subordinates. More of a balanced symmetrical state would be sought in which each member of the dyad initiates at different times depending on the situation.

With regard to this variable the following hypotheses are introduced:

H5: The ratio of subordinate to supervisory initiation of Production communication will be greater in SP than NSP organizations.

H6: The ratio of subordinate to supervisory initiation of Innovation communication will be greater in SP than NSP organizations.

H7: The ratio of subordinate to supervisory initiation of Maintenance communication will be greater in SP than NSP organizations.

It is also hypothesized that these dissimilarities in philosophy and management of organizations will lead to differences in the degree of satisfaction with communication in the company.

H8: There will be greater satisfaction with communications among employees in SP than NSP organizations.

The theoretical material from which these hypotheses developed does not warrant the stating of additional hypotheses regarding types of communication, direction of communication and organizational differences. However, it will be possible to investigate any interactive effects of these variables in the course of this research. Much of the research will therefore be exploratory in nature. This work may be highly useful in yielding information about communication which has been unobtainable to this time.

V. OPERATIONALIZING THE INVESTIGATION

Having defined the problem area and postulated specific hypotheses, the next step was to operationalize the variables. The focus of the investigation was a comparison of the frequency of three types of communication in participative-oriented and non-participative oriented organizations. In addition there were two other variables of interest,ratio of subordinate to supervisor initiation of communication, and satisfaction with communication.

Berlo's typology of production, innovation and maintenance communication was used because it seemed to be fairly exhaustive and fitted in with the theoretical differences that were postulated. It was one of the few typologies of communication that had already been operationalized in research investigations. The author was familiar with a study by Berlo, Farace, and Connelly(1971) that had used the classification. The initiation variable was viewed as an index of the degree of openness,or freedom to communicate with one's immediate supervisor in an organization. A comparison of this variable in participative and non-participative organizations was therefore relevant to the investigation. Communication satisfaction was seen as an end product of levels of communication in an organization. The researcher was interested in determining if the hypothesized differences in communication between employees in SP and NSP organizations resulted in any overall differences in employee satisfaction with communication.

It was decided to use a field setting rather than a laboratory setting for the investigation. The feasability of simulating different organizations with participative and non-participative structures and

climates in the laboratory was questioned. The researcher also thought that the development of stable communication patterns in the laboratory organization would take a longer period of time than we could realistically expect to keep groups intact for. The problems of 1) creating the organizational environments in the laboratory, and 2) being able to generalize to a field situation outweighed the problems of gaining entre and acceptance into "real" organizations.

Having decided to conduct the investigation in the field a survey questionnaire was though the most appropriate, efficient technique for gathering the data. Interviews and a "diary method" of data collection were other viable alternatives. But interviewing a large sample of employees in several different organizations would be much too time consuming. Having employees record their communication episodes would be time consuming for them and too interruptive of their production activities. The survey was a method that would require only a brief period of the respondent's time and could be completed off the job. The researcher also wanted to get in and out of the organizations as quickly as possible in order to minimize any disruptive effects and increase acceptance of the proposed project by the organization.

Because the focus of the research was frequency of communication a behaviorally oriented questionnaire was designed. The investigator decided that a pseudo-sociometric technique would be best. One approach would have been to have subjects respond to items tapping general frequency of each type of communication with others in the organization. But the sociometric technique had two important advantages. One, it would provide a behavioral anchor for each subjects response. In other words, the subject would be reporting his frequency of communication

with specific individuals. Because he was not reporting an overall level of communication with people in the organization, the information might be more accurate and revealing. Secondly, knowing whom the respondents communicated with would allow for the investigation of the direction of communication. Each respondent's listed communication contacts would be classified into one of four different directional categories: supervisory personnel; subordinates; co-workers in the same group; and members of different departments or work groups. Sociometric approaches similar to this had been used to study group structure(Weiss and Jacobson, 1955) and more recently to investigate frequency of communication (Berlo, Farace, and Connelly, 1971). But the specific items and administrative techniques that were developed had never been used. Pretesting was therefore considered essential.

A medium sized manufacturing plant in the Northeast was chosen as the research site for the pretest for several reasons. First, the researcher did not want to use any of the Midwest manufacturing firms with which he had contact. These firms would be likely research sites for the main phase of the investigation. Second, the researcher had personal contacts with management in the Northeast plant so opportunity for entry already existed. Pre-testing was conducted in June 1973. Questionnaires were distributed to all employees of the organization to create as large a pre-test group as possible. The subjects were instructed to complete the forms at home and return them when they came to work the next day. Procedural details and results of the pretesting are presented in a later chapter. In brief, no major changes were necessary in the questionnaire content, format of administration, from the pretesting to the main phase of the investigation.

The most immediate problem then became one of gaining entry into organizations which could serve as research sites for the main phase of the investigation. The investigator had indications from other members of the research team that the Scanlon Plan companies into which we would most likely gain entrance were manufacturers of furniture or furniture-related products. Most of these sites were located in the same geographical area. It was therefore decided to concentrate efforts on eliciting cooperation from Non-Scanlon companies that were also furniture manufacturers located in the same geographical area as the SP organizations. The likely SP research sites were medium sized companies and the search for NSP organizations took this into consideration.

Letters were written to several NSP furniture manufacturers outlining the purposes of the proposed research and the benefits which would be shared by both the company and the researcher. The investigator then began contacting these firms by telephone, to determine where support for the project existed. Several companies expressed interest and interviews were arranged with liason personnel in each organization.

Through the use of these interviews the company became more aware of the details of the proposal, and the researcher gained a clearer idea of the suitability of the company for the comparative investigation which was to take place. Two NSP organizations accepted the proposal and dates were finalized for administration of the survey instrument to all employees. Each company was promised feedback on the results of the investigation. Administration of the survey took place in November 1973. All employees in both organizations were handed the questionnaire as they left work and they were asked to complete the questionnaire and return them to work the next morning. This procedure

was used in all plants in an attempt to minimize disruption of routine activities in the organization. Procedural details of the administration are presented in Chapter VII.

By the time data had been collected in the NSP plants negotiations with SP plants were being concluded. Two SP plants also agreed to cooperate and arrangements for data collection and feedback similar to that discussed above, were finalized. Data was collected in February 1974. Specific procedures used in the data collection phases and description of each research site are discussed in the next two chapters.

Ideally the researcher wanted to use 3 to 4 SP plants and NSP plants in the investigation. A larger number of SP and NSP plants representative of the SP and NSP populations would increase the generalizability of obtained results. But the number of organizations that were willing to cooperate in the project was limited.

Because communication data collected in several organizations were going to be compared, it was necessary to find out as much as possible about the various organizations. Were the organization structures of the various companies similar? Did the plants have similar formal mechanisms for communication? Detailed interviews with personnel in each of the plants were necessary to obtain this type of information. Interviews with both management and rank and file personnel would have been highly desirable. But again the investigator was limited. The source of most of this information was management personnel. A detailed description of the various research sites follows in the next chapter.

Most of the research on organizational communications had been fairly unsophisticated and primarily descriptive in nature. The proposed

research intended to apply techniques of data analysis that not only would enable testing of the hypotheses, but would allow for a more general exploration of the organization communication data that was generated. Interactions between variables were also of interest. Analysis of variance was therefore chosen as the technique to be used. The specific designs and analyses are presented in Chapter VIII.

VI. DESCRIPTION OF RESEARCH SITES

Previous chapters have outlined the basic elements of the Scanlon Plan - its mechanisms and philosophical orientation. Hypotheses related to differences in communication practices between Scanlon and Non-Scanlon organizations have been stated. It is necessary to emphasize however, that we can talk about the elements of the Scanlon Plan only in a theoretical sense. There is no one Plan. The formal mechanisms may be somewhat alike from one organization having the Plan to another. But the day to day operation of the Plan, along with its acceptance, effectiveness, and mechanisms exhibited in trying to achieve the Plan's goals, may differ widely between companies. It may be just as true that companies that do not have the Plan are equally or more advanced in terms of participative management practices and structures, and organizational development efforts. Since there is no one Scanlon Plna we must shift the emphasis to the description of the operation of a specific Plan in a specific organization. Also, it is just as true that there is no one kind of traditional company. What is needed is a description of each organization used as a research site in the investigation. What is there about a Scanlon Plan organization that differentiates it from a company which does not have the Plan? Obviously, stating that one company has the Plan and another does not is not terribly meaningful. It is necessary to be able to differentiate between SP and NSP companies (and between Scanlon Plan companies) in terms of actual behaviors and mechanisms that exist in one and not the other. These contrasts will afford the reader the opportunity to determine if any actual differences in measured communication practices may be due

to differences in organization theory and climate between the various companies.

Each of the 4 different plant utilized for the present research will be discussed in detail in this section. The following format will be followed:

1) brief identifying information about the organization
2) historical-background data
3) employee characteristics
4) formal organization structure
5) physical description of the plant and facilities
6) personnel processes
7) formal mechanisms for communication within the organization

In addition, a table summarizing the comparison between organizations is included on page 77 .

The qualitative information that follows was obtained in semi-structured interviews with key management personnel and from investigator observation. A copy of the interview schedule is included in Appendix A .

Description of Company A

Company A began in the early 1900's as a one man operation. The founder of the company started in the back of a garage, building high quality upholstered furniture. The quality of the furniture has remained high while the company expanded twice to its present location which it has occupied for 12 years. Today the Grand Rapids plant is only one of 3 which bear the original founder's name. A second plant five times the size of this operation, was started in North Carolina in the early 1960's. Soon after, the company merged with a much larger furniture manufacturer and a third plant was established. Today the three plants retain the original name although they are under the control of the larger parent organization. The company is publicly owned and for the 1973 fiscal year had a total sales volume of $3.4 million. It has a well known reputation for high quality upholstered furniture, with its product line ranging from a wide variety of upholstered chairs to sofas.

Employee Characteristics

There is a total of approximately 125 employees in this particular plant. Thirty-three percent of the work force is female, with the average age of employee being 36 years. The average level of education is between 11-12th grade. There are approximately 23 management and supervisory level personnel, and 12 office workers, with the remaining number being primarily production workers. A breakdown by skill level would result in the following classification: skilled- 70%; semi-skilled 20%; unskilled- 10%. Absenteeism in the plant has been at a level of about 6%, while turnover for the last year was approximately 12%. Forty-three percent of the employees belong to the United Furniture Workers

of the AFL-CIO. The plant has been an open shop for the last 12 years.

Organization Structure

The Vice-President and General Manager have primary responsibility for the overall functioning of this particular plant. Ultimate responsibility is to the Board of Directors of the parent organization. The Sales and Marketing Department and Accounting and Finance Department are directly responsible to the General Manager. The Plant Manager also reports to him. The Assistant Plant Manager has the foremen reporting to him. The work force is organized into various functional departments.

Description of Physical Plant

The building housing the plant dates back to the early 1900's. It is a 5 story building, with the 5th floor being used primarily as a storage area. The 1st floor contains the rough mill and is the starting point for the initial cutting of the lumber into pieces ready for set-up. The materials flow by elevator from the mill to the 4th floor where the set-up and frame departments are located. From here it continues on this floor through the springing, cushion and finishing departments. The work is manually transported on each floor by lugger, leadmen, etc. Between floors there is the elevator and a conveyor system in part of the plant. The work flow continues down to the 3rd floor where the operations of cutting, sewing, and upholstering are performed. Final trimming is done on the 2nd floor after which the finished product is brought to the shipping department, also located on

this floor. The general offices are also located on a portion of the 2nd floor. The interior of the plant is rather dark and dingy but kept fairly clean. Two toilets are located on each floor with drinking fountains in proximity to each department. There is no centrally located area that is designated as a lunch room for employees. Vending machines are distributed throughtout the plant and offer a variety of products.

Personnel Processes

When it is necessary to recruit new employees the primary methods used are word of mouth and the service provided by the local Employers Association. Most new employees are recruited by the former method, with friends and family the source of information that openings exist in the company. Some advertising is used but mainly when management level personnel are needed. Applicants are selected on the basis of past job experience, and job stability. Interviews are conducted by the personnel manager.

Upon hiring, the new employee receives an orientation to the company and his job, although this process is not very extensive. There is no real set procedure for the orientation. It seems to consist primarily of paper processing of forms - insurance, health, time cards, etc. There is no special "orientation package" of materials given to the new employee. The only written communication that he receives from the company (other than the above mentioned forms) is a 4 page list of company rules and regulations. Penalties for various offenses are specified. The list includes the penalties for the 1st through 4th offenses in regard to particular regulations. For example, the penalty

for smoking in an undesignated area can range from a verbal warning (1st offense) to a 3 day layoff (3rd offense) and an ultimate discharge beyond that. The rules cover approximately 35 behaviors ranging from fighting in the plant to use of company phones without permission. The personnel manager talks to the new employee about the plant facilities and their location. If time permits they are given a tour of the plant. However, the employee gets little if any information about company history, background, or total product line. At the end of this orientation he is introduced to his foreman.

Any training that either a new or old employee receives is on the job training. There is no formal training mechanism per se. Training is considered a continual process and a matter of individual need. There is a probationary period of 90 days which is held to closely. However, efforts are made to transfer an individual who is having difficulty learning a job to another job assignment. There is no apprenticeship program in the company. No special training programs exist for management or supervisory level personnel either. The company will pay if anyone wants to take a self-improvement course off the job on their own time. Every non-salaried worker has to punch a time clock. However, the company has been lax in enforcing time regulations as outlined in the employee handout. There are several rules relating to "excessive" absenteeism and tardiness. But there seems to be the attitude from management that there is no reason to be particularly strict in regard to isolated cases of lateness. The employees are not on an hourly system and ultimately are hurting themselves financially.

Compensation System

Ninety percent of the non-salaried personnel are on an individual

incentive (piece-rate) compensation plan. The piece-rates are determined by historical standards which were the result of time and motion studies. Percentages are continually being added to the standard base rates as product lines change and involve more difficult production, and to accommodate cost of living increases. These rates are in accord with union demands and agreement. The 10% of the non-salaried that are not on incentive are paid on an hourly basis. These are workers such as lugger and repairmen for whom the piece-rate compensation system would make little sense.

According to the personnel manager the company's rates are above average for the industry, as stated by the Furniture Manufacturers Association. In addition to wage compensation, the employee receives several standard fringe benefits including: health insurance; 1 week paid vacation after 1 year and 2 weeks after 5 years; retirement benefits; life insurance; and a company discount of 10% above cost on any product. These benefits are not listed in any written material given the employee.

There is no formal mechanism for performance appraisal in the organization. No scheduled times exist for evaluation. Production workers are evaluated on a continual basis, according to the company, since they are on a piece-rate system. Mistakes go back to the individual responsible for them and are reflected in his weekly productivity. Management and office personnel also have no routine, written system for being appraised.

Formal Mechanisms for Communication Within the Company

The only formal scheduled meetings which take place are between department foremen and assistant plant manager and plant manager.

These individuals get together for 15 minutes every day during the morning break. Meetings between management personnel are on an informal unscheduled basis. When asked about the state of inter-departmental coordination in the company, one reply was "the place functions." The production workers do not have any formal meetings although they may learn what is going on in the company from the foremen on an informal basis. There is no company newsletter or company publication. Employees do not have any means of gathering financial information about the company. There are no reports or information made available to them directly from management. As the personnel manager stated: "they can find out how the company is doing by looking at the Wall Street Journal." The employees do receive communication about product waste, returned merchandise etc. The company utilizes an "error system" such that individuals who make mistakes or waste materials are notified and responsible for most corrections. There is a formal paper work system which follows this procedure.

There is no formal suggestion system in operation. Suggestions, if made, would go through word of mouth to the department foreman and implementation would be decided upon. There is no provision for financial incentives for suggestions. Recognition would be more in the form of a handshake.

Description of Company B

Company B began in 1963 as an upholstered furniture manufacturer. It is a privately owned corporation under the control of stockholders from the local area. The company's product line, although having grown since the company's inception, is still exclusively devoted to upholstered furniture ranging from chairs to sofas. Although the firm does some marketing of its products under its own name, most of the goods are sold by large retail operations under the respective retailer's label. The company has an industry reputation for middle of the line quality furniture. Not only the quality, but the prices of their product line are also lower than those found in company B. Company A and B therefore can not be considered competitors for the same share of the upholstered furniture market.

Employee Characteristics

There is a total of approximately 100 employees in this plant. Thirty percent of the work force is female with the average age of employees being 35 years. The average level of education is 11-12th grade. Of the 100 employees approximately 16 are management and supervisory level personnel and 7 are office workers. The remaining number are production workers. Absenteeism at the plant has been at a level of about 7%, while turnover in the last year was close to 14 percent. Approximately 50% of the employees are members of the United Furniture Workers of the AFL-CIO.

Organization Structure

The President of the firm has ultimate responsibility for the overall functioning of the organization. Reporting to him are the

Secretary, Treasurer and Vice President for Production. The plant Superintendent reports to the VP for Production and has close contact with departmental foremen who in turn report to the Superintendent. The work force is organized into various functional departments.

Description of Physical Plant

The plant building dates back to the first quarter of this century. It is a four story building which houses only this particular manufacturing operation. The manufacturing process begins on the 1st floor of the plant where the rough mill operation is located. Pieces are cut here and rendered for set up. The material flow continues to the second floor where the set up and frame departments are located. An elevator transports the materials between floors while manual lugging is used to get the work from department to department on each floor. After the frame has been completed the project continues to the springing, cushion and finishing departments also located on the second floor. The flow continues to the 3rd floor where the major upholstering operations are performed. Cutting and sewing are also performed on this floor. Upholster time and final finishing are located on the 4th floor. From here the product goes down to the 1st floor to the shipping department where it awaits loading and eventual delivery. The general offices of the plant are located on the 1st floor. The plant interior is well lighted but appears fairly dirty. Toilet facilities are available on each floor with several drinking fountains also available to the various departments. There is no designated lunch area for employees.

Personnel Processes

Recruitment of employees is accomplished primarily through word

of mouth with plant employees informing friends and family of available openings. Newspaper advertising is used periodically but not heavily relied on. Other than interviews, no formal standardized testing procedure is used. Applicants are selected on the basis of previous training and skills. Evidence of job stability in previous employment also enters into the hiring decision.

After the new employee has been hired he receives a very informal brief orientation to the company. The only written material given to the employee is a sheet of information telling the individual about insurance, length of work day, time cards, and rules and regulations that they are supposed to adhere to. Drinking on the job and tardiness are examples of the types of behavior covered on this list. No specific penalties are given for each regulation. There is no "orientation package" of materials which the new employee receives. New employees are usually given a tour of the plant and the opportunity to acquaint themselves with the various facilities. If this tour is not given on the day of hiring, then the individual's foremen usually shows him around when he reports for work. As was the case in Company A, the hiree gets very little information about company history, background, or product line. The information he does get is usually obtained on the job, informally from co-workers.

There is no formal training mechanism per se in the organization. Any training that employees receive is on the job usually from supervisory personnel. If an individual needs training he is likely to receive it and probably for as long as he needs it, although there is a probationary period of 90 days. Those individuals who can not learn the job are given a chance in other positions if openings exist or changes are possible.

No apprenticeship program exists. There are no special training programs for management of supervisory level personnel either. Non-salaried workers have to punch a time clock. There are rules pertaining to "excessive" absenteeism and tardiness but no rigid enforcement for sporadic, infrequent violations.

Compensation System

Production employees are on a piece-rate incentive system. Historical standards determine the specific rates. However adjustments are made to the base standard in response to rises in living costs and substantial changes in product line. The rates are also determined by union negotiations. Standard fringe benefits which the employees receive include: health insurance; paid vacation time; retirement benefits; life insurance; and company discounts on products (12%). The new employee learns about these benefits at the time he is hired when the necessary paper work is completed.

No formalized performance appraisal system exists in the organization. There are no scheduled times for appraisal. Informal evaluation of production workers is an inherent part of the piece-rate system since production mistakes are directed back to the individual responsible. Non-production workers also do not have a routine system for evaluation and feedback. It is more of a continual, day to day informal process.

Formal Mechanisms for Communication Within the Company

Production workers in the organization do not have any formal meetings. Any information that they receive is usually in an informal basis and from foremen. The plant foremen have an opportunity to meet with the plant superintendent daily as he goes around the plant. However,

group meetings of all foremen and superintendents are not held on a regular basis. Management personnel also meet but on an informal, unscheduled basis. Employees have no opportunity to receive financial information about the organization. Reports or statements from management are not available. Any information which they would obtain would be from the grapevine. No formal suggestion system exists either. If suggestions were made they would be discussed by foremen and the plant superintendent and decided upon. There is no financial reward when a suggestion is implemented.

Description of Company C

Company C began manufacturing grandfather clocks at the turn of this century. It was incorporated in 1906 at which time its present factory was built. The plant started as a family run and owned operation with successive generations taking part. A line of case goods furniture was introduced in 1908 and was manufactured along with the clocks until 1962. For the past 12 years the company's product line has been devoted exclusively to hall clocks. The company has an industry-wide reputation for making top of the line, finest quality merchandise. It competes directly with five other companies that manufacture clocks, few of which are exclusively devoted to this product line. Of these five companies, company C is one of the two oldest and largest in terms of sales volume. From a family owned organization it has become a privately owned firm under the control of approximately 45 stockholders-mostly local members of the community. Its sales volume was $6.2 million in 1973. Ninety-seven percent of its sales volume is generated from the sale of grandfather clocks, although the company also manufactures wall clocks. The product line now consists of 50 different models. Of these 50, 36 are new models having been added to the line since 1971. In 1972 the company purchased assets of another furniture maker in a nearby location and has expanded its manufacturing operation to that site. The Scanlon Plan was introduced in 1964.

Employee Characteristics

There is a total of 155 employees in this particular plant of company C. Thirty-five percent of the work force is female. The average age of employees is 35. The average level of education is

12th grade. There are approximately 40 management and supervisory level workers, with the remaining subtotal primarily production workers. Classification by skill level results in the following breakdown: skilled-58%; semi-skilled-36%; and unskilled- 6%. Absenteeism at the plant has been at a level of approximately 8%. Turnover in the past year was about 10%. The plant is not unionized and has never had a union. There has never been an attempt to unionize.

The work day at the plant is from 7 a.m. to 4:30 p.m. for non-salaried personnel with 30 minutes for lunch and two ten minute break periods. All non- salaried personnel get compensated for one hour of overtime a day since they are on this schedule. The non-salaried people are required to punch a time clock. Loss of pay for lateness is rigidly enforced and is a policy that the employees are made fully aware of. If employees are more than two minutes late they are penalized by loss of pay. They lose pay in tenth of an hour units so that being late 2-6 minutes will result in a loss of one-tenth of the individual's hourly wage.

Organization Structure

The Executive Vice-President of the company reports to the President, as do the VP's in charge of Research and Development and Manufacturing. The directors of Marketing, Cost Accounting and Personnel are in a line under the Executive VP. The plant superintendent and personnel in charge of engineering, purchasing and service, report to the VP of Manufacturing. Foremen of the various functional production departments are responsible to the plant superintendent. The personnel

department in the second plant reports to the Personnel Director who works out of this plant. Production workers report to the foremen in charge of their respective departments.

Physical Description of Plant

As previously stated, the present location of company C dates back to 1906 with expansion since then. The plant is composed of two buildings joined by a tramway. Access between the two is no problem. Building 1 contains three floors. The first floor contains the rough mill and veneer departments and is the starting point for the manufacturing process. Here the lumber is cut and readied for further refining by the machine department on the second floor. The materials are readied for sub-assembly by the cabinet department also on the second floor. Elevator and manual lugging are used to keep the sub-assembled clocks moving through the various processes described. The clocks go from the second floor to the finishing departments on the third floor. The flow then continues across the tramway into building 2 where the clock and movement department is located on the third floor. A conveyor system then takes it through the rub and trim department also located on the third floor. From here they are moved down to shipping on the second floor and eventually delivered. General offices are located on the second floor in both buildings. The plant interior was observed to be remarkably clean for a wood-furniture operation. Most sections of the plant are also very light and airy with plenty of windows throughout. Toilets are located on each floor with drinking fountains in each department. There is a lunch area available for employee use with vending machines dispensing a range of products.

Personnel Processes

Advertising, along with word of mouth are the primary methods used for recruitment of new personnel into the organization. Selection for skilled positions is usually dependent upon former training and acquired skills. For less skilled jobs interviews and application blanks are heavily relied on. The company has a policy of trying, if possible, to promote from within. Lateral transfers are attempted if positions become available. Women are being moved into machine jobs previously the exclusive domain of men.

Each newly hired employee receives an orientation to the company from the personnel director. The same procedure is used for every employee from production worker to management level. The verbal orientation covers the rules and regulations, descriptions of company benefits, safety procedures, company history, product lines, explanation of the monthly bonus system and company philosophy of management (Scanlon Plan). They receive an "orientation packet" which provides written description and explanation of many of the points covered above. One of the sheets in the packet is called an "employee welcoming." As the name implies it tries to make the new employee feel at home in his new organization. One of its messages is that everyone in the organization is necessary and important to the success of the organization. It points out that although profit is a major index of success there are other aims of the company: 1) providing a good place to work; 2) creating and maintaining good relations between everyone in the organization; 3) providing a secure future for employees; 4) giving full value and service to customers; and 5) earning the respect of the

community. This sheet goes on to cover a few rules and regulations that the company emphasizes, ranging from reporting of all accidents to prohibited punching of another employee's time card. Benefits described include health insurance, vacation and holiday pay rates and eligibility (1 week paid vacation for 1 year of work and 2 weeks paid vacation for 2 years employment), monthly bonus plan and retirement benefits. The information ends with the statement that "these rules are designed not to limit your freedom, but to enable the company to be fair and consistent to everyone. . ." Also included in the orientation packet are the following:

1) a sheet describing company history, the relation of the company to its competitors and a brief description of product line
2) a brochure describing the company's product line in detail
3) booklets describing the company's insurance and retirement benefits
4) an employee information sheet indicating the dates that he becomes eligible for specific company benefits

The employee is briefly informed about the company's unique company wide incentive system and its ramifications, but not very much written emphasis is placed upon it. After this orientation period they are given a tour of the plant and meet and spend time with their foremen.

There is no formal training mechanism established by the company. If a new or old employee requires training he will receive it on the job most probably from his supervisor. No apprenticeship program exists either. There is a probationary period of 90 days but adherence to this is dependent upon the individual and type of job into which he has been placed. The rule is to work with the person and if necessary transfer him,

rather than termination. Management and supervisory level personnel would also receive the same type of training. The company does have a policy of paying employees for any job related classes that they take for self-improvement.

Compensation System

All of the non-salaried personnel are on an hourly wage. Production workers average approximately $3.10/hour and non-production hourly workers average $3.40/hour. Wage rates are determined by historical standards and consideration of industry averages. There was no wage scale by skill classification available. Labor grades exist for each of the various job titles with range in pay on each job affected by individual performance and seniority. In addition to the wages employees benefit from the company wide incentive system which is part of the Scanlon Plan described earlier. Bonuses have been increasing steadily for the past few years. The total bonus for 1973 was $214,000. Net bonus percentages for the last two months have been 10% and 15%. Without getting involved in details of how the bonus is calculated it is worth mentioning what items are included in determination of the bonus:

1) direct and indirect labor allowances for each clock style by each department
2) overtime payroll
3) worker compensation and unemployment compensation
4) holiday and vacation accrual
5) group insurance
6) salaries for manufacturing, sales, general administration, research and development
7) returns and allowances

Outside services not related to production and several miscellaneous employee benefits are not included in the bonus calculation.

Although the bonus system can be viewed as a fringe benefit, there are other more traditional benefits that the employees also receive,

most of which have already been mentioned. An employee discount of 20% off wholesale prices is also granted. The company tries to do many little things to indicate their interest and good will toward employees. Hams are given to employees at Christmas and several days a week employees have an opportunity to purchase hot prepared lunches ordered in by the company.

Performance appraisals are conducted twice a year by foremen on a formal basis. An individual performance report allows for the rating of performance on several dimensions. It is not really known to what extent these evaluations are relied on for granting raises in pay. Supervisory personnel get appraised on the same basis by the plant superintendent. Salaried personnel also get reviewed, but their appraisal is conducted once a year and on a verbal, informal basis.

Formal Mechanisms for Communication Within the Organization

Formal mechanisms for communication are designed into the organization as part of implementation of the Scanlon Plan. Every department elects a screening committee representative who serves for 6 months and attends the monthly meetings. The personnel director chairs these meetings. Discussion centers around employee suggestions and their implementation, ways to improve productivity, changes in bonus calculations and monthly financial figures. The representatives are given copies of financial reports on the bonus to be distributed to their respective departments. The report is a 1 page detailed summary of the company's financial condition for the previous month. How much understanding the employee has of the figures presented is questionable. Minutes of the meetings are also kept and printed the next day in the

company newsletter which is distributed to all employees. The representatives serve as a voice for their co-workers and provide an opportunity for the dissemination of information regarding what was discussed in the monthly meetings.

Staff meetings composed of members of each of the major functional groups (manufacturing, accounting, marketing, etc.) are held weekly. The President and Executive VP are in attendence in these meetings. Foremen's meetings are also scheduled weekly. The foremen meet jointly as a group on alternative weeks, with subgroups getting together to discuss related problems on the weeks in between. There are no regularly scheduled meetings between foremen and subordinates. But it is the foremen's responsibility to share the information from his weekly meetings with his men on an informal basis. The production workers do not have representatives at these foremen or staff level meetings. Nor do they receive any written information pertaining to them. Although the Scanlon Plan designates the holding of Production Committee meetings, there are none held in Company C. No reason was given for this.

The monthly newsletter reports on old and new suggestions that have been initiated by employees. Each suggestion is stated along with the name of the suggestee. Comments from the Screening Committee meeting relating to the suggestion are also printed. Information about industry markets and furniture shows is also made available. However, along with reporting the minutes of the meeting and the suggestions, a major purpose fo the newsletter is to provide the employee financial information about the company - specifically about the monthly bonus. This is more in the form of a summary about what the bonus is rather than a detailed picture of how it is calculated or factors that led to an increase or decrease from previous months. The financial report already mentioned provides the

latter. Financial information is also posted weekly on a bulletin board. Information about shipments sales, orders, and the trend of the bonus for the past few months is charted. Employees gain information about product waste, returned merchandise, damages, etc. through the newsletter and the financial report.

A formalized suggestion system is another example of a mechanism designed into the organization structure through implementation of the Scanlon Plan. Many of the mechanisms integrally related to the suggestion system have already been mentioned. Pre-printed forms are used for transmitting the suggestion formally to department foremen or Screening committee representatives. There are 3 copies of the form: one for the individual suggestee, one for the personnel director and one for the Screening committee. Regardless of how simple the suggestion is and whether or not it has already been implemented, it eventually gets to the screening committee where it is discussed and decided upon. The action taken by the committee is also written on the form. Suggestions are submitted by groups or departments as well as by individuals. If the suggestion is implemented and affects productivity, directly or indirectly, everyone will be affected through the monthly bonus.

Description of Company D

Company D is the newly acquired plant of Company C described in the previous section. Most of the information pertaining to Company C in regard to organizational structure, compensation system, mechanisms for communication, etc, are the same. Differences that exist between the two plants will be pointed out in the following discussion.

In July 1972 Company C purchased the assets of another well known furniture maker and expanded its manufacturing of grandfather clocks to that new location. The plant is located approximately 25 miles from the other plant. Product lines and manufacturing operations are similar in the two plants. The plant employs approximately 70 people. The composition of the work force is very similar to the parent plant. Thirty-eight percent of the work force is female. The major difference is that the management and staff are located at Plant C. Only a very few office employees work at this location. There is a personnel manager at the plant who reports to the personnel director housed at Plant C. Absenteeism and turnover figures for this plant are also similar to Plant C, 8% and 7% respectively.

The building in which the plant is located dates back to the early quarter of this century. There are four floors with the production flow almost identical to that described in Plant C. The process begins with the cutting of materials on the 1st floor. Here we find the rough mill. The machine department is located on the 2nd floor and is the second step in the process. Maintenence department and general offices are also located on this floor. The parts reach sub-assembly on the 3rd floor where the cabinet department is located. From here they go to the 4th floor where it works its way through the finishing and rub

and trim departments. The clock movements department is also located on the 4th floor. The completed product is then sent by elevator to the shipping department on the 1st floor. The clocks are then shipped to Plant C for general distribution.

Facilities at both plants are identical. The plant is also well lighted and appears almost spacious.

Employees at this plant are under the same compensation system as Company C. The Scanlon Plan is in effect in both. The bonus is pooled between the two plants so that increases and decreases in one are felt by employee in both plants. The average hourly wage rates are slightly lower because employees of this plant are newer and have less seniority. Production employees average $2.80/hour and nonproduction hourly workers average $2.58/hour. New employees receive the same "orientation packet" as previously described and a similar orientation process and plant tour from the personnel manager.

The formal mechanisms for operation of the suggestion system and formal communication within the organization are also the same as that described under Company C. There is no separate Screening committee for this plant however. Elected representatives attend the company wide meeting that is held alternately at each location. The attempt is to create an attitude of interdependence between Plants C and D. The length of the working day and time for lunch and breaks is also the same. Also, there is no union in this plant.

Plants C and D can be viewed as basically the same with the major differences being in terms of number of employees and length of time that the latter plant has been in operation. While they both have the Scanlon Plan mechanisms designed into the organization it is surely worth noting

that plant D and its Plan have been in operation for a considerably shorter period of time.

Table 1

Summary descriptions of companies participating in research investigation

Dimension	Company A	Company B	Company C	Company D
Type of organization	furniture (upholstered)	furniture (upholstered)	furniture (grandfather clocks)	furniture (grandfather clocks)
Location	Grand Rapids	Grand Rapids	Zeeland	Grand Rapids
Number of employees	120	100	160	70
Sales Volume	$3.4 m	not given	$6.2 m (C and D)	
Control of company	public	private	private	
Mean educational level	11-12th grade	11-12th grade	12th grade	
Mean age of employees	37	35	35	35
Union affiliation	United Furniture AFL-CIO		none	
Compensation system	piece rate and hourly	piece rate	hourly and company wide incentive	
Probationary period	90 days	same	same	same
Communication mechanisms	informal grapevine		company publication monthly meetings	

VII. METHODS

A. Pre-Test

A pre-testing stage of the investigation was considered essential and was conducted to serve six preliminary functions:

1) The degree of cooperation that could be expected utilizing the research instrument and the proposed administrative technique had to be determined. It was not known if subjects would be willing to take time off the job to complete the instrument as requested. Would the entire procedure be taken seriously enough for the investigator to have confidence in the data? Also, what would be the extent of missing data?

2) The adequacy of instructions and item-working had to be evaluated. Were either of these ambiguous or to the point of creating respondent misunderstanding?

3) How much time was needed to complete the questionnaire? Estimates were available from similar research in the area. But determining the time was considered essential since the subjects would be completing the instrument on their own time and length would probably be a critical factor in regard to return rates. Reduction in length would then be possible for the main phase of the investigation.

4) The number of communication questionnaires to include in each subject survey packet had to be determined. This would be indicated by the number of communication contacts listed by pretest respondents.

5) The issue of anonymity had to be confronted. Would the subjects hesitate to put their name on the questionnaires since they were being asked questions about specific individuals in the

organization? Also, would they put the names of people that they communicated with on the survey as requested? This was a crucial question that needed to be answered.

6) Some scale development was necessary to select items and scales to be used in the main phase of the research.

Instruments

The questionnaire employed in the present study incorporated six different indexes all focusing on communication practices. Each of the indices is briefly identified below. A more detailed listing of the items is available in Appendix B .

Using Berlo's typology of communication, which already has been described, items and scales pertaining to frequency of Production Innovation and Maintenance communication were developed. These items were based on Berlo's (1970) theorizing about the three functions, and previous use of the functional categories by Berlo , Farace and Connelly (1971) in organizational communications research. A six point scale indexing frequency of each type of communication (more than once a day - never) was used.

The production items essentially focused on frequency of communication about on-going work or production-oriented matters. For example, "How often do you talk about current work problems?" The Innovation scale consisted of items pertaining to the frequency communication about new ideas or suggestions relating to improvement in the plant. For example, "How often do you talk about new things to do in connection with your work or the work of others?" The Maintenance items indexed frequency of communication relating to "people" problems or communication which may be best described as

closer to "consideration" than "initiating structure." For example, "How often do you get encouragement or recognition about work or non-work matters?"

Three separate Initiation scales (one for each type of communication) were utilized. For each type it was attempted to index the degree to which the subject's communication with his immediate supervisor was supervisor or self-initiated. Items for these scales were also based on previous work done by Berlo, Farace and Connelly (1971) with this communication concept. A six point scale ranging from subordinate always initiates, to supervisor always initiates was used to assess degree of subordinate initiation.

A two item index measuring general satisfaction with communications in the organization was used. A five point Likert scale was utilized to measure intensity of response to the two items.

Subjects and Procedures

Ninety-six employees of a medium-sized manufacturing firm located in the Northeast participated in the pre-test. On the afternoon of the administration, subjects were each handed a packet of material by the investigator. Included in the packet were a cover letter from the researcher explaining the purposes of the research, a communication survey, comment sheet providing space to answer several open-ended questions about the instrument and procedure, and a pencil. Employees were asked to complete the forms at home and return them to the investigator when they came to work the next day. All levels of employees received the same packets and instructions. Those that did not return the packets the next day (for several reasons, ranging from forgetting to bring them in, to absolute refusal) were then asked to make a special effort

to complete the forms and mail them to the researcher. Extra questionnaires and pre-stamped envelopes were left with management to accomodate late returns. Emphasis was placed on employee suggestions about the form, content and style of the questionnaire. The cover letter stressed the need for information about the survey and encouraged use of the comment sheet.

The total return rate including surveys that were later mailed to the researcher was 51% (49 subjects). This figure was higher than expected for two reasons. Management commitment to the entire project was very limited and based only on a desire to accomodate the researcher's needs. Time had prohibited the sending of a cover letter from top management to employees about the visit of the investigator and the project.

Pre-test Results

The pre-test phase served its purpose since it provided information relevant to the questions posed. Although the response rate could not be considered overwhelming, it was about average for similar field investigations, and there were circumstances previously mentioned that had to be taken into account. A quick eyeballing of the data by the investigator and others involved in the research indicated that the subjects apparently had taken the questions seriously. There were no huge gaps in the data or any serious problems of missing data. There were only a few isolated cases of trouble with general instructions and item wording. Information received from the respondents indicated that median time necessary to complete the survey was approximately 20 minutes. This was about what the respondents had been led to expect.

Some respondents indicated that completion time was longer than this, and longer than they had been led to believe. Drastic reductions in length of the questionnaire were not viewed as necessary. However, it was decided that including any additional variables in the investigation could adversely affect future response rates and might be a costly mistake.

The average number of communication contacts listed by respondents was 6.5. This figure was in accord with results from other work in the area. Each subject had been handed 10 communication questionnaires. It was decided to continue this procedure in future phases of the research. Subjects showed little reluctance to list the names of communication contacts or to put their own names on the survey as requested. Less than 5% of the respondents refused to give their name or the names of contacts or made comments about the implications of such a procedure.

Although the primary purpose of the research investigation was not scale analysis and development it was necessary since the specific items and procedure had not been previously used. Scale analysis was undertaken primarily on the basis of a series of item intercorrelations and cluster analyses. There was not a large enough sample for a "blind" cluster analysis. Apriori item clusters based on theoretical expectations and face validity were tested. Decision rules based on alpha estimates of internal consistency reliability, inter-item correlations and item-cluster correlations were used to eliminate items. No regrouping of items from apriori clusters was necessary. The results of the cluster analysis are presented in Table 8 in the Results section.

B. Main Phase of the Research Investigation

Subjects

Subjects for the main phase of the investigation were employees of four medium-size manufacturing plants located in the Midwest. All four plants manufactured furniture products and were located within 25 miles of each other. A more detailed description of the various manufacturing plants and employee characteristics was presented in Chapter VI.

The total number of subjects in the investigation was 261. The number of subjects from each plant was as follows: plant A-73(60%); plant B-48(48%); plant C-96(60%); and plant D-44(62%). The figures in parenthesis indicate the percent of the work force that returned questionnaires. The sex composition of the groups was: plant A-45% female; plant B-42% female; plant C-38% female; and plant D-39% female.

Instruments

The instruments previously discussed and modified as a result of the pretest were used in the main phase. The only difference of any consequence from the pretest to this phase was the deletion of the maintenance initiation scale, mentioned earlier. Item statistics based on the analysis of data from the main phase are presented in Table 8 in the results section.

Procedure

The data collection procedures were basically the same as used for the pre-test. The major difference was the greater degree of collaboration and commitment to the project from the various managements. This resulted from the investigator having more time to plan and discuss the research with these organizations than was possible for the pretesting. Top

management distributed a cover letter describing the project and its possible benefits to each employee a few days before administration of the survey. On the afternoon of the administration each employee was handed the survey packet which included a cover letter from the researcher explaining the study, a communication survey and a pencil. These were distributed to each employee in the organization at their work stations. They were asked to complete the instrument and bring it to work the next morning. Each employee was provided a large yellow envelope in which to seal the returned questionnaire. It was stamped "confidential" and addressed to the "Division of Organizational Research" Michigan State University. Although most of the returns were not being mailed, the address was another attempt to add credibility and prestige to the project. The investigator was at the plant the next morning to collect the packets and individually thank each respondent for his/her cooperation. Those who had not completed the questionnaire were given another opportunity to do so within the next few days. Arrangements were made to collect and mail these late returns to the researcher. The procedure outlined above was followed in each of the four plants which served as research sites.

Data Coding

Responses to each item were manually coded onto optical-scanning sheets and machine punched onto IBM cards. Coded responses were checked against original raw data. Only an insignificant number of errors were found. When data reduction was completed there were three cards per respondent. Each of the cards contained subject identification numbers and company identification to insure against any possible data mix-ups.

Due to the nature of the research investigation coding was a tedious, and important process. Because part of the investigation focused on the communication links or direction in the organization, the relationships between respondent and listed communication contact had to be determined. The investigator was provided with a list of employees by each organization. Each employee was listed by department or functional grouping. The personnel director or similar liason individual at each organization spent time going over the list and answering questions about the relationships of departments and individuals in the organization. In this way it was possible to code the relationship of each respondent-communication contact into one of four categories: communication with supervisory personnel (D1); communication with subordinate(D2); communication with co-worker within same work group(D3); or communication with worker of another work group(D4). Although the researcher had an assistant to help with other coding tasks, this aspect of the work was done by the investigator to insure comparability in determining relationships and placement into the categories. Any problems that arose in regard to the directionality of listed communication relationships were solved by further discussion with personnel at the particular plant.

The respondent was instructed to write in the name of the communication contact at the top of each communication questionnaire that he filled out. In addition, each of the four directional categories was listed with instructions for the respondent to check the one which applied to the particular contact named. These two methods of identifying respondent-contact relationships were utilized to insure that the relationship could be determined and that the completed questionnaire would not be rendered useless by lack of this critical information.

Method of Data Reduction and Scoring

The questionnaire included items dealing with frequency of production, innovation and maintenance communication, for each communication contact listed. The number of communication contacts listed could range from 0 to 10. The number of communication contacts within each of the 4 directional categories was therefore variable between subjects and provided one of the 4 dependent measures used in the research-number of contacts. This measure reflected solely the number of contacts each respondent had in a particular direction. Frequency of production,innovation and maintenance communication was obtained for each of the directional categories. The dependent measure in the last 3 cases was a total frequency of communication score obtained for each subject. This was obtained by summing the item responses within each type of communication and within each direction, for each subject. Since one of the directional categories was communication toward subordinates, and most employees in organizations do not have subordinates, it was necessary to subgroup respondents.The subordinate direction category was used only with those subjects who were in a supervisory or management position and had the opportunity of communication with subordinate personnel. For most of the subjects in the investigation, communication with subordinates was impossible since they had no subordinates. Thus, the subordinate category was excluded for such individuals.

The initiation items afforded a much easier scoring procedure since each respondent answered the items only once. The items for the production initiation and innovation initiation scales were averaged separately so each subject received two initiation scores. A similar procedure was used with the two item communication satisfaction scale yielding one score per subject.

VIII. RESULTS

The results chapter is divided into two sections focusing on different aspects of the data analysis. As previously mentioned, subjects were grouped into supervisor and non-supervisor categories. Using this subgrouping it was possible to include a subordinate direction category where appropriate in the analysis (for supervisory personnel) and to exclude this category where inappropriate(for non-supervisory personnel). Subjects included in the former subgroup included employees who were in a position to have subordinates reporting to them. Data analysis will be presented separately first for the supervisor subgroup and then for the non-supervisor subgroup. Hypothesized differences in frequency of communication between employees in SP and NSP organizations (hypotheses 1 to 3) are therefore examined in each subgroup analysis. Intercorrelations among the 4 main dependent measures are presented in Table 7. Results of item analyses are presented in Table 8 in this section.

Analysis of Supervisor Subgroup

A one way multivariate analysis of variance, with 4 dependent measures at each measure point, and one repeated measures factor was used. The N for this part of the analysis (with subject as unit of analysis) was 50 (N_{SP}=26, N_{NSP}=24).

Table 2 reveals a significant multivariate F ratio for the Groups (SP/NSP) main effect ($F=2.71, df=4,45, p<.05$). Because the multivariate test rejected the null hypothesis of equality of mean vectors inspection of the univariates was warranted. This revealed that the univariates for frequency of production communication ($F=5.25, df=1,48, p<.05$) and frequency of maintenance communication ($F=4.86, df=1,48, p<.05$) were significant. Thus, it could be concluded that the overall Groups main effect might be

attributed to differences between supervisory employees of the NSP and SP groups in frequency of production and maintenance communication. The means for the SP and NSP groups on production and maintenance variables respectively are as follows: SP-17.93,10.48; NSP-24.37,14.96. Contrary to the prediction of hypotheses 1 to 3, the means indicate that there was a greater frequency of these two types of communication among supervisory personnel in the NSP than the SP group. Using the NSP group as the reference distribution we find that these differences in the SP/NSP means are equal to differences of .65 and .81 standard deviation units respectively.

Looking at the univariate F ratios in the above analysis tends to disconfirm the prediction of hypothesis 4. This hypothesis stated that the magnitude of the difference in frequency of production communication between employees in SP and NSP organizations would be less than the magnitude of these differences in innovation and maintenance communication. But examination reveals that the univariate for production is significant and not the univariate for innovation communication.

Table 3 indicates that the multivariate F ratio testing the Direction main effect is also significant ($F=7.61, df=12,37, p<.0001$). A follow up inspection of the univariates was again justified. All 4 of the univariates were significant at the .05 level and were as follows: (number of contacts-$F=14.99$; production-$F=13.93$; innovation-$F=13.99$; maintenance- $F=13.66$). Thus, there were differences in frequency of communication between the various directions, within each of the 3 types of communication and number of contacts. This data is shown in Figure 1 and Figure 2.

The multivariate test for a Groups (SP/NSP) X Direction interaction was not significant.

Table 2

Multivariate analysis of variance of groups main effect(SP/NSP) on 4 dependent measures of communication among supervisory personnel in SP and NSP organizations

F-ratio for multivariate test of equality of mean vectors= 2.71,df=4,45,p<.05

Variable	MS	Univariate F	Eta^2
Number of communication contacts	6.23	3.07	
Production communication	2071.85	5.25*	.02
Innovation communication	196.02	1.35	
Maintenance communication	1000.82	4.86*	.02

* p<.05

Table 3

Multivariate analysis of variance of direction main effect on 4 dependent measures of communication among supervisory personnel in SP and NSP organizations

F-ratio for multivariate test of equality of mean vectors=7.61,df=12,37,p<.0001

Variable	MS	Univariate F	Eta^2
Number of communication contacts	42.48	15.00*	.19
Production communication	6709.86	13.93*	.17
Innovation communication	2011.33	14.00*	.17
Maintenance communication	2469.23	13.66*	.16

* p<.05

Analysis of Non-Supervisory Subgroup

Basically the same model was used for analysis of the non-supervisory data. The only difference was in the lack of a subordinate direction category. The N for this part of the analysis was 210(N_{SP}=113; N_{NSP}=97).

In contrast to analysis with the supervisory subgroup, the multivariate test for a Groups main effect was not significant. The predictions of hypotheses 1 to 3 with this particular subgroup were not confirmed. This finding indicates that on the combined vector of the 4 dependent variables there was no significant difference between the SP and NSP groups. Therefore, further inspection of the univariates was not justified. This finding tends to disconfirm the prediction of hypothesis 4 with this subgroup of data. With no justification in further examination of the univariates it made little sense to compare the magnitude of insignificant differences.

Table 4 reveals a significant multivariate F ratio for the Groups X Direction interaction (F=3.04,df=8 and 201,p<.0030). Inspection of the univariates indicates that the F ratios for number of contacts (F=4.46, df=2 and 416, p<.05) and production communication (F=3.96,df=2 and 416, p<.05) were significant. This leads to the conclusion that the pattern of responses under these 2 dependent measures is contributing to the significant multivariate Groups X Direction interaction. These interactions are presented in Figure 3 and Figure 4.

Table 5 indicates that the multivariate test for the Direction main effect was significant (F=9.23,df=8,201,p<.0001). As was the case for the supervisory personnel subgroup, the univariates for the 4 dependent measures were all significant at the .05 level (number of contacts-F=5.72,df=2,416; production- F=7.21,df=2,416; innovation-F=6.42,df=2,416;

maintenance-F=12.28,df=2,416). This information indicates that there are differences in frequency of communication between the various directions, within each of the 3 types of communication and number of contacts.

Table 4

Multivariate analysis of variance of groups x direction interaction on 4 dependent measures of communication among non-supervisory personnel in SP and NSP organizations

F-ratio for multivariate test of equality of mean vectors= 3.04, df= 8,201,p<.0030

Variable	MS	Univariate F	Eta^2
Number of communication contacts	12.50	4.46*	.01
Production communication	1130.49	3.96*	.01
Innovation communication	191.44	2.02	
Maintenance communication	246.59	1.40	

* p<.05

Table 5

Multivariate analysis of variance of direction main effect on 4 dependent measures of communication among non-supervisory personnel in SP and NSP organizations

F-ratio for multivariate test of equality of mean vectors= 9.23,df=8,201,p<.0001

Variable	MS	Univariate F	Eta^2
Number of communication contacts	16.04	5.72*	.02
Production communication	2673.15	7.21*	.03
Innovation communication	607.98	6.42*	.02
Maintenance communication	2167.20	12.28*	.03

* p<.05

Comparison of Production and Innovation Initiation Among Employees of Scanlon and Non-Scanlon Organizations

A different model was used to test hypotheses 5 and 6. These predicted differences in production and innovation initiation between employees of SP and NSP plants. A one way multivariate analysis of variance was used. Table 6 reveals a significant multivariate F ratio, indicating a significant Groups(SP/NSP) main effect ($F=4.48, df=2,256, p<.01$). Because the multivariate test rejected the null hypothesis of equality of mean vectors, inspection of the univariates was warranted. Only the univariate F for production initiation was significant ($F=8.98, p .003$). Thus, it can be concluded that the difference between employees of the SP and NSP organizations in subordinate initiation was attributable to production initiation rather than innovation initiation. The means for the SP and NSP groups (3.29,2.97) on production initiation indicate that employees in the SP group were higher on this variable. If we look at the difference in terms of standard deviation units and consider the NSP group as the reference distribution, there is a difference of .40 between the groups. As mentioned in Chapter VII, the maintenance initiation scale items had to be dropped from the main phase of the research. Hypothesis 7 could not be tested.

Comparison of Communication Satisfaction Among Employees of Scanlon and Non-Scanlon Organizations

A t-test was used to test hypothesis 8 which predicted a higher degree of communication satisfaction among employees in the SP than in the NSP group. Results indicated that there was a significant difference ($t=5.7, p<.01$). The mean communication satisfaction score of employees in the SP group was 2.53. This indicates that the average employee response was between " I agree somewhat" and "undecided" to the 2 items dealing with general satisfaction with communication in the organization. For

the NSP group the mean response was 3.45. This indicates an average response somewhere between "undecided" and " I disagree somewhat". The analysis indicates a significantly higher degree of communication satisfaction among employees in the SP group. Again, if we look at the difference in standard deviation units, there is a difference of .53.

Table 6

Multivariate analysis of variance of subordinate initiation of communication among employees of SP and NSP organizations

F-ratio for multivariate test of equality of mean vectors= 4.48,df=2,256, p<.0122

Variable	MS	Univariate F
Production initiation	6.89	8.98*
Innovation initiation	1.64	1.30

df(hypothesis)=1
df(error)= 257

* p<.005

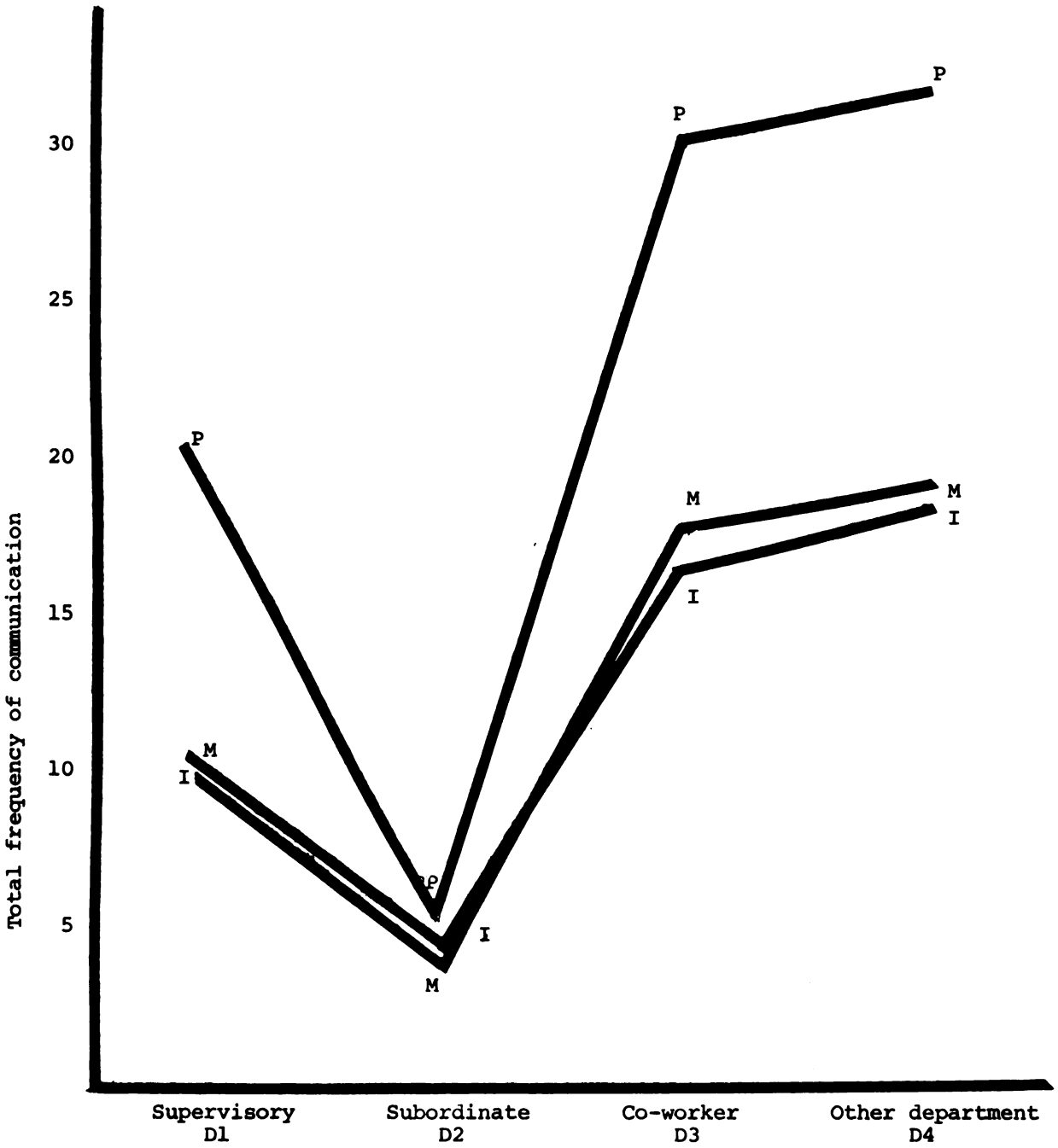

Figure 1. Total frequency of communication for each of 3 types of communication within 4 directions for supervisory personnel,collapsed across SP and NSP organizations

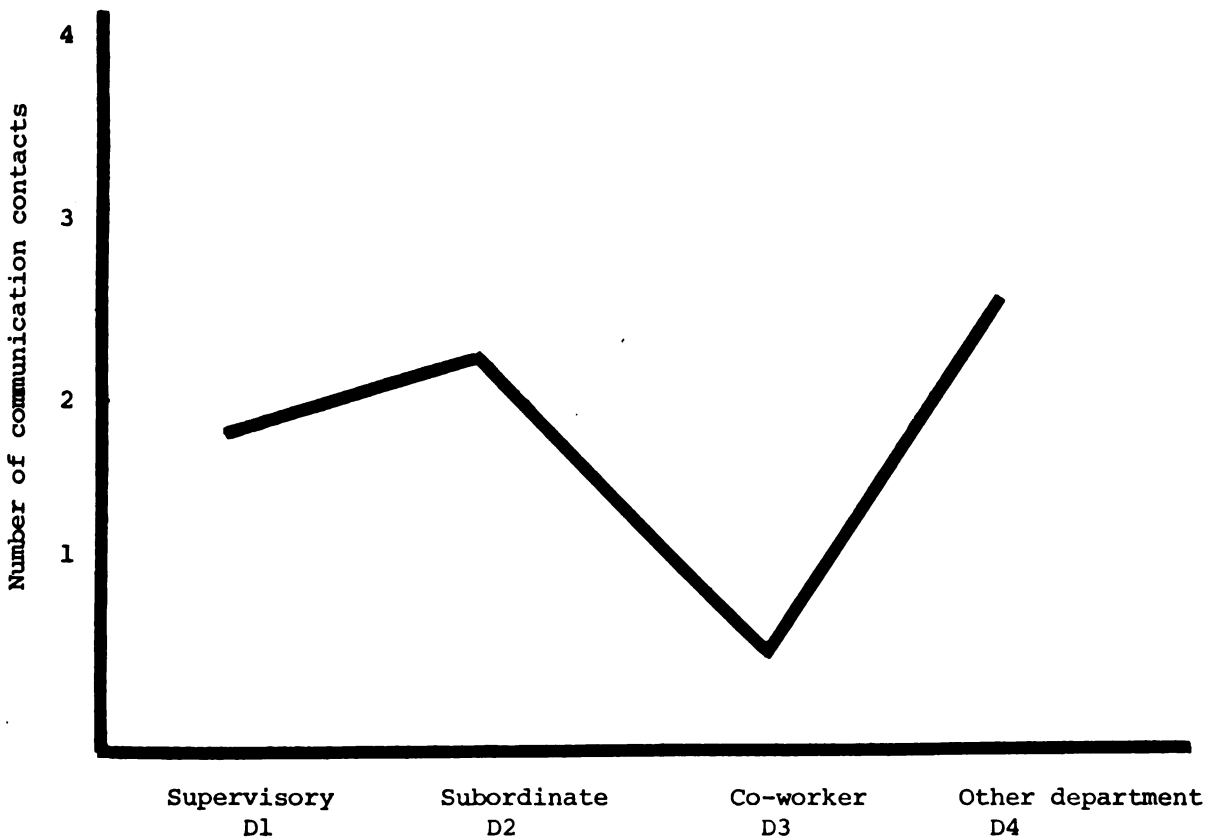

Figure 2. Number of communication contacts in each of 4 directions among supervisory personnel collapsed across SP and NSP organizations

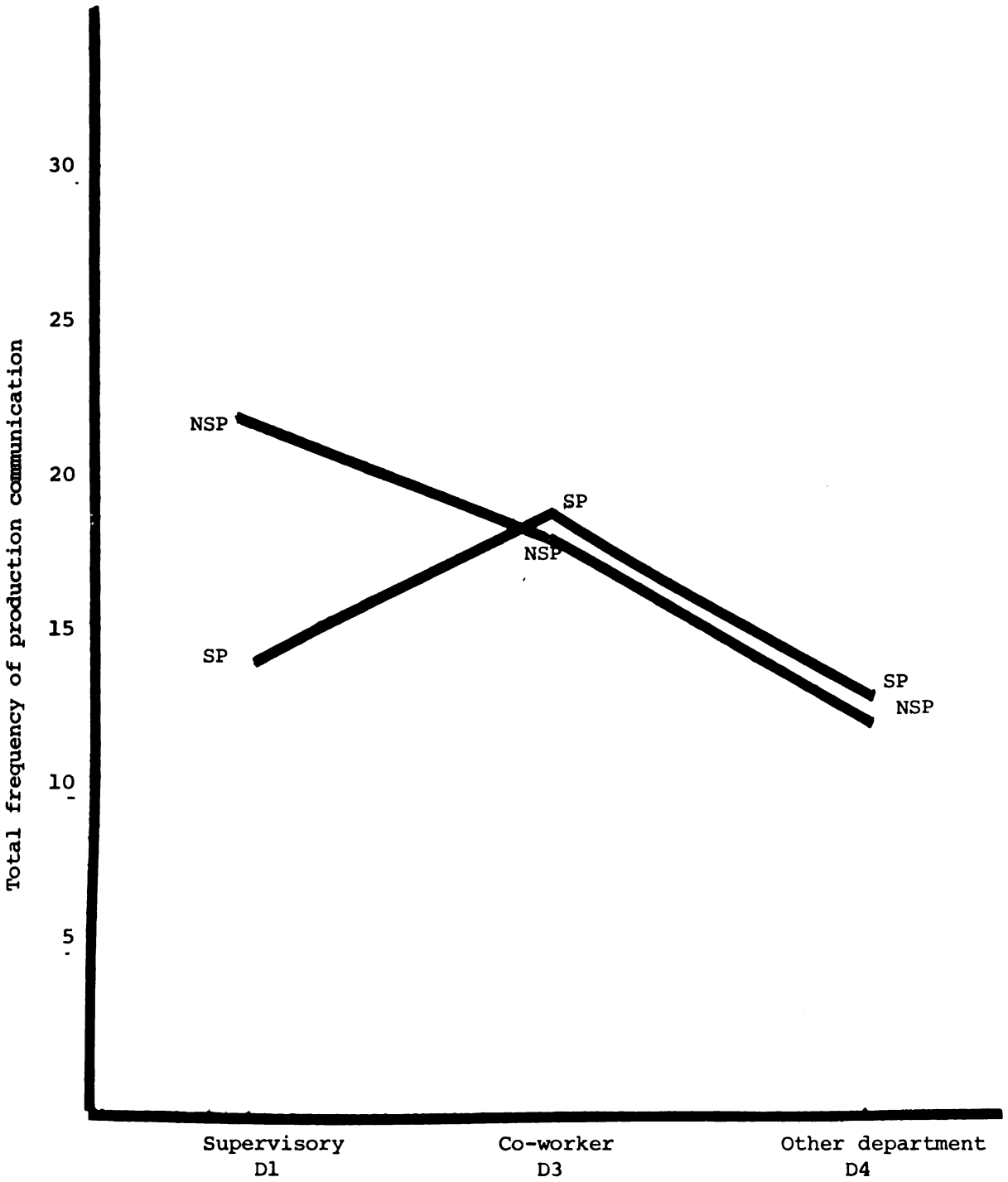

Figure 3. Total frequency of production communication toward 3 directions among non-supervisory personnel in SP and NSP organizations

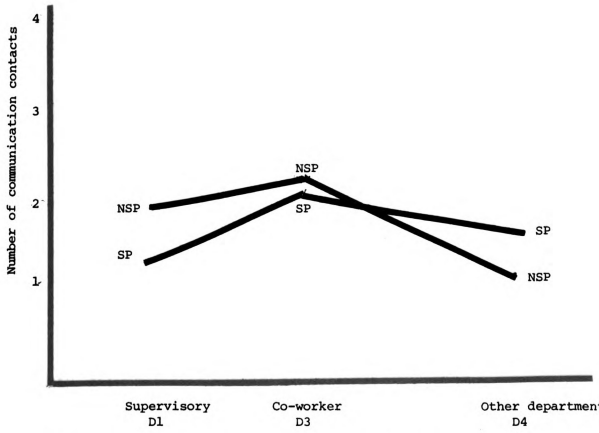

Figure 4. Number of communication contacts in each of 3 directions among non-supervisory personnel in SP and NSP organizations

Table 7

Intercorrelations between measures used in the main phase of the research investigation

Variable	Prod. comm.	Innov.comm.	Maint. comm.	Prod.init.	Innov.init.	No.cont.	Satisf.
Production communication	.86***	.61 (.68*)	.49 (.61)	.68 (.81)	.55 (.70)	.81	.38(.45)
Innovation communication		.90	.60 (.72)	.56 (65)	.57 (.71)	.75	.38(.44)
Maintenance communication			.76	.41 (.52)	.52 (.67)	.77	.42(.53)
Production initiation				.81	.42 (.56)	.79	.41(.50)
Innovation initiation					.71	.73	.47(.61)
Number of contacts						**	
Satisfaction with communication						.49	.81

* coefficients in parentheses are estimated intercorrelations corrected for attenuation
** Alpha not available for this measure
*** Alpha estimates of internal-consistency reliability are in diagonal

Table 8

Alpha estimates of internal consistency reliability, average inter-item r, and average item-cluster r for scales used in the pre-test phase and main phase of the research investigation

Scale	No. items	Alpha	Inter-item r	Item-cluster r
Production communication $_p$	4*	.91	.67	.80
Production communication $_m$	4	.86	.66	.79
Innovation communication $_p$	3**	.92	.71	.85
Innovation communication $_m$	3	.90	.69	.83
Maintenance communication$_p$	4*	.84	.60	.75
Maintenance communication$_m$	4	.76	.64	.74
Production initiation $_p$	2***	.77	.62	.90
Production initiation $_m$	2	.81	.67	.91
Innovation initiation $_p$	2***	.75	.60	.90
Innovation initiation $_m$	2	.71	.58	.88
communication satisfaction $_m$	2	.81	.68	.92

* scale reduced from 5 to 4 items
** scale reduced from 5 to 3 items
*** scale reduced from 4 to 2 items
p- pretest phase statistic
m- main phase statistic

IX. DISCUSSION

Summary of Results of Hypothesis Testing

Before presenting a full discussion of the results and the conclusions that can be drawn from them, a brief recapitulation of the hypotheses and results will be presented. Originally 8 hypotheses were proposed. But as mentioned, hypothesis 7 could not be tested. Although the hypotheses were not postulated for supervisor and non-supervisor subgroups, data analysis later suggested the use of the 2 subgroups.

1) Frequency of production communication would be greater among employees of SP than NSP organizations. This hypothesis was not confirmed for the non-supervisory subgroup. A significant difference in the opposite direction to the prediction was found for the supervisor subgroup.

2) Frequency of innovation communication would be greater among employees of SP than NSP organizations. This hypothesis was not confirmed for either of the two subgroups.

3) Frequency of maintenance communication would be greater among employees of SP than NSP organizations. This hypothesis was not confirmed for the non-supervisor subgroup. However, a significant difference in the opposite direction to the prediction was found in the supervisory subgroup.

4) The magnitude of differences in frequency of communication between employees of SP and NSP organizations would be less for production communication than for the other two types of communication. This hypothesis was not confirmed for either subgroup. Although there was a difference in magnitude in the supervisory subgroup, it was the SP/NSP difference with production that was greater than the other 2 differences.

5) There would be a greater ratio of subordinate to supervisor initiation of production communication among employees of SP than NSP organizations. There was a significant difference in the predicted direction.

6) There would be a greater ratio of subordinate to supervisor initiation of innovation communication among employees of SP than NSP organizations. This hypothesis was not confirmed.

7) There would be a greater ratio of subordinate to supervisor initiation of maintenance communication among employees of SP than NSP organizations. This hypothesis could not be tested because of difficulty with the scale items.

8) There would be a greater degree of communication satisfaction among employees of SP than NSP organizations. This hypothesis was not confirmed.

An additional dependent measure not initially included in the design of the research was used in the analysis. This variable was the number of communication contacts and has been described previously. Results with this measure tended to follow the pattern described above. There were no significant differences obtained with either of the subgroups, between the SP and NSP groups on this measure.

In conceptualizing the research project both implicit and explicit assumptions were generated. The researcher's basic value structure regarding organizations and organizational processes necessarily entered into the conceptual development. The explicit assumptions became formalized in the statement of hypotheses. They were mainly an outgrowth of the integration of PDM, "human relations" oriented theory, and organizational communication concepts. The theory and the rationale for

the specific hypotheses have been described in detail in an earlier chapter. Most of the hypotheses based on these assumptions have not been confirmed. The most compelling question at this point is why didn't we obtain the results that were predicted? Reasons have been given for expecting the predicted differences. We will now turn our attention to possible reasons why the predictions were not confirmed.

The most obvious statement that the lack of expected differences can lead one to make is:" Perhaps the SP and NSP organizations taking part in the investigation were not very different." We not only had a small sample of organizations but it is possible that these organizations did not really differ in organizational philosophy and day to day organizational processes. Detailed descriptions of the various plants used as research sites have been offered in an attempt to afford the reader an opportunity to decide on the comparability of the sites. Although the descriptive comparability data was time bound and mostly non-observational in nature, it can provide some basis for trying to more fully understand the results.

The four plants were basically in the same industry. While all four did not manufacture the same product, they did manufacture wood furniture products using similar manufacturing processes and technologies. We are not confronted with extremes such as two plants being highly automated, heavy industry manufacturing operations, and the other two being primarily research and design operations. Physical layouts of the plants,and work processes and flow were also highly similar. Characteristics of the work force were very much alike in the SP and NSP groups, and all four plants were located within the same geographical area. There is no reason for one not to assume that all four are drawing upon the same work force population. Size of the

plants and work force are also fairly similar across groups. Probably the most useful and relevant information with which to compare the companies is that pertaining to some of the personnel processes and formal communication mechanisms that exist in the organizations.

The picture that is drawn of the orientation procedures in the SP/NSP organizations seems to indicate a substantial difference. Compared to orientation in the SP plants, the NSP procedures appear to be much less emphasized, less valued by management, less informative and generally not very employee centered. Not as much time and effort seems to have gone into planning or implementation of the orientation in the NSP group. The citing of company rules and regulations occupies a larger part of the procedure in the NSP companies. In fact, the only written material given to new employees in the NSP plants is a comprehensive list of rules and penalties resulting from violation of rules.

It is generally in the area of formal communication mechanisms designed into the organization that we see even greater differences between the SP/NSP groups. For the most part, formal mechanisms for communication do not exist in the NSP group. Cross-functional group meetings between management level personnel are infrequent. Although the foremen meet together there is no formalized method for insuring the transmission of this information back to the production workers. No company newsletter or such similar method of information exchange exists. The NSP companies make what seems to be little effort to keep employees informed. The value and obligation of keeping them informed seems to be missing in the NSP group. The comment about employee knowledge of company financial conditions ("They can find out in the Wall Street Journal".) seems indicative of this general attitude . There is no formal suggestion system in operation in the NSP plants. A manager in

one of the plants voiced concern that there was no such system and felt that its feasability should be looked into.

The SP plants can not be categorized as fully employee centered or system 4 in nature. But more of an attempt seems to be made to disseminate information to all levels of the plants. Many of the formal communication mechanisms are designed into the organizations as a result of implementation of the Scanlon Plan. But how operative and well functioning these mechanisms are is another more salient question. Management level personnel from different functional areas do meet fairly regularly. Foremen also get together in formal, scheduled meetings. But more crucial in comparison to the NSP operations is the existence of the Screening committee in SP companies. Representatives of all functional areas attend these meetings and purportedly report the information back to their constituients. In addition, minutes of these monthly meetings are distributed to all employees. The work force also receives financial information about the company largely focused on the profit sharing system. This financial information is both distributed in the form of a monthly financial sheet, and posted even more frequently in the plants. However, it is worth noting that a Production committee does not exist in these SP organizations.

Employees appear to have a greater opportunity to participate in the organization through information sharing processes already described and through the use of a formalized suggestion system. Suggestions are submitted to committee representatives and discussed at the Screening committee meetings. Action in regard to each suggestion is decided upon and later printed in the newsletter. A formal mechanisms for suggestion transmittal is therefore in operation. From looking at plant newsletters it appears that the suggestion system is made use of. Each issue lists

numerous suggestions submitted by employees and acted upon by the committee. Again, the question of how well these processes function is important.

Differences in mechanisms for communication seem to exist between SP and NSP companies. The type and amount of information disseminated through orientation also differs. But do the groups have a basically different approach to organizational processes and different views of the nature and value of the employee? An overall answer to this critical question, based on hard, objective data is not possible at this time. Whether or not there is a participative climate in the SP group and a non-participative climate in the NSP group can not be determined with this information. But, evidence does seem to point to greater participation in information sharing by the SP employees and a greater value by management in sharing this information. The uncovering of these differences must be tempered by the fact that the source of most of the information was management personnel who may have been presenting a distorted, more favorable view of their organizations. The extent to which these differences exist on a day to day operational basis, and the effect that they have on employee attitudes and behavior can be questioned.

Although these later contrasts do seem to exist, perhaps these companies are not generally "different enough" on the participative/ non-participative continuum for most of the hypotheses to have been confirmed. Regardless of the SP/NSP differences that are evident, we certainly are not dealing with 2 groups of organizations that can be categorized as system 1 versus system 4. It is quite relevant to this point that a consultant familiar with the SP plants has also questioned the nature of their SP operation and the degree to which the management

philosophy at the heart of the Scanlon Plan is being implemented. The "maturity" of their Scanlon Plan is very questionable. The obtained results, some of which are opposite to that predicted for an SP organization, and others which indicate no significant difference on the dependent measures, would seem to be consistent with this more clinical evaluation of the SP organizations. There is also some hard data collected tangential to this investigation that may substantiate this point. Employees in the SP group were asked several questions pertaining to SP functioning . One of the items stated that "The Screening committee representatives keep me well informed about what is going on in the company". The mean response of employees was 2.6. This indicates a response close to undecidedness or neutrality about the statement. On the item, "I really understand the basic ideas of the Scanlon Plan," the mean value was also 2.6. On another item the mean was 2.0 indicating some understanding of the use of the suggestion system. Also interview information collected about the orientation process seems to show that while the orientation was more thorough than in the NSP plants, little emphasis was given to informing the employee about the Scanlon Plan. Discussion of the philosophy and day to day implications of the Scanlon Plan took a back seat to the financial aspects from which the employees could benefit.

Organizational consultants worked with management and labor when the plan was initially introduced in the organization in 1964. Since that time there has been no organizational development effort. It is only recently that the organization seems to be taking a look at itself. Within the last 6 months management of the organization has worked closely with a consultant in modifying calculation of the SP

bonus. Effort was taken to inform the employees of this modification. Each functional group in the organization had the opportunity to meet with the consultant and the personnel director to discuss the changes that were to be implemented.

The company also seems fairly concerned lately with the interrelatedness of the two plants. There has been a need expressed to view both plants as equal parts of the whole system. Management does not want either plant to feel that it is being favored at the expense of the other. They want to view both plants as part of one organizational team. This recent self-analysis may indicate that the organization is moving toward a more "mature" Scanlon organization. It would be interesting to evaluate communication practices in these plants in the future to determine what effects, if any, these recent changes have.

Even with the apparent SP/NSP contrasts discussed below, without a basic difference in philosophy between the groups the lack of confirmation of the hypotheses may be more understandable. A sampling of companies more demonstrably apart on the partipative/non-participative continnum may have yielded the predicted differences.

Two of the hypotheses were confirmed. These results are not inconsistent with the previous findings and discussion. The data indicate that there was a significant difference in regard to the ratio of subordinate to supervisory initiation of production communication as predicted in hypothesis 5. Subordinates and supervisors in the SP group appear to have a more equal degree of initiation of production communication than their counterparts in the NSP group. But although the SP/NSP difference was statistically significant this was a difference of only .47 standard deviation units. There was no significant difference

between the SP/NSP groups on the innovation initiation variable.

The second hypothesis that was confirmed pertained to communication satisfaction. As predicted in hypothesis 8 employees in the SP group indicated a significantly greater degree of satisfaction with communication practices than their NSP counterparts. This would seem to fit with the described differences between the SP/NSP groups. The description of organizational processes in each group, specifically in regard to dissemination of information, has indicated that some qualitative differences do exist. There seems to be greater opportunity for employees to receive information in SP plants. More channels and greater access to channels appear to exist in the SP group. It can be assumed that as a result of this ,employees in the SP group indicated significantly greater communication satisfaction. But once again we must look at the practical significance of the data. Even though there is a statistically significant difference, use of eta indicates that the relationship accounts for only 6% of the variance and practical significance is therefore almost nil.

Thus far we have been discussing the results primarily in terms of the analysis of the non-supervisory subgroup. It is when we try to interpret the results obtained with the supervisory subgroup that the inconsistency appears. For two of the dependent measures (production and maintenance communication) the frequency of communication is greater in the NSP group than in the SP group.

These differences are in the opposite direction to the predictions of hypotheses 1 and 3. With the apparent lack of a large difference in operationalization of different organizational theories and philosophies that was anticipated, these findings are an even greater surprise. There

is no clear explanation for why these differences would be obtained for the supervisory subgroup and why they would be in that direction in particular. Looking at the production communication variable one might explain the greater frequency by stating that perhaps there is less of a need for this type of communication in SP organizations because of the existence of formalized communication mechanisms. Or perhaps employees in the SP group have a better idea of what their job duties and responsibilities are. They may have less of a need for communication about production matters. It is easier to try and explain this seemingly inconsistent finding than the result obtained with the maintenance variable. All of the theorizing up to this point has emphasized a greater awareness of the importance of maintenance type communication in participative oriented organizations. Why the frequency of this type of communication would be greater in NSP organizations, even if the organizations do not differ as much as anticipated, is unanswerable at this time. However, this finding could be of great practical importance to advocates and implementors of SP operations. Organizational development practitioners have frequently discussed the "filtering down" process by which organizational change evolves. If greater maintenance communication is desired throughout the organization it would seem most appropriate that supervisory personnel also be committed to the change and help in the process. They would serve as models of change. The fact that frequency of maintenance communication was greater in the NSP supervisory subgroup than in the SP supervisory subgroup suggests that organizational change in the direction implied by the SP philosophy may be a difficult process to achieve under existing conditions.

It may also be argued that the area of explanation for the failure to obtain most predicted differences is the measures themselves.

The dependent measure in most of the analyses was an index of the frequency of communication. But frequency of communication may be too insensitive to relatively small differences in organizational climate or organizational processes between various companies. Even though some SP/NSP differences were obtained in the analysis of the supervisory subgroup, a greater number may have been obtained with the use of a different, attitudinal approach. Even though there were these few statistically significant SP/NSP differences, use of eta indicated that little variance was accounted for and practical significance is questionable. Regardless of what OD interventions are applied(and the Scanlon Plan can be considered an OD intervention) it may be very difficult to effect significant changes in the amount of communication in an organization. It was stated at the beginning of the study that a measure of total amount of communication was not the best approach to use but had been most frequently used in previous research. For this reason amount was refined into frequency of specific types and directions of communication. Even with the addition of types and directions of communication as variables it may be difficult to monitor differences in frequency unless between organizational conditions are widely disparate. The assumptions which guided this investigation are still accepted by this researcher. In a highly participative-oriented organization in which system 4 type beliefs are implemented and operating, communication processes should be different than those in more "traditional" organizations. But perhaps the crucial difference manifests itself in the quality rather than the quantity of the type or direction of communication. Attempts by organizations to be more participative and communicative throughout the organization may affect attitudes of employees about

communication processes to a much greater extent, or earlier in the life cycle of the change, than they affect actual communication behaviors. Unless an extremely intensive OD effort is applied directly to the area of communication, changes in frequency may not be readily forthcoming. But an organization that has somehow demonstrated to employees that it has a participative philosophy of organization, and which has a general and successful OD intervention like the Scanlon Plan, may affect employee attitudes about organizational processes. Thus, an attitudinal approach to the problem area of study, rather than a behavioral approach may have uncovered more differences. By an attitudinal approach I mean more perceptual questions such as the adequacy of type and direction of communication,how much effort is being spent in fostering better communications, and quality of the types of communication in different directions. With even the relatively slight differences in organizational processes that were found in the qualitative data of this investigation, these types of items may have found some meaningful differences. It was mentioned that a significant difference was found between the SP/NSP groups with the use of the communication satisfaction variable. Although the difference was of little practical significance it corresponds to the attitudinal approach being suggested.

It is also worthwhile to speculate in regard to the above discussion and the research area in general, about some of the less explicit assumptions the researcher has been making. It seems that there has been an implicit assumption that the greater the frequency or amount of specific types and directions of communication, the "better the organization". More specifically, the more participative-oriented the organization the greater the frequency of the various types and directions.

But this viewpoint must be questioned. How do we operationalize "better" communications or "efficient" communications practices in organizations? What levels and directions of production, innovation and maintenance communication should we find? Also, how should we interpret a high or low level of communications in an organization? What does a high frequency of production communication tell about the state of the organization? Is this a good sign because employees are exchanging a great deal of information about production matters? Or could it be a cue that nobody in the company really knows what is going on, what specific duties and objectives are. Does a low frequency of production communication indicate that everyone knows what to do in regard to duties and few problems and questions exist? Or does the organizational climate inhibit the flow of communication and lead to infrequent interaction? This fuzziness of interpretation may also be extended to a discussion of other types and directions of communication.

In framing this research study it was assumed that high levels of production, innovation and maintenance communication were necessary to continued health and vitality of an organization. An insistence on the multi-directional nature of these types of communication would also seem to flow from the works of PDM theorists. However, there seems to be no basis at this time for prescribing certain levels and directions of communication over others in all situations. The state of the science is such that we really are unable to assert that production communication once or twice a week between supervisor and subordinate is necessary to smooth functioning of an organization. Nor can we say that there should always be a high level of innovation communication between departments. We also have no reason for assuming that maintenance communication

should be frequent among employees. Taking as a given the fact that we can not always just strive to increase communication, how can we decide what level constitutes too much or too little? Is this level the same for all types, in all organizations?

The answer to the last question is probably no. There just aren't any clear, simple answers to the questions raised. Frequent communication about production matters may not be as necessary in certain types of organizations and task environments as in others. For example, in a highly automated assembly line operation production communication may not only be impossible but for all practical purposes highly unnecessary. The work is so routinized and mechanized that questions and problems concerning the work activities are infrequent. The opposite may be true in a highly skilled, single unit oriented production process in which the aspects of the work are continually changing and constant questioning is therefore necessary. In the former organizational environment maintenance communication may assume an important role. The worker may not want or might not be able to form his self-concept and identity as an outgrowth of his job. He may look toward communication with others to help him identify and confirm who he is as an individual. Intrinsic satisfaction not available from the job may be received from maintenance communication with others. In the second task environment described above, maintenance communication may not be as necessary. The work itself can provide maintenance type communication and information. There may also be less room for innovation communication in a highly routinized environment than in the other task environment. Similar statements and reasoning can be applied to the issue of directionality of communication. Interaction between co-workers may be impossible for assembly line workers

during most of the working day. Communication between functional departments may not be as critical in a situation in which the nature of the work is not as highly interdependent. Some situations may require an extremely high degree of worker autonomy such that interaction between supervisor and subordinate is critical when it does occur. But it may occur relatively infrequently.

The overall point is that the amount, type, and direction of communication which is most appropriate is probably highly situation specific. The works of Fiedler(1964), Lawrence and Lorsch(1969), Woodward(1958), and Schein(1966) have all pointed to the benefits that behavioral scientist theoreticians and practitioners can accrue from contingency approaches to organizational variables. Leavitt's(1951) laboratory investigations have also pointed to different types of communication practices having different results under different sets of conditions. The desire for parsimony has in a sense infused us with tunnel vision. We have looked for simplistic, unidimensional answers and approaches. Just as Schein(1966) recognized the need for a complex man orientation, there may be a need for a more complex, contingency approach to the investigation of organizational communications. Blanket statements about "effective" communications in organizations are of little value and only serve to steer us away from the important but complex realities of organizational functioning. This is a serious limitation of the "human relations" oriented theorists who seem to ignore individual and organizational differences. They ignore individual differences by implying that everyone has higher order needs and wants them satisfied. They ignore organizational differences by implying that PDM approaches are best under all conditions. This

later statement carries with it the implication that particular communication practices which fit the PDM model should also exist under all conditions. If we are going to be able to make prescriptive statements, we must study communications under varied organizational conditions and task environments, and in "effective" and "ineffective" organizations. Clear and simple answers may not be forthcoming, but increased understanding of communication processes will undoubtedly be gained.

We must also consider in discussion of the results that the present study, like most organizational research, has a frame of reference of only one point in time. It is as if the investigator took a "photograph" of the communication processes at a single point in the organizational life cycle. Therefore, the results may reflect but a brief sampling of how the communication processes are in general. Factors and conditions extraneous and unknown to the researcher may have affected the picture that was obtained. It would seem that research of this nature would benefit greatly from longitudinal investigation. It may also have been more appropriate to study this problem area by utilizing a pre and post design. Data about communication processes in the organization before the implementation of a Scanlon Plan could have been compared to periodic post (6 month intervals) evaluation of communication processes. In this way changes in communication that accompany initial implementation and later maturation and refinement of the Scanlon Plan could be assessed. This is a particularly fruitful area for future investigation. The practical logistics of gaining entrance into an organization when it is about to implement the Scanlon Plan may reduce the feasability of such

an approach.

Having discussed the results of the focal point of the investigation let us now look more closely at some of the supplemental findings more tangential to the heart of the research.

A finding which is not at all surprising, and one which was obtained in both subgroup analyses, is the Direction main effect. This main effect indicates that collapsing across SP and NSP groups there are differences between directions in the frequency of communication for each of the 4 dependent measures. Since a Direction X Groups interaction for the supervisory subgroup was not found, it makes sense to try and further examine the obtained Direction main effect. Post-hoc contrasts with the Schefe(1953) method of comparison were used. Examination indicated that for each of the 4 dependent variables the same pairwise contrasts were significant($p<.05$) and contributed to the obtained main effect. The significant contrasts were as follows: frequency of communication to other departments versus frequency of communication to subordinates; frequency of communication to co-workers versus frequency of communication to subordinates; and frequency of communication to supervisors versus frequency of communication to subordinates. Thus, the low frequency of communication to subordinates in relation to communication in the other 3 directions seems to account for the significant contrasts. This finding of lower levels of communication to subordinates is one which has consistently been reported throughout the literature and reemphasizes the problems of superior-subordinate relationships. Superior-subordinate communication seems to be an area which still needs much attention from communication researchers and from psychologists and management specialists hoping to alleviate the

problems in the day to day functioning of an organization.

To further investigate the Groups X Direction interaction that was obtained for the non-supervisory analysis, post-hoc contrasts were also used. This time the Schefe method was also appropriate but multiple comparisons were conducted. Different comparisons were significant with each of the 2 dependent measures for which the interaction was significant. Looking at the measure number of communication contacts, we found that the SP/NSP comparison under direction 1 (toward supervisors) versus direction 4(toward other departments) was significant ($p<.05$). Figure 4 shows that there is a greater SP/NSP difference in the number of communication contacts that non-supervisory employees have with supervisory personnel than there is for any of the other 2 directional categories. Again it is difficult to interpret this finding clearly. Is a greater number of supervisory contacts beneficial to the individual and the organization? In using this variable as a diagnostic aid what does more communication really tell the behavioral scientist about the health of the organization? Answers to these questions would be purely speculative and relate to the discussion of implicit and explicit assumptions about communication at the beginning of this chapter.

A look at the same multiple contrasts with the production communication measure reveals that it is the SP/NSP comparison under direction 1 versus direction 3(toward co-workers) that is significant ($p<.05$) and contributing to the obtained interaction. Figure 3 reveals that the difference in frequency of production communication between SP and NSP groups is greatest under direction 1. Apparently individuals in NSP organizations communicate with their supervisors about production matters much more frequently than their SP counterparts. As was mentioned above, the reasons for this are unclear.

X. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The purposes of the present research have really been two fold. An attempt was made to investigate the effects of participative-oriented theories of organization on organizational communication practices by comparing a specific implementation of the PDM approach (SP) to more traditional methods of organization(NSP). Secondly, communication practices in organizations were explored in attempt to increase understanding in an area that has received little research emphasis.

Some significant differences were found between communication practices. The only Groups (SP/NSP) main effect occurred in the supervisory subgroup analysis and there it was obtained for only 2 of 4 dependent measures. Even though these differences were statistically significant, the use of eta indicated that little variance was accounted for. Reasons for not obtaining a greater amount of expected differences have been postulated. The most parsimonious explanation for the lack of confirmation of the hypotheses may be a lack of real differences between the SP and NSP companies. With greater differences in organizational style and practices, the expected differences may have emerged. There is also the possibility that the measures utilized were not sensitive to small inter-organizational differences in communication. An index of quality of communication rather than quantity may have been more revealing.

Examination of the data also indicated the existence of a Groups X Direction interaction, and Direction main effect. The Groups X Direction interaction affirms the fact that simplistic statements about communications in participative versus non-participative organizations must be

reworked. The difference in frequency of communication in participative versus non-participative organizations may depend upon the specific direction of communication investigated. It would also be worthwhile to examine the possible interaction between types of communication and direction of communication as well as the interaction between type and groups. Investigation of these effects were not possible with the model of analysis being used. However, both of these interactions would appear to fit in with the contingency approach to communication that was discussed.

Although implications and recommendations have been stated at appropriate times throughout the discussion, a brief summary will be presented.

1) The frequency measure that was used may have restricted the opportunity of demonstrating even greater differences in communication practices. It may be more appropriate and revealing to investigate employee perceptions about the quality of communication. Differences in climate and operating philosophy between organizations may affect employee perceptions of adequacy and satisfaction with communication to a much greater extent and more quickly than they affect frequency of interaction.

2) Utilization of a pre-post longitudinal design may have afforded a greater opportunity to answer some of the questions about communications under SP and NSP operations. Any changes in communication that result from different degrees of "successfulness" or "maturity" of the Scanlon Plan could also be assessed this way.

3) Prescriptive statements and assumptions have failed to emphasize a contingency approach that is necessary to increased understanding of communication processes. The most appropriate,efficient mix of frequency

direction, type and other variables not yet even thought of, must be examined under a wide range of organizational and task conditions if understanding is to be enhanced. This researcher believes that the effort is justified. Communication is a process that pervades all aspects of organizational functioning. Its relationship to other organizational processes and to individual, group and organizational end states should also be investigated.

APPENDICES

APPENDIX A

Interview Schedule for Comparability Data

Brief Identifying Information

1. Organization name and location
2. Type of organization (ie. service, manufacturing)
3. Total dollar assets for 1973
4. Total dollar assets for 1973

Historical-Background Information

1. When company founded
2. Founded by whom
3. Line of succession after initial founder
4. Major product line when company started and subsequent changes

The Formal Organization

1. The Formal Organization Chart
   a) Actual diagram of structure if available from records or perceptions of organizational hierarchy from key people
   b) Written description of how organization is divided and subdivided structurally, by investigator

2. Job Descriptions
   a) Determine if formal job descriptions exist
   b) Obtain copy if possible to determine extent of detail

3. Number of employees in each functional area: number of production, supervisory, management and office personnel
4. Ratio of supervisory personnel to production workers and ratio of management personnel to entire work force. Information also

Plant and Equipment

1. Brief description of different functional areas on each floor
2. Facilities available such as drinking fountains, toilets, windows, lunch and break facilities
3. Plant size
   a) Total square footage of plant
   b) Number of floors

4. Equipment
   a) Type of equipment (manual, semi-automatic, automatic)
   b) General frequency of equipment breakdown

Employee Characteristics

1. Mean age of employees
2. Mean educational level
3. Percent male and female

4. Percent of workforce voluntarily terminated in 1973
5. Average daily absenteeism
6. Percent at various skill levels
7. Mean length of service in company
8. Ethnic composition

Personnel Processes

1. Description of recruitment process
    a) methods used
    b) criteria for selection

2. Rate of recruitment per month

3. Description of orientation procedures
    a) length of orientation
    b) when it occurs
    c) who conducts procedure
    d) contents
    e) written material given to employee
    f) rules and regulations- content, formal-informal
    g) information about company background, products

4. Training of old and new employees
    a) do new employees get any training
    b) form and length of training
    c) do supervisory and management get any training
    d) description of apprenticeship program, if any
    e) description of probationary period

5. Promotion
    a) percent promoted in last year
    b) description of written promotion policies
    c) how are promotions decided

6. Compensation
    a) wage scale for hourly
    b) comparison of wage scale to industry rates
    c) how are wage rates set
    d) description of profit sharing or incentive systems,if any

7. Performance Appraisal
    a) timing of appraisals
    b) who does the appraising
    c) are standards generated and by whom
    d) is the appraisal written,formalized

8. Fringe Benefits
    a) what are the benefits and who shares in them

9. Conceptualization of time in the organization
    a) are there assembly lines or similar devices to regulate workers

b) is there a time clock and who has to punch in (level)
c) penalties for lateness
d) what is considered late

Communication Within the Organization

1. Are there any formal committees set up within the company
2. Are there formally scheduled meetings
3. Frequency of meetings
4. Level of these meetings
5. Are there written reports from these meetings
6. Do rank and file attend or have representatives
7. Is there a company inhouse organ and what does it contain
8. What financial information is made available to employees
9. What is the form of this financial information and frequency
10. Is information about product waste, returned goods made available
11. Do supervisors hold scheduled meetings with subordinates
12. Suggestions
    a) Is there a formal system
    b) Is it tied to incentives
    c) Who gets the incentive for the suggestion
    d) Are suggestions made known to all
    e) Who decides on implementation
13. Inter-departmental coordination
    a) Are there scheduled meetings between departmentsand frequency

Financial Information

1. Total sales volume for 1973
2. Relative standing in industry
3. Dunn and Broadstreet rating if available

Miscellaneous

1. Union activities
    a) Union affiliation and number
    b) Do employees have to join
    c) Attempts to unionize

2. Daily schedule
    a) Length of work day
    b) Frequency and length of breaks
    c) Length of lunch time
    d) Percent that work overtime

APPENDIX B

MICHIGAN STATE UNIVERSITY

Department of Psychology-Organizational Research Division

COMMUNICATIONS ON YOUR JOB

A phrase that we hear often nowadays is "communication problem." People are constantly talking about the problems that they have in communicating with others in both work and home life.

The Psychology Department at Michigan State University is very interested in finding out about communications that take place in work settings. With this information we may be able to learn how to overcome many of these problems. Your cooperation in this study will help greatly in trying to find some solutions.

All of the enclosed questionnaires are strictly confidential. No one but the research team at the University will see them. As soon as you have completed the questionnaires you can seal them in the envelope provided. You will hand them directly to the University staff. No one in the company will ever see the individual information that you have provided. General results of the study will be made available to you.

Thank you very much for your cooperation.

Before starting to answer the questionnaire it is necessary that we get some information about you. This will only be used to help us code and analyze the information in the questionnaire.

YOUR NAME: _____

JOB TITLE: _____

SEX: MALE _____ FEMALE _____

LENGTH OF TIME ON JOB: _____

INSTRUCTIONS

This part of the survey deals with communication between you and your immediate supervisor-your boss or foremen. There are no right or wrong answers to these few questions. Below each question you will find 6 possible answers. Each of the answers has a number above it. Read each of the questions and answer them by drawing a circle around the number of the answer that you want to give. Please answer all questions.

Remember your answers are held in strict confidence.

EXAMPLE

When you talk with your supervisor about your work activities who decides what will be discussed?

1	2	3	4	(5)	6
I always do	I usually do	We each do an equal number of times	He usually does	He always does	We never talk

If your supervisor always decides you would circle the 5 as is done above.

1. When you talk with your supervisor about things related to your work, who starts the conversation?

1	2	3	4	5	6
I always do	I usually do	We each do an equal number of times	He usually does	He always does	We never talk

2. When you talk with your supervisor about your work activities who decides what will be discussed?

1	2	3	4	5	6
I always do	I usually do	We each do an equal number of times	He usually does	He always does	We never talk

3. When you talk with your supervisor about new ways of doing things, who starts the conversation?

1	2	3	4	5	6
I always do	I usually do	We each do an equal number of times	He usually does	He always does	We never talk

4. When you talk with your supervisor about any changes that take place or should take place in connection with your work, who starts the conversation?

1	2	3	4	5	6
I always do	I usually do	We each do an equal number of times	He usually does	He always does	We never talk

turn over

Read each of the next statements and indicate how strongly you agree or disagree by circling one of the 5 answers below each statement.

5. I usually get the information I need at the time I need it.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

6. I am satisfied with communications in general in this company.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

7. The production and screening committee representatives keep me well informed about what is going on in the company.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

8. The Grand Rapids and Zeeland plants are equally important .

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

9. The company is more interested in the Zeeland plant than they are in us.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

10. I really understand the basic ideas of the Scanlon Plan.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

11. I understand how to use the suggestion system to get my ideas across.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

12. I don't understand how the bonus is figured out.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

13. All things considered, I'm satisfied working here.

1	2	3	4	5
I agree strongly	I agree somewhat	I am undecided	I disagree somewhat	I disagree strongly

INSTRUCTIONS FOR PERSONAL COMMUNICATION LIST

Please go back over the last few months and think of the people in the company that you talk to the most. You are to list the full names of these people in the spaces provided below. This list can include people higher in the company than yourself (such as supervisors, foremen, or company president) your subordinates, people in other departments or work groups, and co-workers in your own department. Space is provided for you to list up to 10 names.

We need the names in order to properly analyze the information. But we can assure you that all the information is treated confidentially and no one in the company will ever see any of your responses.

LIST OF NAMES - COMMUNICATION CONTACTS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

INSTRUCTIONS FOR COMMUNICATION QUESTIONNAIRES

Now that you have listed these names we would like to find out briefly about the types of things you talk about with each of these people.

On the next few pages are Communication Questionnaires. At the top of each questionnaire is a space provided for you to write in the name of a person that you listed above. Look at your list of names and write the name of the 1st person from your list in the space provided on the 1st questionnaire. Then answer the questions about your communication with this person.

When you finish the 1st questionnaire go on to the second and write in the name of the second person from the list. Answer the questions about your communication with this person. Repeat this procedure for every person that you listed above. Please think carefully about your answers since we want the information to be as useful as possible.

Again, thank you for your cooperation. The research staff at Michigan State University appreciates your help and will make the general results of this survey available to you.

COMMUNICATION QUESTIONNAIRE

COMMUNICATION CONTACT _____

Check one of the following. Is this person -

1) a member of your work group _____
2) a member of a different work group _____
3) or in a supervisory position _____
4) your subordinate _____

1. How often do you talk about current work problems with this person?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

2. How often do you talk with this person about work deadlines-getting the work done?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

3. When talking with this person how often do you give or take orders about work performance?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

4. How often are your talks with this person about meeting work specifications?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

5. How often do you talk with this person about new things to do in connection with your work or the work of others?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

6. How often do you talk with this person about any new ideas or suggestions that you or others have about how to improve work performance?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

7. How often do you talk with this person about actually putting these ideas or suggestions into effect-carrying them out?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

8. How often in your talks with this person do you give or get encouragement or recognition about work or non-work matters?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

turn over

9. How often do these talks produce information about why your job is necessary or how your job relates to other jobs in the company?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

10. How often do you talk about "people-problems" - such as trying to solve personal problems-with this person?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

11. How often do you talk about non-work problems with this person?

1	2	3	4	5	6
more than once a day	once a day	once or twice a week	once or twice a month	less than once a month	never

12. In general, how important are your talks with this person?

1	2	3	4	5
utmost importance	great importance	some importance	little importance	no importance

SPACE IS PROVIDED BELOW FOR YOU TO MAKE ANY ADDITIONAL COMMENTS YOU WISH REGARDING COMMUNICATIONS, OR WORK IN GENERAL IN THIS COMPANY.

THANK YOU FOR YOUR PARTICIPATION.

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