DYNAMICS OF ORGANIZATIONAL CHANGE:

SOME DETERMINANTS OF MANAGERIAL PROBLEM SOLVING AND DECISION MAKING COMPETENCES

by

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Faculty Advisor of the Thesis

June 22, 1964

Professor Philip Franklin
Secretary of the Faculty
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Professor Franklin:

In accordance with the requirements for graduation, I herewith submit a thesis entitled "Dynamics of Organizational Change: Some Determinants of Managerial Problem Solving and Decision Making Competences."

Sincerely yours,

Signature redacted

Raghu Nath

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An Abstract of

DYNAMICS OF ORGANIZATIONAL CHANGE:
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Submitted to the Department of Industrial Management on September, 1964, in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

In recent years an increasing number of social scientists have been engaged in developing liaison between social knowledge and action. Some of them, working with industrial organizations, have aided in the development of a new type of organizational change program. The present study has been conducted in the context of one such change program in a large industrial corporation. The program is aimed at increasing organizational effectiveness through improving problem solving competences of the management system. It employs a four-phase strategy which is based on introducing new values in the system which emphasize the principle of integration of individual and organizational goals (Theory Y) as contrasted with the principle of direction and control (Theory X).

The purpose of the present study is to develop a system model of organizational change, to develop instruments and other methods for measuring changes in the management system, and to test the validity of the model by showing how it can be used to study the effects of company change program on the management system.

Using systems concepts to integrate interpersonal and problem solving orientations to the study of organizations, a model of the management system is developed. The model provides a paradigm for the study of change programs, and contains the nine sectors of management values: communications, power distribution, organizational behavior, interpersonal and group skills and attitudes, technical skills, problem solving competences, management goals, and results. It is then shown how processes of planned change, and the company change program in particular, can be conceptualized in terms of the model.

A set of instruments have been developed to measure the variables in the several sectors of the model. Both self-report and behavioral measures have been used. The former are derived from interview data and from post-meeting reaction questionnaires. Behavioral measures are derived from observations of regular staff meetings and meetings where groups worked on standard tasks.

In order to test the validity of the model, several hypotheses were derived which predict the direction of change in six sectors of the model. Results support the assumptions underlying the model and show that the directions of change in the system are as predicted.

Considering the total organization as a unit, the effect of the change program is an increase in problem solving competences, a shift in values toward Theory Y, an improvement in communications, an increase in power equalization, an improvement in interpersonal and group skills and attitudes, and an improvement in the clarity and priority of management goals. Changes are more pronounced in some respects than in others. There is no significant change in the reported frequency of downward communications, delegation of decision making power, and openness of a subordinate toward his boss. There seems to be a trade-off between time to reach decision and quality of decision. In different departments of the organization different patterns of relationship between reported and observed changes can be identified.

In the course of the change program there is not only an upward trend but a convergence in the measures of values, power distribution, and goals. It was also found that there is improvement in dealing with actual problems of the organization such as a difficult case of new product development, and that there were modifications in organizational structures, policies, and procedures which would be expected to have long range effects.

Thesis Supervisor: Warren G. Bennis

Title: Professor of Industrial Management

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CHAPTER I

INTRODUCTION

> One thing that is new is the prevalance of newness, the changing scale and scope of change itself, so that the world alters as we walk in it. ••• To assail the changes, that have unmoored us from the past is futile, and in a deep sense, I think it is wicked. We need to recognize the change and learn what resources we have.
> (Oppenheimer, 1955, pp. 10-11)

Today we live in an age of change. Most of our social organizations find themselves operating in an environment of rapidly changing social, economic and technological conditions. Thus the main challenge confronting today's social organizations, whether an emerging country, a social agency or a business enterprise, is that of responding to changing conditions and adapting to external stress. An increasing number of organizations are becoming interested in developing ways and means to cope with this challenge.

In recent years social scientists have been studying the problem of organizational change.* Some have been working specifically with business organizations as change agents, trainers or helpers. Their main focus has been to utilize knowledge to develop new types of change programs. As this activity gained momentum, a few organizations have started developing their own change programs. The present

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*See for example: March & Simon (1958, Ch. 7), Lippitt et al. (1958), Shepard (1960), Argyris (1960), Gibbs & Lippitt (1959), Bennis et al. (1962a).

study is being conducted in the context of one such company program.

The Problem and its Setting

An outline of the program is given in Chapter II. The goals of the program are to improve organizational effectiveness by improving problem-solving and decision-making competences of the management group. The strategy, i.e., the mechanisms and instrumentation used by the program have many things in common with those of other new change programs. In his critical appraisal of the new change programs, Bennis (1963), has raised many issues for further investigation and research. First is the theoretical issue of the gap between interpersonal type change models and problem solving models. Second is the lack of adequate methods (instruments) for studying change processes. Third is the issue of the nature and effects of these change programs on the organization.

Objective of the Present Study

The present study was formulated in the context of the three issues stated above. Thus the purpose of the research is three-fold:

1. To develop an integrated theoretical framework, in the form of a model, that can serve as a paradigm for the study of programs of planned change. By incorporating both the interpersonal and group aspects of organizational behavior, as well as cognitive processes of problem solving, in the proposed model, the author hopes to bridge, in some small measure, the gap between interpersonal type change models and problem solving models.

2. To develop adequate methods (instruments) for studying important aspects of the change processes.

3. To use the model in studying the effects of these change programs on the client system.

Organization of the Thesis

This thesis is divided into seven chapters. Chapter II contains a brief description of the company program of planned change.

Chapter III presents an outline of interpersonal, problem-solving and system orientations to the study of organizations, which are then used to develop a model of the management system containing both interpersonal and problem-solving aspects of organizational behavior. Each sector of the model is then developed.

Chapter IV explains how processes of planned change and the particular change program under study can be represented in terms of the model. The scope and objectives of the present study are reformulated and a number of specific hypotheses are derived from the model for testing.

Chapter V contains a discussion of some issues of research design and methods, a description of the instruments developed for data gathering, and outlines the specific measurements used for each of the variables.

Chapter VI contains the analysis of the data, the findings, and a discussion of the results.

Chapter VII presents the conclusions of the study, indicates some implications these may have for management, consultants, and behavioral scientists who are interested in change programs, and outlines a few areas that seem specially promising for further research.

CHAPTER II

THE COMPANY PROGRAM OF PLANNED CHANGE

The Company

The data for the present study come from one of the divisions of a large industrial corporation with a number of autonomous divisions. A division is headed by a Chief Executive who has four to eight department heads reporting to him. Each of the department heads is in charge of a functional area such as finance, manufacturing, marketing, engineering, etc. A number of managers, and in some cases specialists, report to each department head. About seven divisions have been so far involved in the change program.

History of the Development of the Program

The program grew out of the company's disenchantment with their incentive plans. With the help of outside consultants, a study was launched to develop new wage plans. The experience gained during this study was used by company personnel to develop an experimental change program which was then tried in two of the company's divisions. At this stage some company managers became interested in the activities of the National Training Laboratories. One of these managers, who is now the chief administrator of the change program, went to the Arden House T-Group program. This resulted in a major shift in the strategy of the program, from emphasis on impersonal aspects of the business

to human aspects. The program as it is today places a major emphasis on the interpersonal and group aspects. The present outline took definite shape during the middle of 1962, when a social scientist associated with the National Training Laboratories helped the company personnel in the design of the training program for change agents. This training program was of ten-week duration, and several members of the National Training Laboratory were involved in running a one-week T-Laboratory.

Description of the Program

Entry of a Division into the Program

Any division within the company can enter the program by asking for a trained change agent from the central pool. The decision to enter the program, and to have the 4-day meeting for the top management group is made by the Chief Executive, in consultation with his department heads.

Four Phases

The program starts formally with the arrival of the change agent at the division and is divided into the following four phases:

Phase I: The change agent works individually with the top management group consisting of the chief executive and his department heads. He interviews each of these managers, attends their meetings, and familiarizes himself with operations of the division. After two or three months the top management group and the change agent hold a 4-day meeting at a place away from the divisional location.

Phase II: In this phase the change agent works with the next level, i.e., managers reporting to department heads. The phase ends

with a 4-day meeting of managers from all departments away from the division's physical location. Department heads do not attend this meeting; it is a meeting of peers in different functional departments. The whole phase takes about 10-12 weeks.

Phase III: This is the consolidation phase. The change agent works with departmental groups, and attends department staff meetings. If necessary, the entire group meets away from the location for a full day. This phase takes about 10-12 weeks. During the latter part of this phase, the emphasis shifts to decision-making and planning in order to identify some major problems. This takes about 5-8 weeks.

Phase IV: This is called the implementation phase. The emphasis is primarily on working on specific problems, making decisions, and implementing them. The problems may be within a department or involve a number of departments. This is expected to take about 15-20 weeks.

The total time for the four phases is thus about 48-62 weeks. Since the present study spans the first three phases, the activities which take place during these phases will now be described.

Activities During the First Two Phases

The kinds of activities in the first two phaes are essentially identical, though they occur at different points in time and with the different managerial levels. The activities can be divided into two parts:--before the 4-day meeting and at the 4-day meeting.

Before 4-day Meeting

The major activity consists of interviews the change agent has with managers. Each interview may last from one to three hours, and

a single manager may be interviewed one to four times. The change agent also attends some of the management meetings. A small portion of his time is also spent in analyzing records and familiarizing himself with the operations of the division. These activities contribute to his diagnosis of the situation. In terms of Lewin's change model of unfreezing, changing and refreezing (Schein, 1961, pp. 62-63), it is during the interviews that unfreezing starts taking place. Content analysis of the interviews, and direct observations of some interviews, show that the change agent asks a number of questions which help the manager to think in terms of his assumptions about managing, in particular, his management philosophy, and relate these to some consequences. In addition the change agent has available to him several models which depict how different sets of assumptions lead to different consequences.* Also, the change agent conveys to the managers new set of values and their implications. To sum up, the main purpose is to start unfreezing the managers by letting them examine their values and their consequences, and providing at the same time an alternate system of values. This unfreezing sets the stage for the 4-day meeting, where the changing starts in a major way.

4-Day Meeting: The meeting takes place away from the location, and hence away from day-to-day pressures of business. This provides an ideal setting for attempting changes in the management values by encouraging new types of behavior.** The author has not attended any

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*These models are similar to those developed by Argyris and Blake. For one such model, see Argyris (1962, p. 43).

**See McGregor (1960, p. 223) for the idea of the cultural island and its suitability for programs aimed at changes in values.

4-day meeting but has heard detailed reports about the activities at such meetings, both from the change agents and from participants. It appears from these reports that the activity during a 4-day meeting is similar to a task-oriented type of T-Laboratory.* At this meeting changing is attempted in a major way. The changes carry on after the meeting. But the focus of the program shifts to refreezing after the group returns to the location.

Activities During Phase III

During the major part of Phase III, the activity alternates between refreezing and changing, with major emphasis on refreezing in the several departmental groups. The occasional changing activity is necessitated by the fact that the 4-day meeting during the second phase is held without the bosses, so that it is necessary to attempt some changing during Phase III with bosses present in functional groups. During the latter part of Phase III the emphasis shifts to impersonal problems of the business, i.e., working on business problems.

The Company Program and Other New Change Programs

In his discussion of new change programs, Bennis (1963) has grouped them in three types of change models--equilibrium, organic and developmental. The company change program has many things in common with these change programs especially with those of the organic model (Blake and others) and the developmental model (Argyris and others). The targets of change in the organic model are problem

*A task-oriented type of T-Laboratory is one that has been designed to achieve a specific task. In case of this program, the task for the management group is to look at their problems, develop the symptoms and analyze the causes for the existence of these problems.

solving activities; the emphasis of the developmental model is on interpersonal competence. There is also more emphasis on cognitive inputs in the former. In both of these respects, the company program is similar to the organic model. The company program uses transformation of values as its mechanism of change as does the developmental model.

All new change programs, including the company program, have many common characteristics, such as the emphasis on interpersonal or group relationships in their diagnosis of the organizational health, recognition of the importance of values, and a preference for organizations based on the ideas of Likert (1961) and McGregor (1960). These common characteristics stem from the new view of motivation in industry that has grown out of the contributions of the behavioral sciences.

Having outlined the similarities, it is necessary to point out that the company program also has unique characteristics of its own, e.g., the four-phase strategy, the 4-day meetings, and greater emphasis on problem solving activities.

In summary, the goals of the change program are to improve organizational effectiveness by improving the problem solving competence of the organization. The program employs a four-phase strategy which uses transformation of values as the mechanism of change, and a 4-day meeting away from the location as the main vehicle of instrumentation.

CHAPTER III

A MODEL OF THE MANAGEMENT SYSTEM--A PARADIGM FOR PROGRAMS OF PLANNED CHANGE

> "If there is one fundamental insight underlying all management science, it is that the business enterprise is a system of the highest order: a system the "parts" of which are human beings contributing voluntarily of their knowledge, skill, and dedication to a joint venture. And one thing characterizes all genuine systems, whether they be mechanical like the control of a missile, biological like a tree, or social like the business enterprise: it is interdependence."
>
> (Drucker, 1959, p. 26)

The three orientations to the study of organizations that are of interest to us will be called interpersonal orientation, problem solving orientation, and systems orientation.

Interpersonal Orientation

Writers with this orientation have emphasized interpersonal or group relationships in their models or organizations. Many of them are associated with the National Training Laboratory and the Tavistock Institute. Models of organization developed by this group are generally normative. Though there is mention of problem solving in these models, there is not much elaboration of this aspect of managerial behavior. Interpersonal and group aspects, on the other hand, are discussed in great depth (Bennis, 1963).

Problem Solving Orientation

The second group views organizations, particularly managerial organizations, primarily from a problem solving and decision making viewpoint (Simon, 1960; Maier, 1963). Whereas Simon has been interested in developing general models of the problem solving process from theoretical considerations, Maier's work has been oriented towards practical considerations in areas of role playing, conference leadership training, and development and use of standard tasks to be used with problem solving groups. Problem-solving models developed by this group are primarily of the descriptive type.

System Orientation

Though work of many sociologists reflects the system orientation (e.g., Selznick, 1948; Merton, 1949; Parson, 1951), it is only recently that this viewpoint has gained acceptance in the field of organization theory. Many of the people in this group have an engineering or scientific background, and make use of computer simulation techniques (Forrester, 1961; Newell & Simon, 1961). The systems orientation differs from the first two orientations because it is not concerned with any particular aspect of the organization. Instead it views organizations as systems with multiple interacting and interdependent parts. This feature of the systems approach makes it suited for developing models where large number of factors and their inter-relations have to be considered. The author, therefore, has used this approach in building a model of the management system which incorporates both interpersonal and problem-solving aspects of managerial behavior.

A Model of the Management System--An Integrated Approach

An industrial organization is a complex network of a large number of parts constantly interacting with each other. This study is concerned with the management part of the organization, i.e., the management system. Two important aspects of managerial behavior deal with interpersonal and group relations, and with problem-solving activities. Two important considerations have guided the formulation of the present model:

1. Need to keep the model simple: Computer technology has made it possible to simulate systems of a few thousand variables. There is, however, a virtue in keeping models as simple as possible, consistent with the goals for which they are formulated. In addition, since the present model is a preliminary formulation, the author has tried to keep it simple by including only important variables.

2. Selection of variables to answer relevant questions: The criterion used for the inclusion of a variable in the model is whether the variable is important from the point of view of the questions that we like to model to answer. As Forrester says (1961, p. 60) "Questions to be answered control the content of a model, but how? Again the perception and judgment of the investigator are taxed. He must select on the basis of his knowledge of the situation, the factors that he believes are pertinent. Here skill and practice in working with the dynamic behavior of systems are important." The author, therefore, spent a considerable time in the actual locations developing a feel for the important aspects of the system. In addition, work of other behavioral scientists in relevant areas was reviewed.

The Proposed Model

The final version of the model is presented in Figure 1. The model consists of nine sectors: management values, communications, power distribution, organizational behavior, interpersonal and group skills and attitudes, management goals, technical skills, problem

solving competences, and results. General features of the model will be first discussed, and then a detailed description of each of the nine sectors will be given. Finally, there will be a discussion of the relation between the sectors of problem solving and results.

General Features of the Model

First, the model is a complete system, though it does not encompass the total organization. According to Johnson et al (1963, p. 4), "A system is an organized or complex whole; an assemblage or combination of things or parts forming a complex or unitary whole." In fact, the model of Figure 1 contains at least two subsystems. The first sub-system consists of the five sectors of management values, communications, power distribution, organization behavior, and interpersonal and group skills and attitudes. The second subsystem consists of these five sectors plus the problem solving competences sector. Each of these subsystems is a unitary whole, since each is a complete information-feedback loop.* One can test the existence of these feedback loops by starting at any sector in the loop, and tracing along the direction of arrows. Whenever a loop exists, one will return to the starting point.

The second point concerns the dotted line from the sector of interpersonal and group skills and attitudes to that of technical skills, and from problem solving competences to results. Dotted lines have been used to indicate that although there is a relationship

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*According to Forrester (1961, p. 14), an information feedback system exists whenever the environment leads to a decision that results in action which affects the environment and thereby influences future decisions.

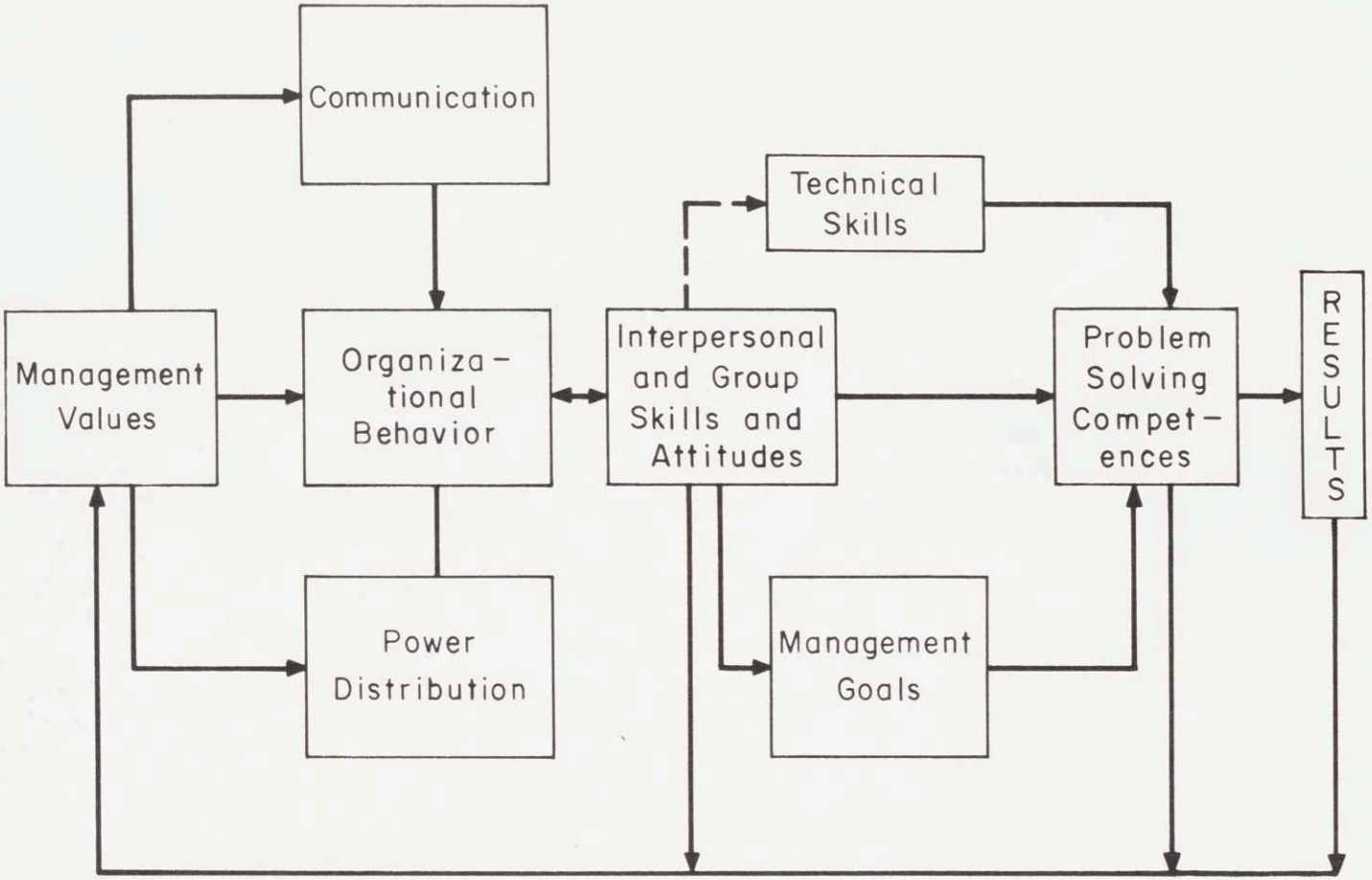

FIG. 1. Model of management system.

between the sectors connected by dotted lines, the delays are many times greater than between sectors connected by solid lines. This point will be elaborated at the end of the chapter during discussion of the relationship between problem solving competences and results.

Third is the question of the direction of arrows. The arrows have been drawn to represent the strategy of the new type of change programs, which is to first initiate changes in the interpersonal and group factors, which will be propagated to the other sectors.

Fourth is the belief that changes in management values eventually lead to changes in results, but that the causal path is not direct. Instead the changes work through the intervening sectors shown in Figure 1.

The fifth point is that the most important characteristic of a system is the interdependence between its parts, and that this is often more important than any separate component by itself (Forrester, 1961, p. 6).

We will now discuss each of the nine sectors or blocks represented in Figure 1, to show what type of variables or factors fall within these sectors. We will move from left to right in the direction of the arrows. It will be helpful for the reader to refer back occasionally to Figure 1, so as to keep the total perspective in view.

Management Values Sector

The term "values" means beliefs about what is desirable or good and what is undesirable or bad (Krech et al, 1962, p. 102). The

beliefs we call management values relate to the assumptions management holds about what is the good way to manage its human resources. These values have also been called philosophies or theories of management.

Traditional theories of management have been challenged in recent years by a number of social scientists. Out of the contributions of individuals such as Maslow (1954), Maier (1955), Argyris (1957), Herzberg (1960), and McGregor (1960) has come a new and consistent view of human motivation in industry. A comprehensive statement of both the traditional and the new view is provided by McGregor. He calls these views Theory X and Theory Y respectively. The central principle of management that characterizes Theory X is that of direction and control. Theory Y is based on the principle of integration and self control--the creation of conditions such that the members of the organization can achieve their own goals best by directing their efforts toward the success of the enterprise.

Another assumption made by the traditional viewpoint about human relations is that their effectiveness increases as behavior is increasingly rational, logical and clearly communicated, and that non-rational behavior, i.e., expression of personal attitudes, feelings and values tends to decrease effectivenss. As Argyris (1962, pp. 40-42) argues, this traditional view leads to decreased authenticity in interpersonal behavior, i.e., it increases non-authentic behavior in the organization. In similar vein, McGregor argues that the philosophy of management by direction and control, as derived from Theory X, deprives people of opportunity to satisfy their self-actualizing needs

at work and leads them to behave with indolence, passivity, unwillingness to accept responsibility, resistance to change, etc. (McGregor, 1960, p. 42).

Implied by each of these value systems is an appropriate type of communications and power relations. This is shown in the model of Figure 1 by the arrows going from the sector of management values to the sectors of communications and power distribution. We will now consider these two sectors.

Communications Sector

Almost all of the managerial activities in any on-going organization are carried out through some form of communication--written, verbal, or expressive. According to Collins (1957, p. 4), "communications render true social life practicable, for communication means organization."

There has been a considerable amount of research in the area of communications in organizations, both from the point of view of content and structure (See Rubenstein & Haberstroh, 1960, Ch. 4). Likert (1961, p. 105) views organizations as a network of overlapping work groups, each group in turn comprising a boss and his subordinates. A group with a leader or a boss can have two types of communication links--vertical and horizontal. Communication which passes through these links is called respectively, vertical or boss-subordinate; and horizontal or peer communication. There is a third type of link between members of one group and another group, called cross-functional communication.

Two aspects of communications passing through these links are the frequency or quantity, and the effectiveness. Effectiveness of communication measures the extent to which the relevant information gets transmitted accurately to the proper destination and in adequate quantity. In every communication network comprised of human beings there are a number of factors that may limit the effectiveness of communication. There is distortion and suppression of information because of human biases and attitudes of non-authenticity. Some of these attitudinal factors will be considered in the sector of interpersonal and group skills and attitudes.

Power Distribution Sector

Enmeshed and intertwined with the issues of communications are the issues of power distribution. In every vertical communication, there are power implications. In fact, communication is the mechanism by which interpersonal influence, i.e., power, is exerted (Cartwright, 1959, p. 7).

Most authors have provided their own definitions of power, Parson (1954, p. 391) defines it as "the realistic capacity of a system-unit to actualize its 'interests' (attain goals, prevent undesired interference, command respect, control possessions, etc.) within the context of system-interaction and in this sense to exert influence on processes in the system." In other words, power is a relationship involving interaction between system units such as persons or groups. A special form of this relationship is a dyadic relationship, i.e., a relationship between two persons. In the organizational context, the boss-subordinate dyad is of special interest from the point of view of power relationships.

From the systems viewpoint, the aspects of power that are of special interest deal with the issue of allocation or distribution of power. One fruitful means of distinguishing among various forms of power allocation in a boss-subordinate dyad is in terms of decision-making. There are two dimensions of decision-making power.* First is the dimension of delegation; i.e., what type of decisions are reserved for the boss to make, and what decisions are in the area of authority of the subordinate. Increase in delegation is indicated when the subordinate is given the authority to make an increasing number of decisions that were previously reserved to the boss. Second is the dimension of consultation; i.e., the way the decisions are made. An increasing degree of consultation is indicated when an increasing number of decisions by the boss are made after consultation with his subordinates.

Another approach that can be used to study the behavior of boss and subordinates during the process of decision making is to determine the degree to which the meeting was led by the boss and the subordinates.** In addition the decisions made during the meeting can be classified as autocratic and participative. A greater degree of power distribution is indicated when there is a decrease in the former type and an increase in the latter type.***

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*Refer Strauss (1963, pp. 58-59) for detailed discussion of the issue of operationalizing "power."

**Blake and Mouton (1961, pp. 28-32) use a similar approach in their work in the area of power. They call this the concept of "power spectrum."

***Strodtbeck (1951) has used a similar method for determining the relative influence of roles in an experimental situation.

Organizational Behavior Sector

As can be seen from Figure 1, organizational behavior is a result of the interaction among the sectors of management values, communications and power distribution.

Behavior in organizations takes place at three levels: individual, dyad, and group, the latter two being of the interpersonal type. Most of the activity in organizations used to be carried out on an individual basis or in two-person relationship. There is a live controversy as to the use of groups in management. At one extreme are those who find group activity a hampering and limiting form of activity. On the other side, McGregor (1960, p. 242) finds that "we cannot hope much longer to operate the complex, interdependent, collaborative enterprise which is the industrial company on the completely unrealistic premise that it consists of individual relationships." He argues that it is not the lack of need for group activity that has been the factor against the use of groups but the fact that only a few managements know how to operate effectively in groups. When more managements learn this, it will provide the stimulus necessary to accelerate the transition to group activity.

Interpersonal and Group Skills and Attitudes Sector

It is through repeated practice (behavior) and feedback that one acquires skills and develops attitudes. In other words, skills and attitudes result from behavior. Also skills and attitudes are inferred from behavior, attitudes feedback to reinforce beliefs and values, and values in turn affect behavior. Thus there is a circular

relationship between behavior, skills and attitudes, and values, as shown in the model of Figure 1.

Some of the important interpersonal and group skills and attitudes that influence problem solving activities in an organization are:*

1. Understanding
2. Mutual trust
3. Listening ability
4. Openness. Three components are: a) freedom to express ideas, b) leveling or freedom to express feelings, and c) freedom to express disagreements (this is a result of respect for individual differences as against pressures for conformity).
5. Concern for maintenance as well as task activities; i.e., balance between emotional and rational behavior.
6. Conflict resolution ability; i.e., working through conflicts vs. suppression or avoidance of conflicts.
7. Experimental attitude.

Some of these factors can be classified as attitudes, others as skills. The former category includes factors 2, 4, 5, 6, and 7; the latter includes factors 1 and 3. Understanding, listening ability and openness could also be seen as belonging to the communications sector. All are results of communications. Listening ability is also a skill and openness an attitude, so that these two

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*Some of the writers who have discussed one or more of these factors in their work are: Read (1962); Deutsch (1962); Lippitt and Seashore (1962); Dover (1958); McGregor (1961), and Bennis (1962b).

can belong to either of the two sectors. Understanding is considered by many as a communications variable, for it reflects the accuracy of communication.*

Inclusion of these variables in this sector is thus arbitrary to some extent. The reason for doing so is to identify important interpersonal and group factors which have a bearing on problem solving competence, and place them all in this sector, which is closely related to the sector of problem solving competence.

The dotted line in Figure 1 from the interpersonal and group skills and attitudes sector to the technical skills sector indicates long delay between these sectors. In the long run, there is a direct relationship between these two sectors, but this may not necessarily be true in the short run.

Technical Skills Sector

No organization can handle a problem which exceeds its technical competence. In other words technical competence sets the upper limit to what the organization can do.

Technical competence includes intellectual knowledge as well as manual skills. Some examples of intellectual knowledge are an engineer's knowledge about properties of metals or circuit design, a mathematician's knowledge of calculus, a manager's knowledge of company policies, customers or products, etc.

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*For example Read (1962, p. 6) measured accuracy of communication by ascertaining how much knowledge or understanding the boss had of the concerns of his subordinate.

Management Goals Sector

The solid line from the sector of interpersonal and group skills and attitudes to the management goals sector indicates a direct relationship between these two sectors.

Two important aspects of management goals have a direct effect on problem solving competence. First is the extent to which these goals are clear to the group members, thus providing effective guidance for managerial behavior. Second is the nature of these goals; i.e., whether the goals are suboptimal or optimal. When suboptimal goals take priority over the optimal ones, there are important long run dysfunctional consequences for the overall organization. For healthy functioning of an organization, overall business goals (optimal type) should have priority over functional or departmental goals (suboptimal type).

The sectors of technical skills, interpersonal and group skills and attitudes and management goals are the three inputs to (or determinants of) problem solving competence. In the model of Figure 1, this relationship is indicated by the solid arrows from the three sectors to the sector of problem solving competences.

Problem Solving Competences Sector

Rapidly changing technology and growth in complexity of our industrial society is changing our concepts about the nature and functions of organizations. It is no longer adequate to perceive organizations as analogous to machines as Max Weber did, nor is it reasonable to view them only in terms of the social-psychological

characteristics of the individuals involved at work. Instead, organizations must be viewed as adaptive, problem-solving structures operating and embedded in complicated and rapidly changing environments (Bennis, 1962b, p. 275).

Much of a manager's work is in solving problems: organizing the activities of his unit, planning for anticipated or unanticipated circumstances, choosing his own managerial strategies, and a wide range of other decision-making activities. There are skills involved in diagnosing problems, acquiring and interpreting relevant data, assessing and testing alternative solutions, and getting feedback concerning the effectiveness of both the solution and the process used in arriving at it (McGregor, 1960, p. 216).

Problem solving includes activities of which decision making is an integral part, and the importance of decision making for managerial jobs is well recognized. As Simon (1960, p. 1) points out, "What part does decision making play in managing? I shall find it convenient to take mild liberties with the English language by using 'decision making' as though it were synonymous with 'managing.'" The process of decision making, according to Simon, comprises three principal phases: finding occasions for making a decision, finding possible courses of action, and choosing among alternatives.

Problem solving or decision making can be looked at from two viewpoints: process and output. The process viewpoint as exemplified by Simon is concerned with the analysis of various steps which an individual or an organization goes through in solving its problems.

The output viewpoint is interested in the analysis of the end products of these processes, i.e., the various aspects of the decisions made.

Viewing organizations as adaptive structures leads to a shift in emphasis from output to process, a shift away from end products to procedural rules and norms by which the organization approaches its task. In the last decade, a number of social scientists have been working in the area of process analysis, and have developed category systems for analyzing processes.* We shall discuss this in detail in Chapter V. Our interest in this section is to isolate some criterion variables in the area of problem solving.

The first point one notices in this regard is that the ability of an organization to adapt to its changing goals has been variously defined by different authors. For example, Kahn et al (1956, p. 4) call it "organizational flexibility," Bennis (1962b, p. 277) gives it the name of "adaptability," which he defines as "active mastery of the environment," and Zaleznick (1963, p. 7) refers to it as "proactive" or "innovative" ability, which he defines as a type of executive function that actively seeks out environmental possibilities.

The three definitions mean essentially the same thing, but "adaptability," as defined by Bennis, is a more comprehensive variable than "proactive" or "innovative" ability, and "flexibility."

"Adaptability" refers to the overall competence of an organization to adapt to its environment. It is, therefore, synonymous with problem solving competence. Broad variables of this type are of

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*Significant work in this area has been done by Bales (1951), Simon (1960) and Marquis et al.(1951).

great help in conceptualizing a phenomenon, but from the operational standpoint it is the limited variables which are more useful. In order to build definitions for these limited variables, various activities that go on during the problem solving process will now be discussed.

Problem Solving Process

The process of problem solving has been conceived differently by different authors.* For our purposes we shall divide the process into four phases: reality-testing, ideation and analysis, deciding and choosing, and final acceptance and implementations. As shown in Figure 2, the process of problem solving or decision making has been traditionally conceived of in three phases, resulting in an output of the decisions. The fourth phase deals with the doing or process of action. Since this fourth phase has been generally neglected,** it is necessary to emphasize that it is integrally related to the preceding three phases. Each of the four phases will be discussed from the standpoint of its input, its process and definition of some key abilities, and its output.

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*See Woodson (1964) for an excellent summary of how the problem solving process has been divided into various phases and activities by Arnold, Von Fange, Osborn, Taylor and Gordon. Recent work in the area of problem solving includes Newell et al. (1958), Simon (1960), Gagne and Brown (1961), Simon and Simon (1962). The author is specially indebted to Marquis whose model of problem solving process (Marquis, 1962) provided the initial spark for his interest in problem solving.

**See Simon (1960) for a discussion of how theory of administration has with two notable exceptions of Barnard and Stone neglected doing or processes of action as compared to deciding or processes of decision.

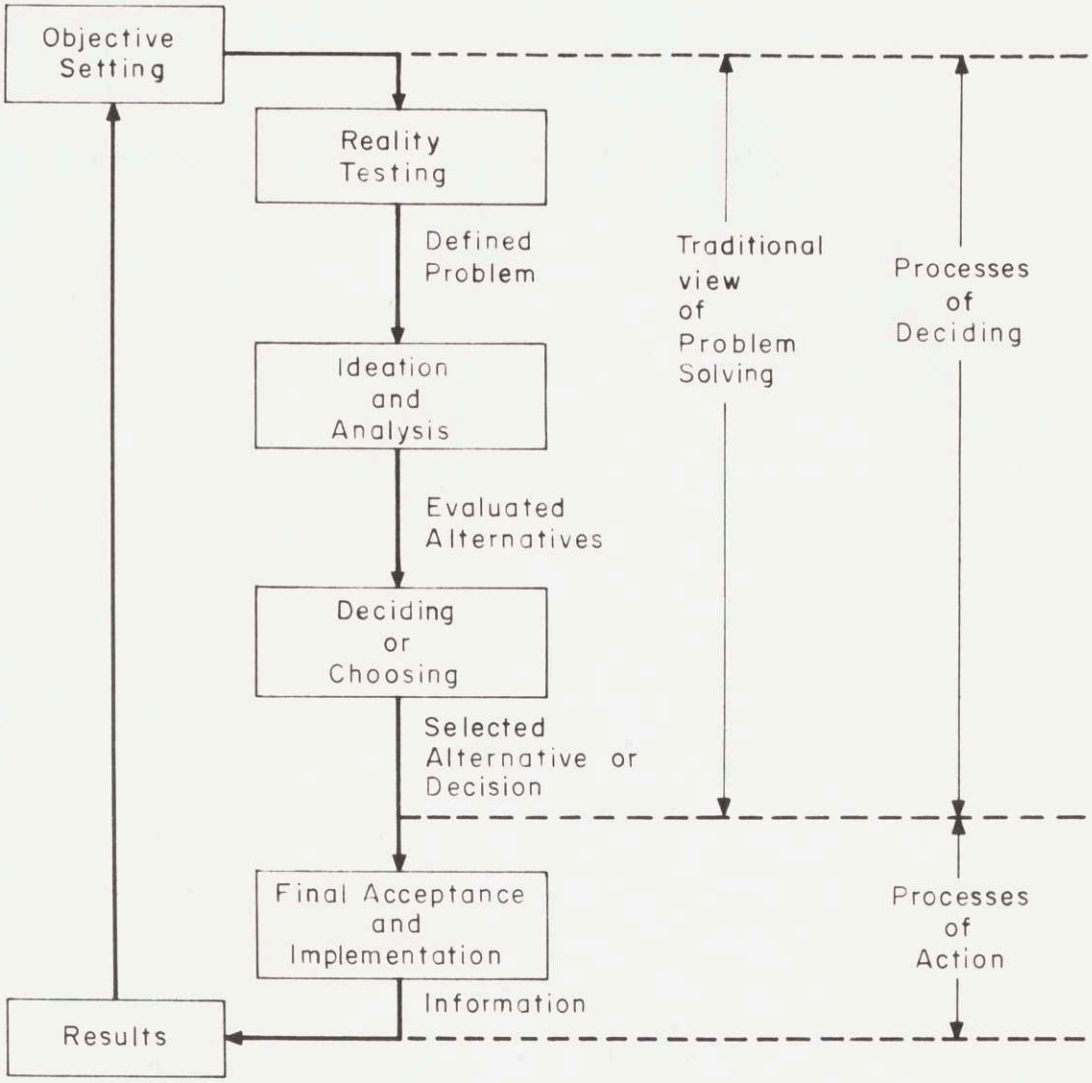

FIG. 2. Problem solving process.

Phase 1: Reality Testing: The inputs to this phase are the goals of the organization, the major goal being to actively master its changing environment. The first thing the organization needs is to determine real properties of the field in which it exists; i.e., the organization needs sufficiently sensitive and accurate sensing mechanisms to define the problem it faces and take realistic assessment of its internal resources. In other words, it should have the capacity for adequate search behavior (March and Simon, 1958, p. 50). The ability to perceive the situation realistically in good time will be called reality-testing ability. In the context of a managerial group, it involves not only gathering of suitable information but also willingness to share it openly so that it becomes the property of the group. It is in this context that issues of interpersonal trust and openness become important. The output of this phase is the defined problem which is the input to Phase 2 (Figure 2).

Phase 2: Ideation and Analysis. Ideation is the phase that consists of generating alternatives (Woodson, 1964, p. 62). Analysis is the evaluation of them in terms of the pros and cons. Innovative or creative ability is measured in terms of quantity and quality of ideas or alternatives suggested. In the context of managerial groups, both the technical skills of its member and the approach adopted by the group influence the creative ability of the group. The approaches of groups can be classified in two categories. The first is where they get locked into a win - lose situation, in which every idea is followed by immediate evaluation (usually criticism). The second approach may be called a problem solving mode, in which the ideas are

followed by other ideas or by development of pros and cons. It is only after a sufficient number of pros and cons have been considered that an evaluation is made. The output of this phase is evaluated alternatives which is also the input to Phase 3.

Phase 3: Deciding or Choosing is the phase in which the decision is made. From the process standpoint, there are two important aspects of this phase:

1. The first is concerned with what is normally referred to as decisiveness. This is the ability to make decisions in good time. In the context of managerial decision making groups, decisiveness often depends upon the quality of leadership and the perceived urgency. Lack of decisiveness results in a situation where the group finds itself spending its time in defining and redefining the situation and never coming to grips with it.
2. The second aspect is concerned with the procedures for making the decision. Blake identifies nine such procedures, resulting in nine types of decisions (Blake, 1961, p. 60). The following five types form a continuum along the dimension of degree of agreement:
   (i) Single type. These are self-authorized decisions, in which the boss makes the decision and subordinates neither agree nor object but remain silent.
   (ii) Hand clasp type. Support of one member insures success of the proposal.
   (iii) Clique or sub-group type. Minority support of decision.

(iv) Majority-minority vote. Formal vote is taken, decision is made if at least one more than half support it.

(v) Consensus type. Decision is made only after true agreement by all is reached.

The consensus type of decision needs further elaboration. Agreement by all does not imply that there were no differing views and opinions; instead it means that a chance was provided for minority views to be expressed and explored to a sufficient extent such that there was general agreement that the decision was best under the circumstances, though there might have remained an honest difference of opinion on the part of some members. The process of consensual decisions insures full participation of technical competences, and also elicits commitment on the part of all towards implementation of decision. The output of this stage is the decision.

Phase 4: Final Acceptance and Implementation. The input to this phase is the decision (Figure 2).

The phase of action during which the organization mobilizes its resources and implements the decisions, has often been neglected in administrative theory, yet in many ways this is the crucial phase. It is in this phase that the mettle of the organization is tested. It is relatively easy to generate solutions, develop blueprints, and even intellectually agree to them.* It is far more difficult to translate decisions into actions, yet what good are decisions which are never implemented? Action calls for execution skills and these

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*Miller et al. (1960, pp. 10-11) discuss the issue of the theoretical vaccuum between cognition and action, and point out that "something is needed to bridge the gap from knowledge to action."

are rare indeed. There are many aspects of these skills, the most important being the eliciting of commitment of those who will be involved in executing the decisions. The word "commitment" rather than "acceptance" has been used because the former indicates active acceptance as against passive acceptance. In order to elicit commitment an executive must be aware of what motivates people.

How does one ascertain whether commitment has been obtained? One way is to see whether the decisions were of the consensus type. This is, however, an indirect way. Another method is to ask people who will be involved in implementation how much they are committed to it. This can be done soon after the decisions are made. The final way is to wait and observe the degree to which the decisions were implemented. In the case of important decisions this may involve waiting a few years, and even as long as twenty years in the case of key decisions (Forrester, 1961, p. 8).

Summary

The discussion of the problem solving process has identified a few abilities: reality testing ability, innovative or creative ability, decisiveness, and ability to elicit commitment which is an essential part of execution skill. Another important skill is flexibility, which is the capacity of an individual or an organization to change with changing internal and external circumstances. In the context of a managerial group, it means that neither the group nor

its members get locked into rigid patterns, but can change its pattern as the situation demands. Members take on different roles rather than the same role in all situations. There is some evidence that flexibility is related to creative ability.* The adaptive ability is an overall ability of an organization and comprises all the above abilities.

Problem Solving from Output Viewpoint (Decisions Made)

The direct products of problem solving processes are decisions. Until recently the study of decisions has been from the point of view of their quality or degree of excellence. From this viewpoint, decisions can be divided into categories along different dimensions; e.g., obvious vs. creative; or domination vs. compromise vs. integration (Metcalf and Urwick, 1940, pp. 30-49). Decisions can be classified into these categories either by an independent judge against a set of criteria or by asking the participants to rate the quality of the decision.

As discussed before, the part which has been neglected is the acceptance of the decision or the way the persons feel about it. In his recent book, Maier (1963, pp. 3-5) suggests an approach to analyzing decisions that considers both of these dimensions, i.e., quality as well as acceptance. For reasons explained earlier, the second factor will be called "commitment" rather than acceptance. A decision's potential effectiveness can thus be written as:

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*Taylor (1964, p. 179), discussing factors contributing to creativity, observes "the divergent production factors, including fluencies and flexibilities seem to be the most important."

$$E.D = Q \times C$$

where E.D = Effectiveness of the decision

Q = Quality of the decision

C = Commitment to its implementation.

Summary

Problem solving has been discussed from two viewpoints: the process viewpoint and the output viewpoint. The process was divided into four phases for each of which there is a key ability or abilities. The issue of flexibility was briefly discussed and it was indicated that adaptive ability is an overall ability comprising at least five abilities: reality-testing ability, innovative ability, commitment-eliciting ability, and flexibility. Problem solving was then discussed from the output viewpoint, and it was shown that effectiveness of a decision is a product of its quality and the commitment elicited for its implementation. All sectors of the model of Figure 1 have been discussed except the last sector of results, which will be considered now.

Results Sector

In this sector are variables which have been traditionally used as criteria for measuring organizational effectiveness. These include measures of performance that appear on the balance sheet, as well as measures of satisfaction which have been emphasized in the studies by the human relations school, and which are used in a limited way by many organizations. Performance measures which are commonly used are those of productivity, profit ratios, return on investment,

market share, etc. Satisfaction factors are employee morale, employee turnover, etc.

Performance measures, either singly or in multiple form, are employed by organizations* and by the public (investors, etc.) in judging and appraising the effectiveness of a business organization. As a result modern organizations have developed elaborate mechanisms for computing and reporting these indices periodically.

Relation Between the Sector of Results and Other Sectors

In the model of Figure 1, there was shown a dotted line leading from the sector of problem-solving competences to the sector of results. This indicates a long delay between the two sectors and a direct relationship between them only in the long run sense. In the short run, the relationship may not be necessarily true. As Forrester (1961, p. 8) indicates, "Now we find that key decisions relate to research in frontier products...The span from primary decisions to full consequences has risen to twenty years or more." In any case, for most of the important decisions it takes anywhere from two to three years from the time the problem is identified to its final implementation.

Results, especially the performance measures, are affected by many other factors such as the nature of the market, competition, and the state of the economy. Inclusion of these additional factors in the model is not considered advisable because it would complicate

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*For example Sloan (1963, p. 208) emphasizes the overriding importance of a single criterion of return on investment. Many companies use multiple criteria or a weighted average of many criteria as a measure of performance.

the current model too much. Our knowledge of the dynamic relationships between those parts of the business system that have been included in the model of Figure 1 is still scanty, so there is a need first to understand these dynamics before venturing into other areas.

Summary

A model of the management system has been developed, and important characteristics of the nine sectors of the model discussed. It will be shown in the next chapter how this model can be used to represent the process of planned change. It will then be shown how the change program in the company being studied can be conceptualized in terms of the model. Objectives of the study will be reformulated, and a few specific hypotheses will be stated for empirical testing.

CHAPTER IV

PLANNED CHANGE IN A MANAGEMENT SYSTEM: STATEMENT OF HYPOTHESES

"The best way to learn how a system works is to try to change it." -- Kurt Lewin

It was pointed out in previous chapters that the organizations of today face the challenging tasks of adjusting to a rapidly changing environment. In other words, the question is no longer whether or not to change, but how to change. The issue is one of the drifting process* vs. planned change. The growth of the helping professions, the increasing number of change programs, the shift from short-run to long-run forecasting and planning,** during the last decade or two, all point to the growing importance of planned change as contrasted with the drifting process or automatic adjustment.

Planned Change in a Management System

Bennis et al. (1962a, p. 11) define planned change as "a deliberate and collaborative process involving a change agent and client system.

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*Writing about this process, Gilbreth (1960, p. 245) says "In the past, progress in management has been made largely by the 'drifting process.' This drifting process is the slowest process."

**See for example the growth of the activities of organizations like 'Tempo.' According to Nations Business (1964, p. 23), Tempo's mission is to foresee world economic, social, technical, political and military conditions 5 to 15 years hence. ••• It has conducted more than 500 studies for such clients as U.S. Defense Department, the National Aeronautics and Space Administration, Rand Corporation, General Motors, and various universities, as well as its parent organization, the General Electric Company.

These systems are brought together to solve a problem, or more generally to plan and attain an improved state of functioning in the client system by utilizing and applying valid knowledge."

The process of planned change in a management system can now be represented as in Figure 3. The client system in Figure 3 is the management system whose sectors are shown in detail in Figure 1 of Chapter III.

Since the model of Figure 1 is a closed loop system consisting of interdependent sectors, a change initiated in one or more of the sectors will be eventually propagated throughout the system, thus setting up the dynamics of the system. Which sector or sectors will be used for initiating change depends upon the strategy of the change agent. One of the strategies of change is to begin changes in the management values sector by modification or addition to the present values. Another startegy can be the reverse of this; i.e., to start changes in the sectors of skills (technical or problem-solving) with the hope that this will lead to attitude and interpersonal skill changes, which in turn will lead to changes in communications, power distribution and values (e.g., Odiorne, 1963, p. 18). A third strategy is to start changes in communication and power distribution, which will then get propagated throughout the system (e.g., Lawrence, 1958). Finally, there can be many combinations of these strategies. It would be interesting and useful to study the effects of these different strategies in terms of their final outcome. This is, however, beyond the scope of the present study which is being carried on within the context of a single strategy.

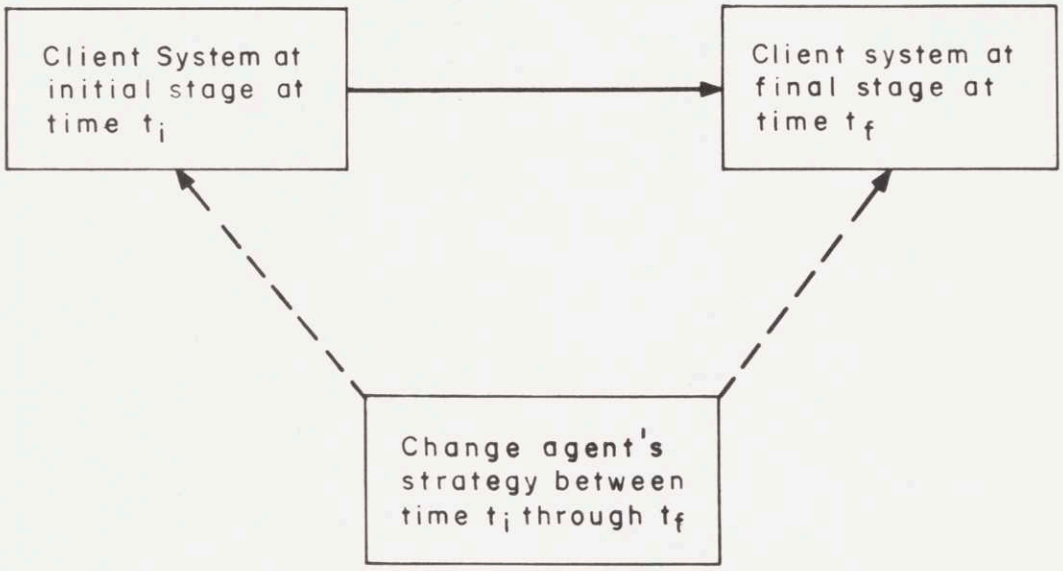

FIG. 3. Planned change.

An Empirical Test of the Model

The model of Figure 1 is a general model that can be used to represent a number of different strategies of change, and thus to provide a theoretical framework for the study of change programs. In order to explore the validity of the model, it will be used to describe a specific change program.

Planned Change Program in a Company

Chapter II describes the details of a particular change program. The data for the empirical testing of the model were collected from one division of the company that had completed the first two phases of the program and was in the third phase. The portion of the model of Figure 1 that is relevant for describing this situation is reproduced in Figure 4. Comparison of Figure 4 and Figure 1 shows that the difference is that the model of Figure 4 does not contain the sector of results shown in Figure 1. The reason for excluding the sector of results is that at the time of this study the program at the division being studied was only six months old and thus less than half way through the third phase. Only after another three or four months will it be entering the implementation phase. From then on, it takes about 2-3 years before the consequences are reflected in the results measured. It will now be shown how the change program in Chapter II can be conceptualized in terms of the model of Figure 4.

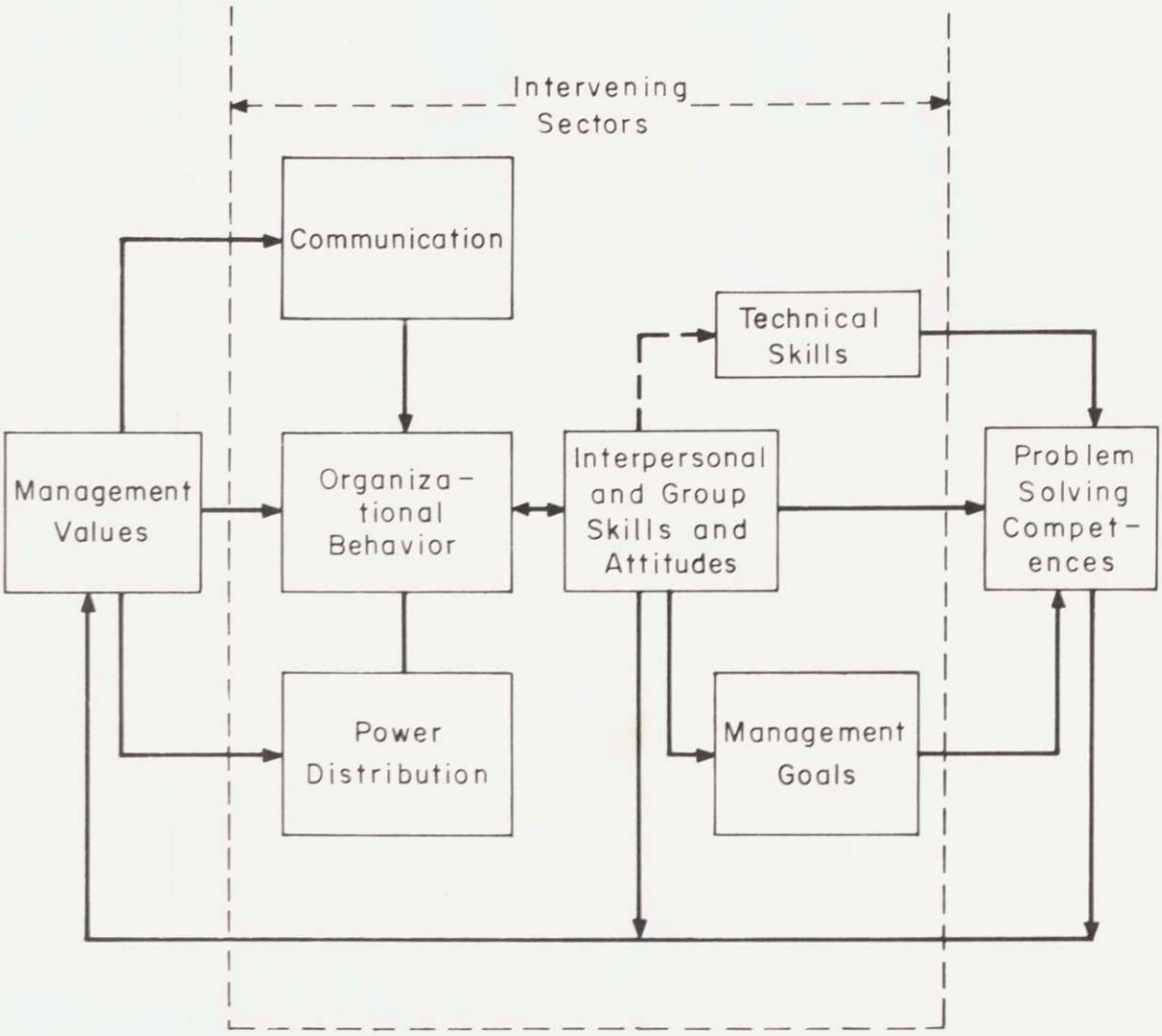

FIG. 4. Model of the company change-program.

Description of the Change Program in terms of the Model of Figure 4

The arrival of the change agent results in a new influence on the management values sector of the model. During the time prior to the 4-day meeting, this new influence is interacting with the existing value system in unfreezing the old values. Changes in values start taking place at the 4-day meeting, and these in turn change communications as well as power distribution by way of trying new behaviors. Resultant changes in interpersonal and group skills and attitudes feedback to reinforce new values. This cycle is repeated many times at the 4-day meetings, and after the managers return to the division these changes have an effect on the problem solving activities in the organization. It will probably take 4-8 weeks after the 4-day meetings for these changes to get consolidated and for the system to stabilize at a new level.

Reformulation of the Objectives of the Study

It is now necessary to reformulate the purpose of the study, as outlined in Chapter I, in terms of the model of Figure 4; that is, to understand the dynamics of a management system during change, or to validate empirically the dynamics of the model of Figure 4. The assumptions underlying this model are:

1. It contains the necessary and sufficient number of sectors.
2. The sectors are interrelated so as to form a closed loop feedback system.
3. The system tends to remain relatively stable; i.e., the inherent tendency of the system is to return to stable operations.

There are many implications that flow from the above set of assumptions. First, the stability* implies that the changes in the system can be induced only by major disturbances or external pressures. Some of these major disturbances can be the introduction of an outsider into the system, i.e., a change agent or a consultant, or the movement into a position of power of an internal group with a different value system from the prevailing one. In the case of the change program being studied it is an outside change agent.

Second, the interdependency means that a change introduced into any sector of the model is propagated throughout the system in the direction shown by the arrows in Figure 4. For example, if the change initiated in the system is a change of management values from more of Theory X to more of Theory Y, it will lead to more effective communications and increased equalization of power, and to attempts at new behavior patterns in interpersonal and group skills and attitudes. These improvements in skills and attitudes will feedback to support the new values, thus completing one cycle. Another cycle will result from the fact that improvement in interpersonal and group skills and attitudes will help in the better utilization of technical skills, thus resulting in increased problem solving competence, the assumption being that people put forth their best efforts only when they are motivated to do so. Improvement in interpersonal skills helps the manager in caring about the other managers, and in being skillful in providing proper motivation for them. Another reason is that attitudes of openness, mutual trust and understanding help to create an atmosphere in which people can freely express their technical ideas.

*The stability referred to is in a dynamic sense and not a static one.

As can be seen in Figure 4, the success experienced as a result of this improvement in problem solving competences feeds back to support the new values, thus completing the second cycle. In fact, there are many more circular relations than the two major ones which have been traced. These cycles are repeated many times until the system attains a new dynamic but stable level of operation consistent with the new set of values. In the interim period, when the changes are operating, some of the sectors may be moving in a direction opposite to the one discussed above. In other words, soon after the initial changes are started there may be a worsening of the situation before the improvement starts.* Another aspect worth stressing is that it requires both effort and careful handling of the situation until a new stable level of operations is achieved. In fact, it is the amount and quality of this effort that determines how far the changes will be propagated in the system, i.e., whether they will stop at the first cycle or complete the second also.

Statement of Specific Hypotheses

At this point a few specific hypotheses predicting direction of change in each sector of the model will be stated so that these hypotheses can be confronted with the data gathered from the change program.

Hypothesis 1. Problem solving competences of the management system will increase.

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*See for example Coch and French (1958, p. 241). In their figure on page 241 notice the dip in production after the change was introduced. Notice, however, that after a while production picks up.

Hypothesis 2. Management values will change toward those of Theory Y.

Hypothesis 3. Communications in the system will improve.

Hypothesis 4. Power distribution in the system will become increasingly equalized.

Hypothesis 5. Interpersonal and group skills and attitudes will improve.

Hypothesis 6. Management goals will increase in clarity and there will be relatively higher priority for overall business objectives as compared to functional goals.

Summary

This chapter has explained how the process of planned change and the company change program can be conceptualized in terms of the model of Figure 4 (or figure 1). Objectives of the present study were then reformulated, and a number of specifc hypotheses were deduced from the model. The variables involved in these hypotheses were also defined.

In the following chapter, some issues of research design and methods used for operationalizing the variables and collecting the data will be discussed.

CHAPTER V

RESEARCH DESIGN AND METHODS

The study of change programs from the systems viewpoint is relatively new. The theories and models of the type studied here have been only partially tested. In particular, the relationship between interpersonal and group factors and problem solving competences remains to this day untested at the organizational level. It was therefore necessary to develop new methods. The main focus of the present study has been on using some existing research methods, modifying others, and developing many new ways of measuring the effects of change programs.

The data for testing the hypotheses were gathered from the field situation, i.e., an ongoing company program, rather than from controlled experiments in the laboratory.* Field work in formal organizations presents a number of dilemmas or issues concerning research design and methods (Scott, 1963; Katz, 1953). Some of these issues which relate to the present study will be discussed in the subsequent pages. They are:

1. Development of measurement instruments

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*See for example work in problem solving by Maier (1963) or work in role development by Moment (1963). Some of the areas covered by these studies overlap with areas examined in the present study. However, both studies used an experimental approach in a laboratory setting.

2. Selection and description of the organization to be studied
3. Problem of entry
4. Selection of the levels of analysis
5. Sampling problems
6. Data collection procedures
7. Issues in operationalizing of variables
8. Measurement of variables

Development of Measurement Instruments

It must be emphasized that the instruments were being developed and refined throughout the period of the study. As a result, in many cases the final form was ready only in the later phases of the study, and a simpler version was used in the earlier phases. Two overriding considerations have guided the development of the instruments: (1) that the instruments be as simple as possible so that they would be easy to handle in the field and would not consume too much of the time of the managers; and (2) that they be meaningful to the managers concerned. The instruments developed and used in the present study are discussed below.

The Interview Schedule

The most important consideration in the development of this schedule was that the questions should be developed in the language of the organization, so that these questions would be familiar and

meaningful to the executives involved.* Initial questions were developed after the author had spent some time with the executives at one of the divisions of the company. During the pretesting phase, the schedule was tested at another division. As a result, some questions were refined and redefined. The final version of the schedule is reproduced in Appendix II.

One aspect of the interview schedule that requires special mention is the use of a percentage scale. This scale has been used for two reasons: First, business people are generally used to thinking in terms of percentages; secondly, it provides a continuous quantitative score.

Questionnaire

The following questionnaire was used in this study after the departmental meetings:

Post-Meeting Reaction Questionnaire.** The questionnaire reproduced in Appendix II was used after a regular managerial meeting called staff meeting. A slightly modified questionnaire was used

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*In developing questions, the author found the discussion of this issue in Payne (1951) very illuminating and helpful.

**In the development of this questionnaire, the author is specially indebted to D. G. Marquis and W. J. Reddin who helped him with their ideas and criticisms.

after the task meeting in which the group worked on a standard task. The questionnaires were filled out individually by the members of the group after the meeting was over.

No outside observer can ever monitor and understand everything that goes on in a meeting. It is therefore necessary to find out from the members their views about the meeting. Three most important aspects measured by this questionnaire are the quality of decisions made, commitment of the member to implement these decisions, and his satisfaction. Percentage scales have been used wherever possible.

The questionnaire in Appendix II is for participants to complete. For the leader (chairman or the boss) the questionnaire used was identical except for the omission of page 1a.

Behavior Patterns and the Category System

The actual behavior of managers, rather than subjective reports like questionnaires and interviews, was recorded by scoring their interactions in their meetings. This is important both because of the nature of this study and the belief that a large and important part of the behavior takes place in these meetings.

Bales developed a category system called Interaction Process Twelve Category Set (Bales, 1951, p. 9). This set has six categories in both task and socio-emotional areas. Since our interest was in decision making and problem solving, all socio-emotional categories were combined into one category, thus resulting in seven categories. Pre-testing showed that this was not satisfactory, and that some

important data were being missed. It was, therefore, found more useful to separate goal directed search behavior (Cyert et al., 1956) and the behavior connected with the organization of the group (Guetzkow and Simon, 1955) from behavior connected with solving a specific problem. This resulted in the development of an 11 category system: one of interpersonal maintenance, two dealing with goal setting and organization, and eight dealing with working on a problem. This system was used for data collection during the before situation.

The reliability of this coding was determined by correlating the scores recorded by two independent observers for the same meeting. The obtained value of 0.74 indicates that the scores have sufficiently high reliability for the purpose of this study. Marquis et al. (1951, p. 51) using a similar category system, reported an inter-observer correlation of 0.72. Other research had indicated that problem-solving coding can be done as reliably from direct observation as from a typewritten transcript of the meeting.

The eleven categories were later expaned to fifteen. The final meeting observation form and a description of each of the fifteen categories is given in Appendix III.

During the research reported in this study, the behavior at both regular meetings (staff meetings) and task meetings (where groups worked on standard tasks) were scored by the same observer, thus improving further the reliability of measurement.

Standard Tasks

In laboratory experiments on groups, standard problems have been used in a number of studies. Most of these have been of a puzzle or maze type to which there is a unique solution.* The nature of organizational problems is, however, quite different. They are generally complex problems and do not permit a unique solution. There has been a trend in recent years to construct problems that are meaningful from an organizational standpoint. One approach has been to simulate a total organization in the laboratory.** Another approach consists of simulating management problems*** in a computerized game, or simulating a relatively small company for a top management group.**** But these require computers and are not suitable for use in a field experiment. Maier (1952) has used role-playing and other tasks in human relations; these tasks do not use computers and are thus promising from the viewpoint of their use in field experiments.

For the present longitudinal study, the choice of an organizational task requires the development of at least two such tasks which are comparable along various parameters. We do not even know fully what

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*See for example, Rubenstein and Haberstroh (1960, p. 261) or Bavelas (1956-57).

**Representative of this approach is the large-scale experiment approach used by Rand. See for details Chapman and Kennedy (1955).

***See Massy et al. (1961, p. 43) for a summary of different types of games.

****See Churchman and Ratoosh (1961) for one such simulation approach.

these critical parameters are. An attempt was made, however, and a set of parallel forms was developed and is reproduced in Appendix IV.*

Ranking Tasks: The main features of these tasks are:

(i) Each consists of ten items which are to be ranked. This is simple and provides comparability insofar as both forms have the same number of items, and are of the same degree of complexity and difficulty.

(ii) Each contains five statements relating to the Theory X type of managing, and five relating to Theory Y.

(iii) The nature of the strategy used in arriving at the final solution, i.e., how far a group is able to descern that there is a bipolar grouping of the items, provides a measure of the quality of the decision.

(iv) The content analysis of the solution provides quantitative measure of management values.

Items for the two forms were derived from two sources. Most of the items were taken from the Personal Opinion Questionnaire (Shein, 1963). A few items were constructed by paraphrasing statements of Theory X and Theory Y (McGregor, 1960). Face validity of the items was checked by asking judges (faculty and students) who are familiar with the concepts of Theory X and Theory Y to separate ten items into Y and X items. This separation was perfectly achieved in all cases. A test of the equivalence of the difficulty of Forms I and IA using

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*Task No. 1 was developed by Fred I. Steele and Task No. IA by the author. The author is indebted to W. G. Bennis who provided constant encouragement in this regard and suggested the idea of a ranking type of task.

21 students and managers showed no significant difference. The details of this test will be reported in the discussion of quality of decision on page 57. Form I was administered to groups in the before situation and Form IA in the after and after-after situation. The groups were departmental groups. Each individual was asked to record his ranking before group discussion started. The time limit for discussion was set at 60 minutes. Form I was also filled out by individual managers in both before and after situations, and content analysis provided a score for management values for each manager.

Selection and Description of the Organization to be Studied

At the time the study was begun there was only one division which was starting the program. Other divisions were well advanced into the third phase.

The program concentrates on the top three levels of management. There are six groups involved: the top management group, and five functional departmental groups. The total number of managers and specialists at the several levels is about 28: 1 at the top level, 5 at the next level, and 22 at the third level.

Problem of Entry

The most important problem here is establishing a personal relationship of trust and mutual confidence with each manager, and each group. This is time-consuming but absolutely essential for insuring the quality of the data. The presence of the change agent at the division, as well as full cooperation by the chief executive in initial stages, was found to be very helpful.

Selection of the Levels of Analysis

Four levels of analysis were used: individual, interpersonal, group, and organization. Interviews provided data from all levels. Group observations provided data from the first three levels. Groups used were of the permanent type, i.e., top management group and functional groups.

Sampling

Sixteen managers were selected for interviews. There was a total sample from the top two levels, and at the third level at least two managers were interviewed from each of four functions of marketing, engineering, manufacturing and finance. The selection was made at random out of those who were planning to participate in the activities of the program especially the four-day meeting. Two managers interviewed, however, could not go to the 4-day meeting, but they participated in all other activities of the program. In the case of groups, the plan was to observe five groups: top management, and four functional groups of marketing, engineering, manufacturing, and finance.* However, the finance group did not hold their meetings on a regular basis, so only four groups were studied.

Data Collection Procedures

Each interview took about one hour. In many cases another 30 to 45 minutes were spent explaining the purpose of the study, and asking managers for their help in providing objective data. In every case, complete and full anonymity of raw data was promised.

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*The personnel section had only two people in it, and so was not selected.

For group data a regular meeting was observed. They varied in length from 15 minutes to 4 hours. Usually at the end, the group was given the standard task. Behavior in both types of meetings was recorded on the meeting observation form by the author.

Issues in Operationalizing of Variables

The main issues in operationalizing the variables were:

(1) Single vs. multiple measurements. Multiple measurements were used wherever possible.

(2) Subjective vs. objective measures. Subjective measures are those in which a person reports his subjective opinion about the phenomenon. These are self-report measures such as interviews and questionnaires. Objective measures, on the other hand, are those in which either an observer is used or where output of self-reporting is such that it can be judged by an independent observer or measured against objective criteria.

Wherever possible both types of measures were used.* In some cases, however, subjective measures were the only feasible ones, e.g., for purely attitudinal variables of trust, openness, etc.

(3) Importance of behavioral measures. A person may report what he thinks the researcher wants to hear or he may indeed be unaware of how he actually behaves. Since our interest

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*This is because purely subjective measures are not regarded by many as very valid. See Odiorne's criticism (1963) of subjective measures.

in the study is in changes, it was desirable to use behavioral measures wherever we could. A special emphasis was placed on the use of behavioral measures, i.e., objective measures, in the case of variables in the problem solving area. For this purpose standard tasks and direct observation methods were used.

Measurement of Variables

Each sector of the model contains one or more variables. The actual measurements used for each of the variables will now be outlined. All subjective measures were direct responses on various questions of the interview schedule reproduced in Appendix II. Objective measures were derived from data on meeting observations or analysis of the ranking tasks.

Problem Solving Competences Sector (Objective Measures)

These measures were derived from the observation of both staff and task meetings.

Role Flexibility Index

The categories were combined to yield seven roles, one combining the categories of maintenance and summarizing, one of organization and goals, three of problem solving, one of asking for suggestions and evaluation, and a final one of asking for development. The index was derived as follows:

$$\text{Role flexibility index} = \frac{\text{Total number of roles taken}}{\text{Number of members} \times 7} \times 100.$$

A score of 100 means that every member assumed all the seven roles.

Ideation Ability Index.

This index for a group was measured by the number of solution suggestions generated per problem.

$$\text{Ideation Ability Index} = \frac{\text{Number of suggestions}}{\text{Number of problems}}$$

Time to Reach Decision.

This variable was measured objectively by observation of the group while working on the standard task. It is the total time taken from the point the discussion starts to the point when the final decision is made.

Quality of Decision.

The ranking task used for group decision consists of five items that belong to one category, and another five items that belong to the other. Thus, there is possible a bipolar grouping of the items. Strategies used in reaching a group decision may be classified into three categories: compromise, partial analytic and full analytic. In the case of compromise, the decision is arrived at simply by pooling the individual ranks. When the group explicitly recognizes the bipolar patterning in arriving at the decision, the strategy will be called full analytic. The partial analytic strategy is one in which the group recognizes that there is some patterning of items but the exact bipolar patterning is not recognized. If an assumption is made that the optimal strategy to solve the ranking problem is the one that explicitly recognizes the bipolar patterning, the three strategies may be ordered from compromise to partial analytic to full analytic.

Quality of the decision was measured by observing the process by which groups arrived at their solution. The strategy or procedure used by the group was coded by the observer into the three categories of compromise, partial analytic and full analytic.

Two alternate forms of the ranking test were used in the group decisions; Form I in the before situation and Form IA in the after and after-after situations. An equivalence test for the difficulty of the two forms showed no significant difference. Ten graduate students in industrial management took the two forms separated by a day or two, and eleven managers from the company completed both forms in the after situation; Form I being completed at the time of the interview and Form IA before the group task meetings one or two days later. The solutions were analyzed to determine the degree of bipolar grouping of items. No significant difference was found between students and managers. Out of a total of 21 subjects, six achieved full analytic solution on Form I and five on Form IA. Eleven subjects misplaced one item on Form I, and 13 on Form IA. Combining full analytic and one item misplaced solutions. There were 17 on Form I and 18 on Form IA, showing no significant difference between the two forms.

Problem Solving Competences Sector (Subjective Measures)

Adaptability

Interview items used to measure this variable were:

VC.1b: If there is any change in the external environment (competitive pressures, sliding prices, new demands), what can you say about the speed with which your department will adjust to it?

0% - very slowly
100% - very quickly

VC.2b: Same question except that "your section" was substituted for "your department."

Flexibility

IVC.1a: How would you rate the climate in your boss's staff group?

0% - completely inflexible
100% - completely flexible

IVC.1b: How would you rate the climate in your staff group?

Ideation Ability

VB.1a: How many alternatives get expressed and considered when you are working on a problem in your boss's meeting?

0% - very few
100% - quite enough

VB.1b: How many alternatives get expressed and considered when you are working on a problem in your meeting?

Commitment for Decision Implementation

IVA.3: Given a decision about which there were differing opinions at the time the decision was made. What is the chance that such a decision will be implemented?

0% - those who differed try to sabotage or just don't care about it
100% - all pitch in

a.) your boss's staff group

b.) your staff group

Reported Decision Quality

This was measured by the response on question number 8 of Post-Meeting Reaction Questionnaire of Appendix II. The question is:

Q.No. 8: Considering the merits of the decision objectively, how would you rate it?

0% - no good
100% - excellent

Commitment elicited

This was measured by question S1.b of the Post Meeting Reaction Questionnaire:

S1.b: How committed do you feel to be guided by this decision in your future managerial behavior?

0% - No commitment at all
100% - fully committed

Management Values Sector

Management Values

These are the assumptions management holds about its human resources and are measured in terms of a continuous percentage scale obtained as follows:

Content analysis of ranking task: The ranking task No. 1 has five items relating to Theory Y and five to Theory X. If a person or a group ranks all Theory Y items in the first five choices, the scale score is 100%; if he ranks all Theory X items in the first five choices, the scale score is 0%. The scale score is calculated as follows:

$$\text{Management value index} = 100 \times \frac{(\text{Sum of the ranks of X Items} - 15)}{25}$$

Communications Sector (Objective Measure)

Two-way Communication Index

This is a measure of the extent to which subordinates are participating in a meeting relative to their superior. An index score of 0% means no participation by subordinates; a score of 100% means total participation by subordinates. The index is calculated as follows:

$$\text{Two-way communication index} = 100 \times \frac{\text{Acts by Subordinates}}{\text{Total Acts}}$$

Communications Sector (Subjective Measures)

Frequency of Upward Communication

The measure used was question ID.1 of the interview schedule in Appendix II.

ID.1: How would you rate the frequency of communication between you and your boss?

0% - very inadequate
100% - very adequate

Frequency of Downward Communications

ID.2: How would you rate the frequency of communication between you and your subordinates?

Frequency of Horizontal Communication

ID.3: How would you rate the frequency of communication between you and your peer group?

Effectiveness of Upward Communications

IB.2: How effective is the communication between you and your boss?

0% - completely ineffective
100% - completely effective

Effectiveness of Downward Communications

IB.3: How effective is the communication between you and your subordinates?

Effectiveness of Horizontal Communication

IB.1: How effective is the communication within your peer group?

One-way vs. Two-way Communication

Two questions used were:

IC.1: How would you describe communication in your boss's meetings with his staff?

0% - He passes on information, we listen (one-way)
100% - Each of us participates as much as our boss does (two-way)

IC.2: How would you describe communication in your meeting with your staff?

Power Distribution Sector (Objective Measures)

These measures were derived from the observed behavior of managers in their regular (i.e., staff) meetings.

Leadership Acts Ratio

This is a measure of the extent to which subordinates perform leadership acts falling in the categories of goals, organization, and asking for suggestion and evaluation. A ratio score of 1 means total equalization of power, whereas a score of zero indicates total centralization. The index is calculated as follows:

$$\text{Leadership Acts Ratio} = \frac{\text{Leadership acts by an average subordinate}}{\text{Leadership acts by the boss}}$$

Decision Index

This is the percentage of decisions which are reached jointly. Joint decisions are those where at least one subordinate agrees explicitly to the decision. All decisions fall into this category except those that are made by the boss alone. The index is:

$$\text{Decision Index} = \frac{\text{Joint decisions}}{\text{Total decisions}} \times 100$$

A score of 0% is complete centralization of power, and a score of 100% is complete equalization.

Power Distribution Sector (Subjective Measures)

Delegation of Decision Making Power

The measure used was question IIA.2 of the interview schedule (Appendix II).

> IIA.2: According to the defined responsibility of your position, there are a certain number of decisions that fall within your area of responsibility, and which you can and

should be making. Of these total decisions, what percentages does your boss let you make?

0% - none at all
100% - all of these

Checking with Boss

IIC.2: On an average how many times do you have to check with your boss before you make a decision?

0% - very seldom
100% - very often

Style of Leadership

IID.2: In your view, how do you ensure that your subordinates carry out your decisions?

0% - because I am a boss (reward, punishment, loyalty)
100% - I try to consult my subordinates before I make the decision so that they feel committed.

Method of Decision Making (Consultation)

Four questions used are:

IIB.1d: Please image yourself in the boss's staff meeting, what would you say about the following?

0% - boss makes all decisions
100% - all decisions are mutually (jointly) arrived at

IIIC.2a: How are the conflicts handled in your boss's staff meetings?

0% - boss makes the decision all the time
100% - we all mutually work it out all the time

IIB.2b: Please imagine yourself in your staff meeting, what would you say about the following?

0% - I make all the decisions
100% - all decisions are mutually arrived at

IIIC.2b: How are the conflicts handled in your staff meetings?

0% - I make all the decisions
100% - we all mutually work it out

Interpersonal and Group Skills and Attitudes Sector

(Objective Measure)

Concern for Maintenance

The measure is derived from the data on observation of meetings in the following way:

$$\text{Concern for maintenance index} = \frac{\text{(Maintenance and summarizing acts)}}{\text{Total acts}} \times 100$$

Interpersonal and Group Skills and Attitudes Sector

(Subjective Measure)

Upward Understanding

Two questions used were:

IVB.1a: To what extent can you read accurately your boss?

0% - not at all
100% - perfectly

IVB.2a: To what extent are you aware of the true feelings and opinions of your boss about the various issues that arise during your business transactions with him?

0% - not aware at all
100% - completely aware

Downward Understanding

Two questions used were IVB.1b and IVB.2b. Both of these were similar to the above questions except for the substitution of "your subordinates" for "your boss."

Horizontal Understanding

Two questions were IVC.1c and IVC.2c, which were similar to the questions above except that "your boss" was replaced by "your peers."

Understanding Among Departments

VD.2a: How would you describe understanding of various departments towards each other?

0% - none at all
100% - complete

Mutual Trust Among Departments

VD.2b: How would you describe the feeling of trust of various departments towards each other?

Openness of a Subordinate toward his Boss

IIB.1b: Please imagine yourself in your boss's staff meeting, what would you say about the following?

0% - I don't feel free to express opinions
100% - I feel completely free

IIIB.2a: How free do you feel to express disagreements with your boss?

0% - none at all
100% - completely free

Openness of a Group of Subordinates toward their Superiors

IIB.1c: Please imagine yourself in boss's staff meeting, what would you say about the following?

0% - We (sub.) don't feel free to express our opinions
100% - We feel completely free

IIIC.1a: How frequently are disagreements expressed in your boss's staff meetings?

0% - not at all
100% - very frequently

Openness Among Peers

.IIIB.2b: How free do you feel to express disagreements with your peers?

0% - not free at all
100% - completely free

Listening Ability

IIB.1a: Please imagine yourself in boss's staff meeting, what would you say about the following?

0% - boss does not care to listen at all
100% - he is a perfect listener

IIB.2a: Please imagine yourself in your staff meeting.

0% - I don't listen at all
100% - I am a perfect listener

Conflict Resolution Ability

IIIC.3: Of the total number of conflicts what percentage is not handled at all (shoved under the rug)?

a.) In your boss's staff meeting

b.) In your staff meeting

Experimental Attitude

IVA.2: What is the chance of trying out any reasonable (50% chance of success) idea?

0% - no chance at all
100% - will be definitely tried out

Management Goals Sector

Clarity of Group Goals

IVB.3a: How clear is your boss's staff group about the goals it is striving for?

0% - completely unclear
100% - completely clear

IVB.3b: How clear is your staff group about the goals it is striving for?

Whole Business vs. Sectional View (Priority of Goals)

VD.1a: To what extent are various activities coordinated in your department?

0% - people have functional or sectional view
100% - people have whole business or company view

VD.1b: To what extent are various activities coordinated in your section?

Summary

Issues and topics of research design and methods were discussed in this chapter. In particular, instruments used to collect data, and measurements of specific variables were described in detail.

In the next chapter, analysis of data and results will be presented and discussed.

CHAPTER VI

RESULTS

This chapter presents the analysis of the longitudinal (before-after) study conducted at one division of a large industrial corporation.

Schedule of Observations

The program started at the division when the change agent arrived. The top management 4-day meeting (abbreviated at T-4 da in Figures 5-20) was held after three months, and the managers' 4-day meeting (abbreviated as M-4 da) after another five months. Most of the data were collected from the division at two different points in time. The first point was about two months before the managers' 4-day meeting and the second about five weeks after the managers' 4-day meeting. The first set of data will be called before data, and the second set after data. Of the three departments in which meetings were observed initially, one had held only one department meeting after the managers' 4-day meeting. This department was therefore still in the process of consolidating changes. A third visit was, therefore, made to the division about four months after the managers' 4-day meeting to collect data from this department. This third set of data will be called after-after data.

Interview Data

Data using the interview schedule (Appendix II) were collected in both before and after situations from 16 individuals: 6 from the

top management group (T), 2 managers each from departments I and II, and 3 managers each from departments III and IV. Tables 2, 7, 10, 12 and 13, and Figures 6, 8, 13, 16, 18, 19 and 20 report the analysis of interview data. Each table presents the analysis of variables belonging to a single sector of the model. The figures in the table are means for each group and for all five groups.

Management Values Data

Eighteen managers from three departments (I, II and III) completed the value ranking task No. I (Appendix IV) in both before and after situations. Four managers from department I also completed the value ranking task I in the after-after situation. The analysis of these rankings yields the management value scores which are reported in Table 5 and Figure 11.

Staff Meeting Data

Observation of managers in top management staff meeting and in three department staff meetings was carried out in both before and after situations and coded into the Meeting Observation Forms. Acts falling into various categories were tallied and summarized in Meeting Analysis Forms,* of which there were two for each management group. The data from the analysis forms were further analyzed to derive various indices shown in Tables 1, 3, 6, 8, 9 and 11. The changes from the before to the after situation are plotted in Figures 5, 7, 12, 14, 15 and 17.

Task Meeting Data

Task meetings were those in which the group worked the ranking task. The interactions were coded into the Meeting Observation Form

*A specimen of this form is reproduced in Appendix I.

by the observer who also recorded the strategy used in arriving at the final decision. Data were collected from three department groups (I, II and III) in before and after situations. Data were also collected from department I in the after-after situation. The analysis of these data is plotted in Figures 9 and 10. In addition Post Meeting Reaction Questionnaire (Appendix II) was administered to group members only in after and after-after situations. The analysis for group I is reported in Table 4.

Findings

Six hypotheses stated in Chapter IV predicted the direction of changes in the six sectors of problem solving competences, management values, communications, power distribution, interpersonal and group skills and attitudes, and management goals. The changes in these six sectors as a result of the company change program will now be described.

Problem Solving Competences

Changes in problem solving competences from the before to after situation were measured both objectively and subjectively by analysis of staff meeting, task meeting, and interview data. The results are reported in Tables 1-3 and Figures 6-10. Staff meeting data were obtained in four groups: top management group (abbreviated T in tables and figures), and three departments (shown as I, II, and III in tables and figures). Task meeting data were obtained from three departments.(I, II and III). In the case of department I, data were also gathered in the after-after situation. Table 4 presents analysis

of the Post Meeting Reaction Questionnaire for department I.

Role Flexibility

Table 1 shows how the role flexibility index was derived from staff meeting observation data. The change from the before to after situation is shown in Figure 5. Three groups (I, II and III) show an increase in role flexibility of their members from before to after situation, whereas group I shows no change. The general trend in the system is that managers are assuming an increasing number of roles in staff meetings.

The interview data show a corresponding increase in flexibility of managers. Figure 6 shows that managers from four groups (T, I, II and III) report a considerable increase in flexibility, whereas managers from group IV report a very slight increase. Table 2 indicates that for all five groups (N=19), the mean per cent increase reported is 10.6, which is significant at less than the 0.001 level applying a one-tail sign test. Thus the subjective measure (Figure 6 supports the objective measure (Figure 5) that there is an increase in flexibility in problem solving.

Two points need special mention here. First is the fact that group IV (Figure 6) reports very little change. In fact, the reported change is zero if the boss is taken out of this group. Second is that whereas changes in behavior or performance (Figure 5) for three departments (T, II and III) are generally in the same direction as the reported or perceived changes (Figure 6), there is an inconsistency in the case of department I. Managers in this department reported an

Table 1

Change in Problem Solving Competence Measured by Per Cent of Seven Types of Role Acts Performed by the Average Member. (Analysis of Staff Meeting Data)

Management group		Top	I	II	III	Average
1. Number in group	Before	5	5	7	7	
	After	5	5	4	7	
2. Total number of role acts performed	Before	27	28	31	23	
	After	30	28	26	35	
3. Role flexibility index $\frac{(2)}{(1)} \times \frac{100}{7}$	Before	77.0	80.0	63.2	47.0	66.8
	After	85.5	80.0	92.7	71.4	82.2
	Change	+8.5	0	+29.5	+24.4	+15.4

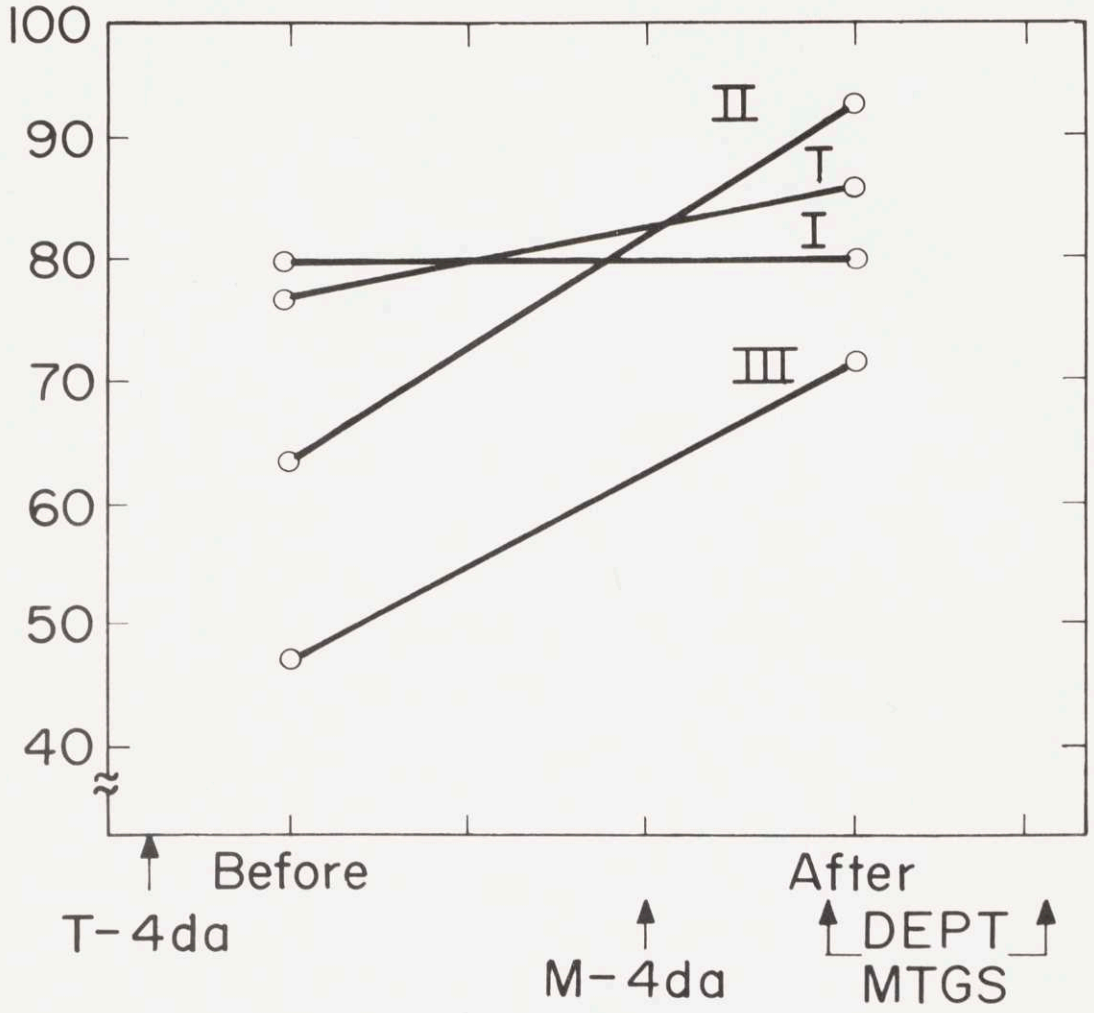

FIG. 5. Change in problem solving competence measured by per cent of seven types of role acts performed by the average member in a top management meeting and in three department staff meetings.

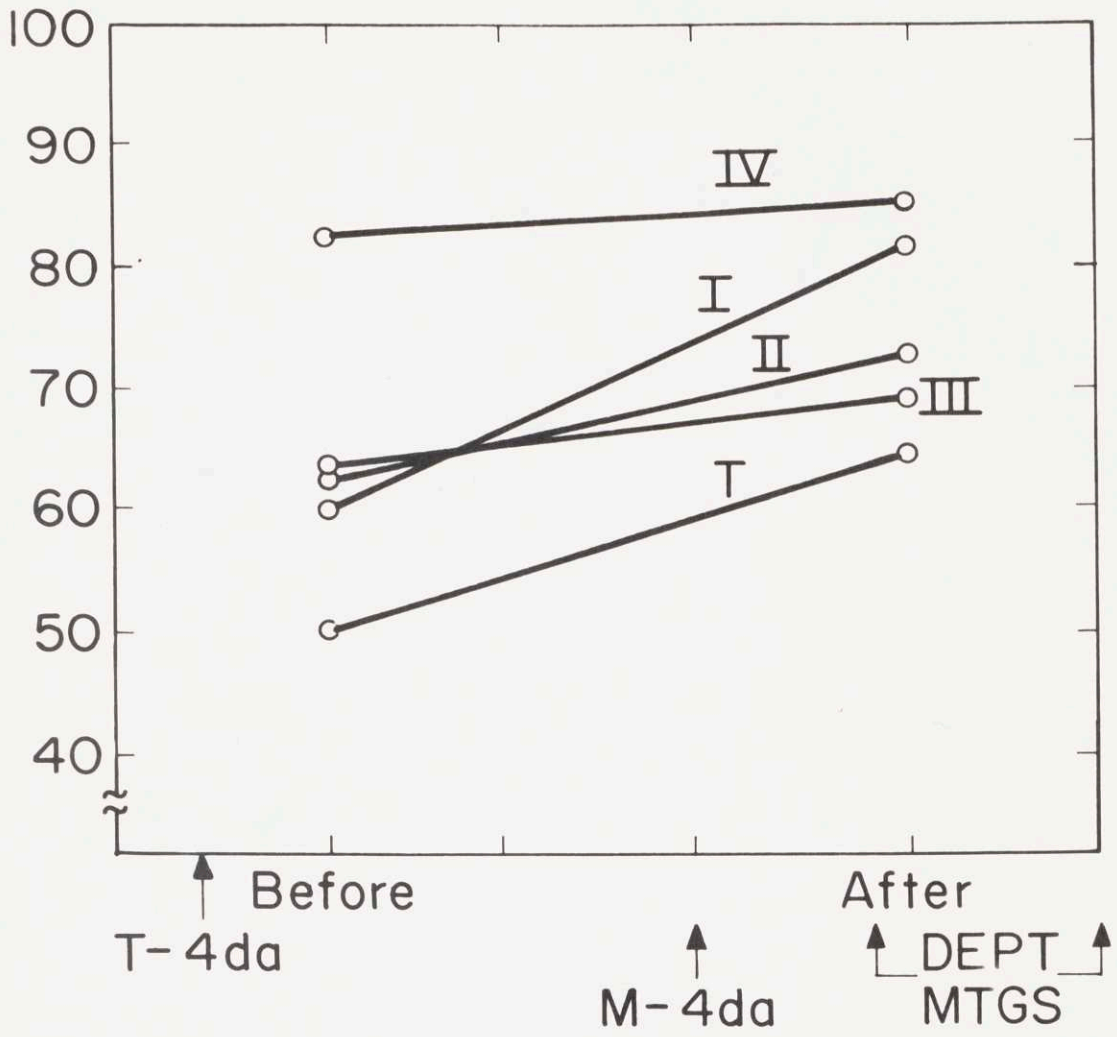

FIGURE 6. Change in problem solving competence measured by reported per cent flexibility of members in top management meetings and in staff meetings of four departments (Interview items IVC.1a and IVC.1b).

Table 2

Reported Per Cent Changes in Problem Solving Competences (Analysis of Interview Data; Department Manager is Included in His Group as well as in Top Management Group).

Management group		Top	I	II	III	IV	Average	p**
Number in group		6	3	3	4	4	20	
Adaptability	Before	45.0	66.7	50.0	50.0	65.0	54.0	
(VC.1b & VC.2b)	After	57.1	75.0	55.0	57.5	70.0	62.6	
	Change	+12.1	+8.3	+5.0	+7.5	+5.0	+8.6	< 0.001
Flexibility	Before	50.0	60.0	62.5	63.7	82.5	62.5	
(IVC.1a & IVC.1b)	After	64.2	81.7	72.5*	68.7	85.0	73.1*	
	Change	+14.2	+21.7	+10.0	+5.0	+2.5	+10.6	< 0.001
Ideation ability	Before	68.3	73.3	66.7	80.0	70.0	71.5	
(VB.1a & VB.1b)	After	76.6	85.0	73.3	88.7	70.0	78.5	
	Change	+8.3	+11.7	+6.6	+8.7	0	+7.0	0.001
Commitment for	Before	60.8	78.3	73.3	73.7	78.8	71.5	
decision imple-	After	75.8	85.0	78.3	80.0	81.3	79.5	
mentation	Change	+15.0	+6.7	+5.0	+6.3	+2.5	+8.0	< 0.001
(IVA.3a & IVA.3b)								

* One person did not answer.
** One-tail sign test.

increase (Figure 6) but there is no change in their behavior as observed in their staff meetings (Figure 5). These two points are highlighted here because they occur very consistently in the other variables. We will return to this issue in the discussion of results.

Ideation Ability

The ability to generate a number of suggestions or alternatives on a given problem in staff meetings is shown in Table 3. The changes in this objective measure from before to after are shown in Figure 7. There is an increase in this ability in the case of three groups (T, II and III), while group I shows a decrease.

Ideation ability was also subjectively measured in the interview data. Figure 8 shows an increase in four groups (T, I, II and III), but no increase in group IV. The average reported increase in all five groups was 7.0 per cent (Table 2) and is significant at the 0.001 level using a one-tail sign test. The interview data thus support the observed change in staff meetings.

Time to Reach Decision

This was measured in the task meetings in which groups worked on the value ranking task, and is the time from the start of the discussion to the final decision. Figure 9 shows that groups II and III were very close to the 60-minute limit in the before situation. It was obvious to the observer that they did not budget their time at all, and that the decision was made in a great hurry at the end. Both these groups decreased their time in the after situation. Group I changed very little from the before to after situations but showed an increase in the after-after situation.

Table 3

Change in Problem Solving Competence Measured by The Total Number of Solution Suggestions Per Problem (Analysis of Staff Meeting Data)

Management group		Top	I	II	III	Average
Number of problems	Before	31	7	16	2	
	After	17	18	7	2	
Number of suggestions	Before	66	45	12	16	
	After	43	51	15	28	
Ideation ability ($\frac{\text{sugg.}}{\text{prob.}}$)	Before	2.1	6.4	0.7	8.0	4.3
	After	2.5	2.8	2.1	14.0	5.3
	Change	+0.4	-3.6	+1.4	+6.0	+1.0

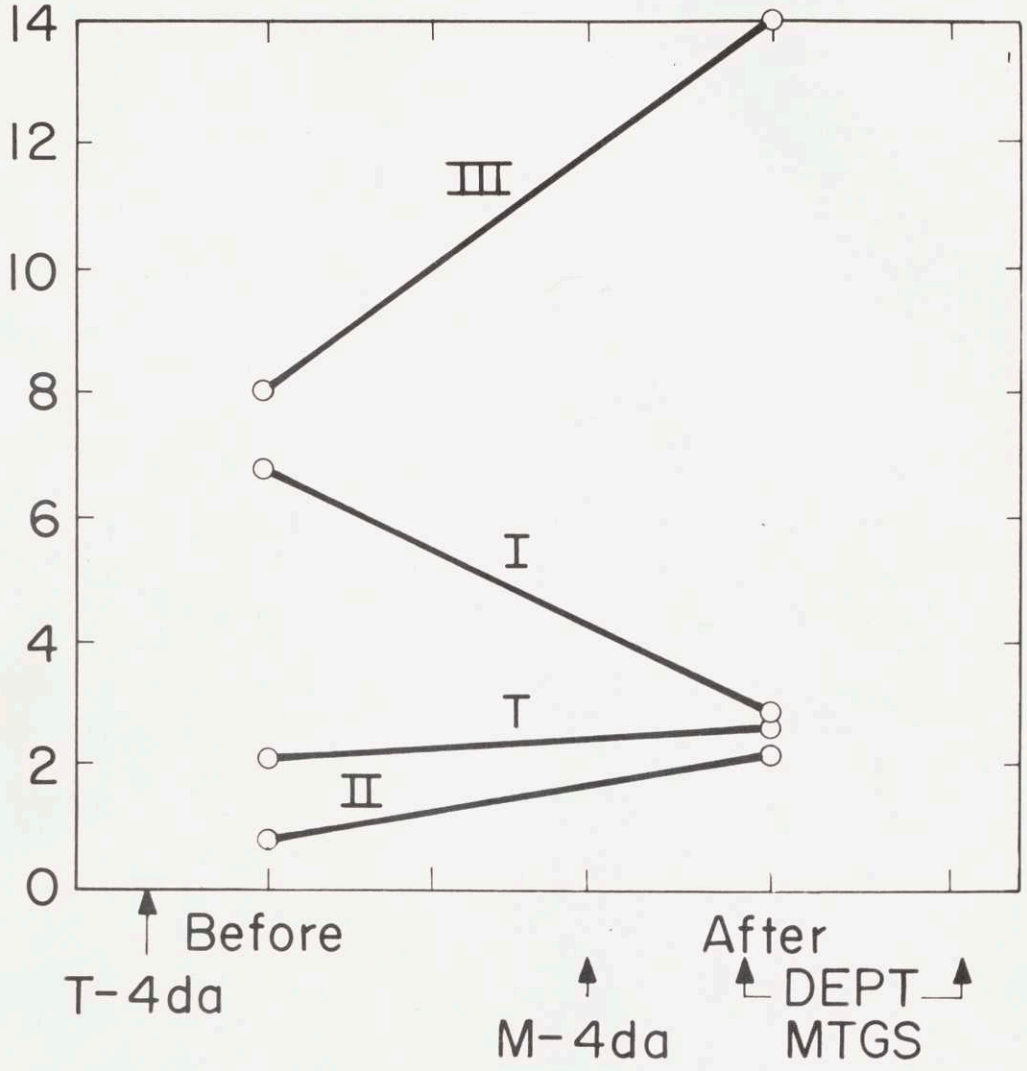

FIGURE 7. Change in problem solving competence measured by the total number of solution suggestions per problem in a top management meeting and in three department staff meetings.

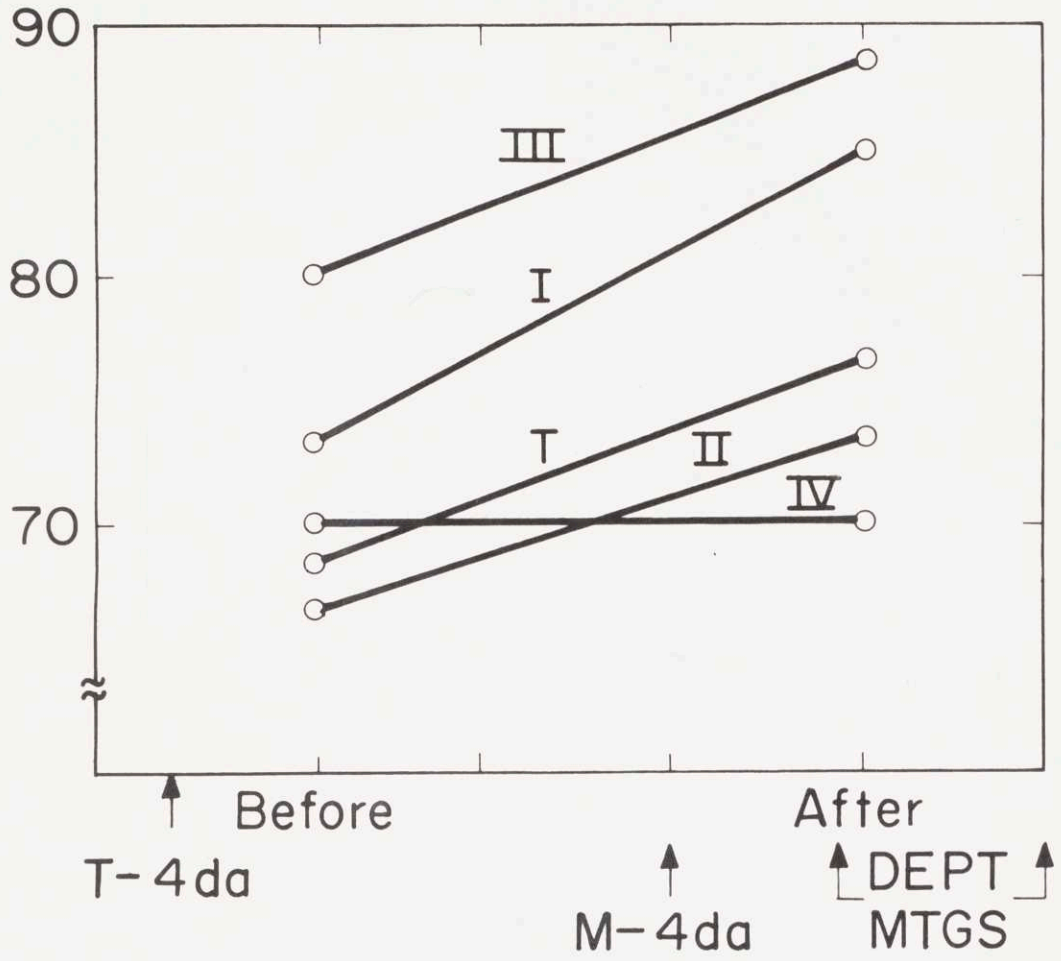

FIGURE 8. Change in problem solving competence measured by the reported adequacy of expressing and considering alternatives on a problem in top management meetings and in staff meetings of four departments (Interview items VB.1a and VB.1b).

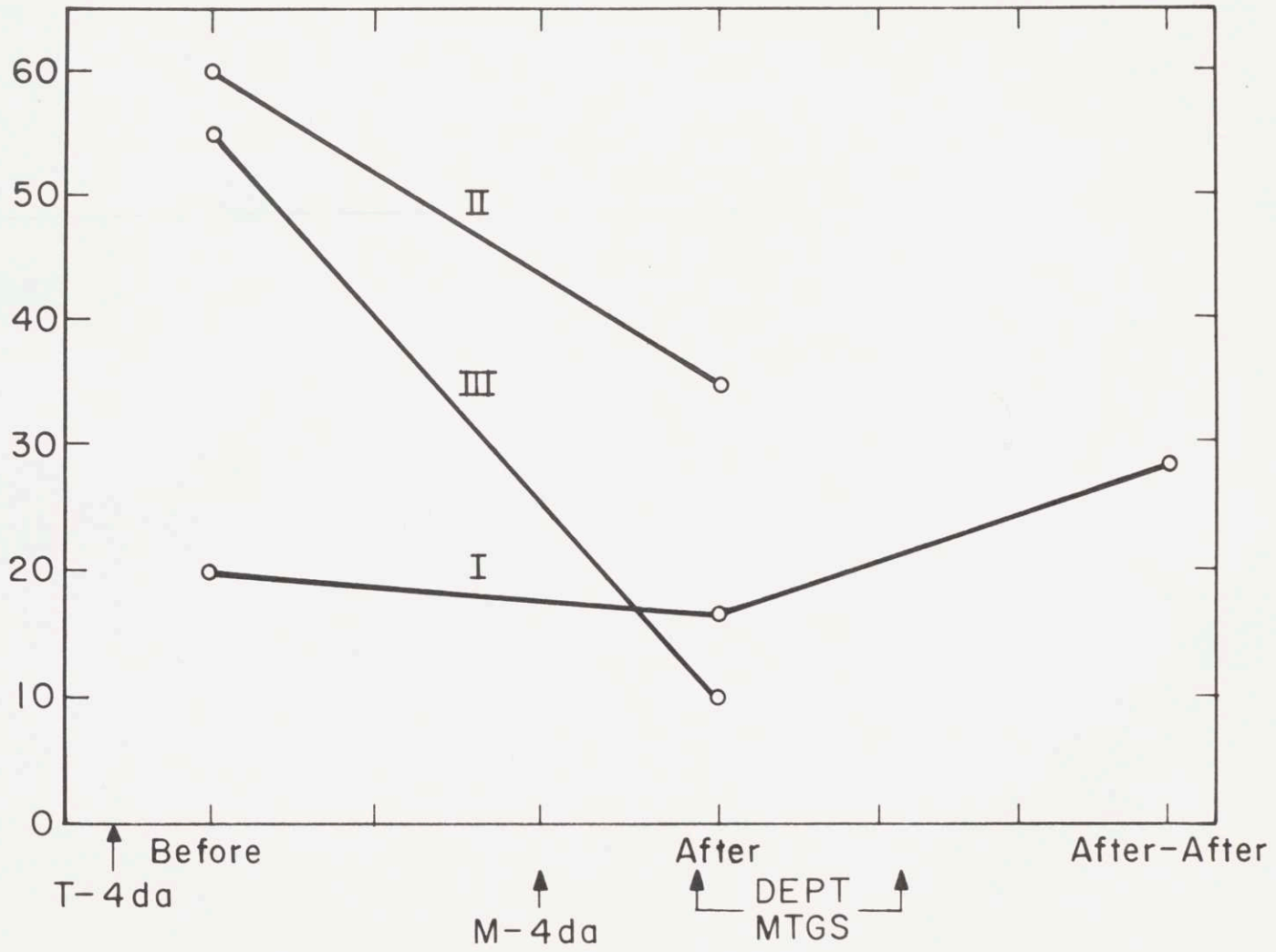

FIGURE 9. Change in time (minutes) to reach decision on the value ranking task in three department task meetings.

Quality of Decision

This was measured by classifying the strategies used by the group in reaching a decision on the ranking tasks into three categories of compromise, partial analytic, and full analytic. Groups I and III did not change from the before to after situation (Figure 10), but group I showed a marked increase in the after-after situation. Group II increased from compromise to partial analytic. Thus two out of three groups show improvement in their strategy of decision-making, and the third shows no change.

Quality of Decision and Time to Reach Decision

Comparison of Figures 9 and 10 shows an interesting relation between time to reach decision and quality of decision. Group III which showed the greatest decrease in time showed no change in decision strategy; group II which showed a moderate decrease in time showed moderage improvement in strategy; group I which showed an increase in time showed the greatest change in strategy. There seems to be a trade-off between time and quality. There is an optimal time for best quality solutions on a given task. In the case of the ranking task, this seems to be in the range of 20 to 30 minutes.

Post Meeting Reaction Questionnaire

This questionnaire was administered only to group I after the ranking task meeting in both after and after-after situations. The analysis of two items dealing with the variables of Reported Decision Quality and Commitment Elicited is given in Table 4. A third variable--Effectiveness of Decision--was calculated as a product of the above two variables. Reference to Figure 10 shows that group I increased its quality of decision as measured by decision strategy, thus providing

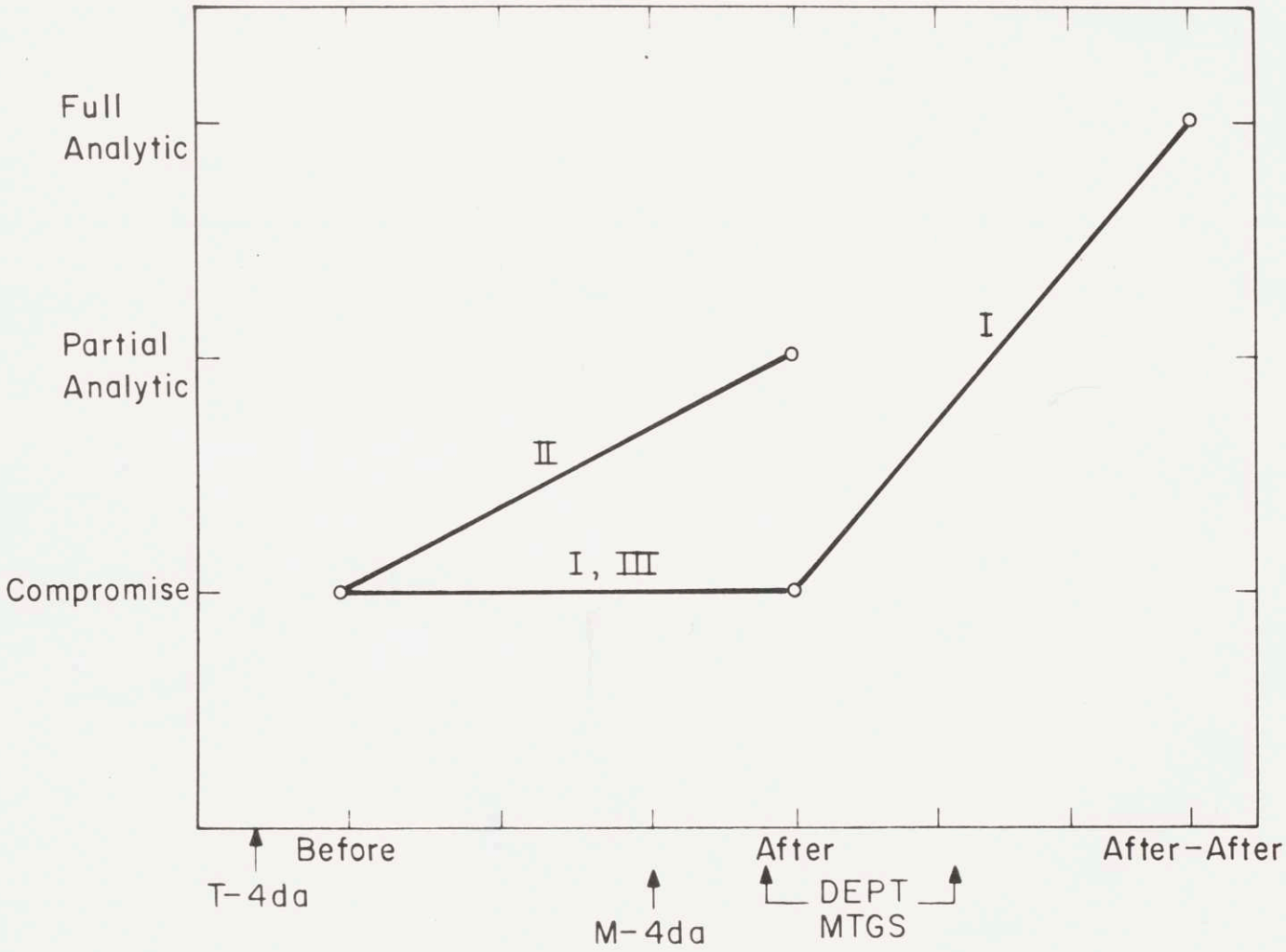

FIGURE 10. Change in the quality of decision measured by the strategy used in reaching agreement on value ranking task in three department task meetings.

Table 4

Reported Per Cent Changes in Problem Solving Competences of Department I (N=5) from "After" to "After-After" Situation (Analysis of Post-Meeting Reaction Questionnaire).

Variable	TIME OF OBSERVATION After	After-After	Change
1. Reported decision quality (Item 8)	80	89	+ 9
2. Commitment Elicited (Item S1.b)	69	91	+22
3. Effectiveness of Decision $\frac{(1) \times (2)}{100}$	55	81	+26

a validity check for the Post Meeting Reaction Questionnaire.

Other Changes

Table 2 shows that managers also reported in their interviews an increase in adaptability, i.e., the ability of the organization to adjust to changes in external environment and an increase in commitment for decision implementation.

Summary

In this section change in a number of measures of problem solving competences was examined, using both objective and subjective data. In general, it was found that there is an increase in the problem solving competences of flexibility, ideation ability, and quality of decision. The post meeting reaction questionnaire used after the task meeting also indicates an increase in reported commitment elicited and effectiveness of decision. Interview data also show an increase in adaptability and commitment for decision implementation.

Management Values

Eighteen managers from three departments (I, II and III) completed the value ranking task with Form 1 in both before and after situations. Table 5 summarizes the scores computed according to the formulae on page 59 of Chapter IV. In the case of department I, four managers completed the value ranking in both after and after-after situations. Managers in groups II and III show a shift toward Theory Y values, whereas group I shows no change from before to after. The change is significant at the 0.016 level using the one-tail Wilcoxon matched-pairs signed-ranks test. Dividing scores at the initial median of 80, the change is significant at the 0.01 level using the one-tail x^2 test.

Group I shows a shift from the after to the after-after situation.

Table 5

Shift in Values from Theory X to Theory Y. (McGregor)
Measured by Rankings Assigned by Managers in Three Departments.

Management group		I	II	III	Average
Number in group		5	7	6	18
	Before	90.4	73.7	71.3	77.5
	After	88.8	85.7	88.7	87.5
	Change	-1.6	+12.0	+17.4	+10.0*

* p = 0.016 (One-tail Wilcoxon matched-pairs signed-ranks test)

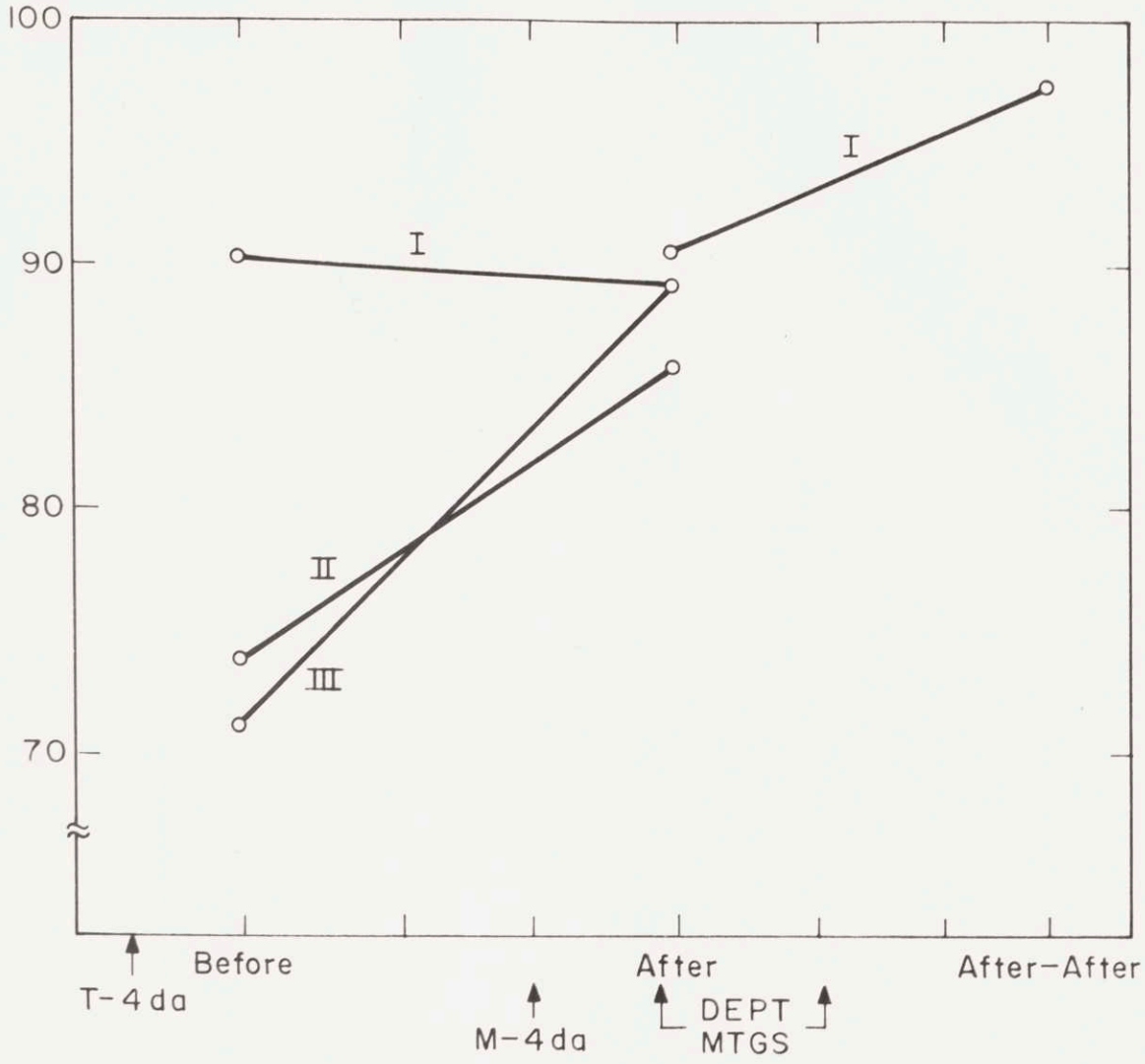

FIGURE 11. Shift in values from Theory X to Theory Y (McGregor) measured by rankings assigned by managers from three departments. (In department I, there were five managers who participated in before and after situations, but only four of these participated in both after and after-after).

Over the total span of time, therefore, there is a shift toward Theory Y values in all three groups.

Communications

Changes in variables in the communications sector are reported in Tables 6 and 7 and Figures 12 and 13.

One-way vs. Two-way Communications

One-way communication means that all initiations are from boss to subordinate, whereas two-way communication means that both initiate equally. An objective measure for this variable was derived from analysis of staff meeting data (Table 6). As can be seen from Figure 12, three groups (T, II and III) increased in two-way communication, whereas group I decreased.

The data from the interviews (Figure 13) show an increase in two-way communications in all five groups, though the increase for group IV is insignificant. Table 7 shows that the reported increase for the total system is significant and supports the objective measure.

Other Changes

Table 7 presents further analysis of interview data bearing on changes in communication. It shows there is a significant increase in the effectiveness of upward, downward and horizontal communications. There is also a significant increase in the frequency of horizontal and upward communication. But there is no change in frequency of downward communications. The change in communications from one-way to two-way therefore comes about through increase in frequency of upward communication.

To sum up, both the objective and subjective results show an improvement in two-way communications. Interview data also show that

Table 6

Change in Two-Way Communication Measured by Percent Participation of Subordinates. (Analysis of Staff Meeting Data).

	Management group		Top	I	II	III	Average
1.	Total Acts	Before	341	209	155	93	
		After	352	321	153	264	
2.	Acts by subordinates	Before	183	140	89	61	
		After	223	199	110	197	
3.	Two-way communication index (2/1 x 100)	Before	53.7	67.0	57.5	65.6	60.9
		After	63.4	62.0	72.0	74.6	68.0
		Change	+9.7	-5.0	+15.5	+9.0	+7.1

Table 7

Reported Per Cent Changes in Communication (Analysis of Interview Data; Department Manager is Included in His Group as Well as in Top Management Group, Except as Noted)

Management group		Top	I	II	III	IV	Average	p***
Number in group		6	3	3	4	4	20	
Frequency of upward comm. (ID.1)	Before	62.0	70.0	32.5	91.7	86.7	70.0	0.031
	After	71.0	70.0	45.0	91.7	90.0	75.2	
	Change	+9.0	0	+12.5	0	+3.3	+5.2	
Frequency of downward comm. (ID.2)	Before	85.0	50.0	70.0	88.3	91.7	82.5	
	After	91.0	40.0*	70.0	88.3	90.0	83.5*	
	Change	+6.0	-10.0	0	0	-1.7	+1.0	0.687
Frequency of horizontal comm. (ID.3)	Before	68.0	65.0	43.7	63.3	80.8	66.0	
	After	85.0	73.7	48.7	70.8	81.6	75.2	
	Change	+17.0	+8.7	+5.0	+7.5	+0.8	+9.2	0.001
Effectiveness of upward comm. (IB.2)	Before	53.0	72.5	57.5	78.3	81.7	67.0	0.002
	After	70.0	75.0	67.5	80.0	85.0	75.3	
	Change	+17.0	+2.5	+10.0	+1.7	+3.3	+8.3	
Effectiveness of downward comm. (IB.3)	Before	57.0	60.0	57.5	83.3	91.7	69.7	0.002
	After	87.0	65.0*	72.5	86.7	91.7	85.7*	
	Change	+30.0	+5.0	+15.0	+3.4	0	+16.0	
Effectiveness of horizontal comm. (IB.1)	Before	48.0	55.0	43.7	61.7	71.6	55.8	
	After	69.0	68.7	68.7	74.2	75.8	71.3	
	Change	+19.0	+13.7	+25.0	+12.5	+4.2	+15.5	<0.001
One-way vs two-way comm. ** (IC.1 & IC.2)	Before	55.8	70.0	51.7	50.0	80.0	61.0	
	After	71.6	83.3	63.3	78.7	82.5	75.7	
	Change	+15.8	+13.3	+11.6	+28.7	+2.5	+14.7	<0.001

* One person did not answer.

** Boss included in all five groups so that number in all groups is increased by one and for average by 5.

*** One-tail sign test

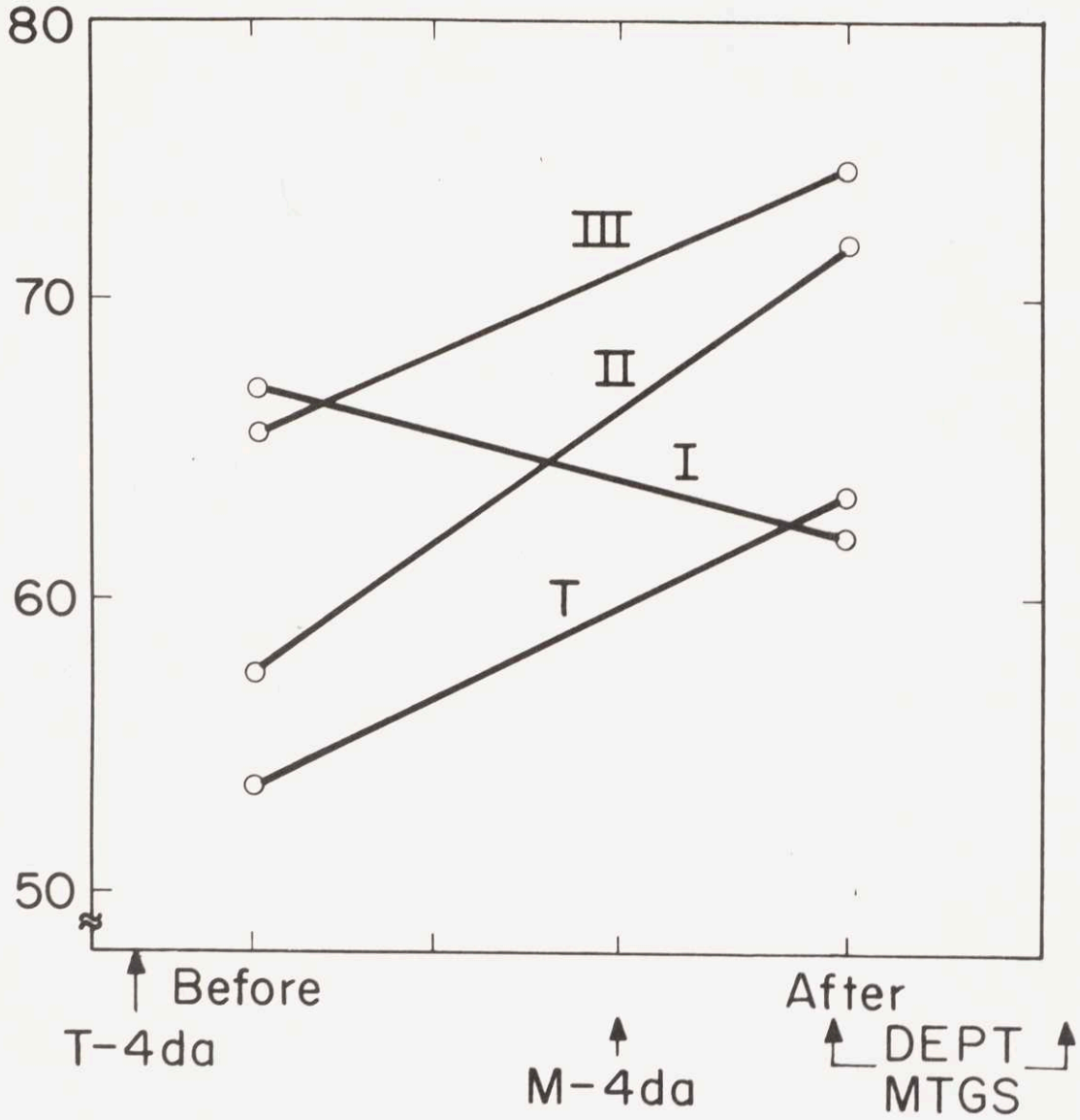

FIGURE 12. Change in two-way communications measured by per cent participation of subordinates in a top management meeting and in three department staff meetings.

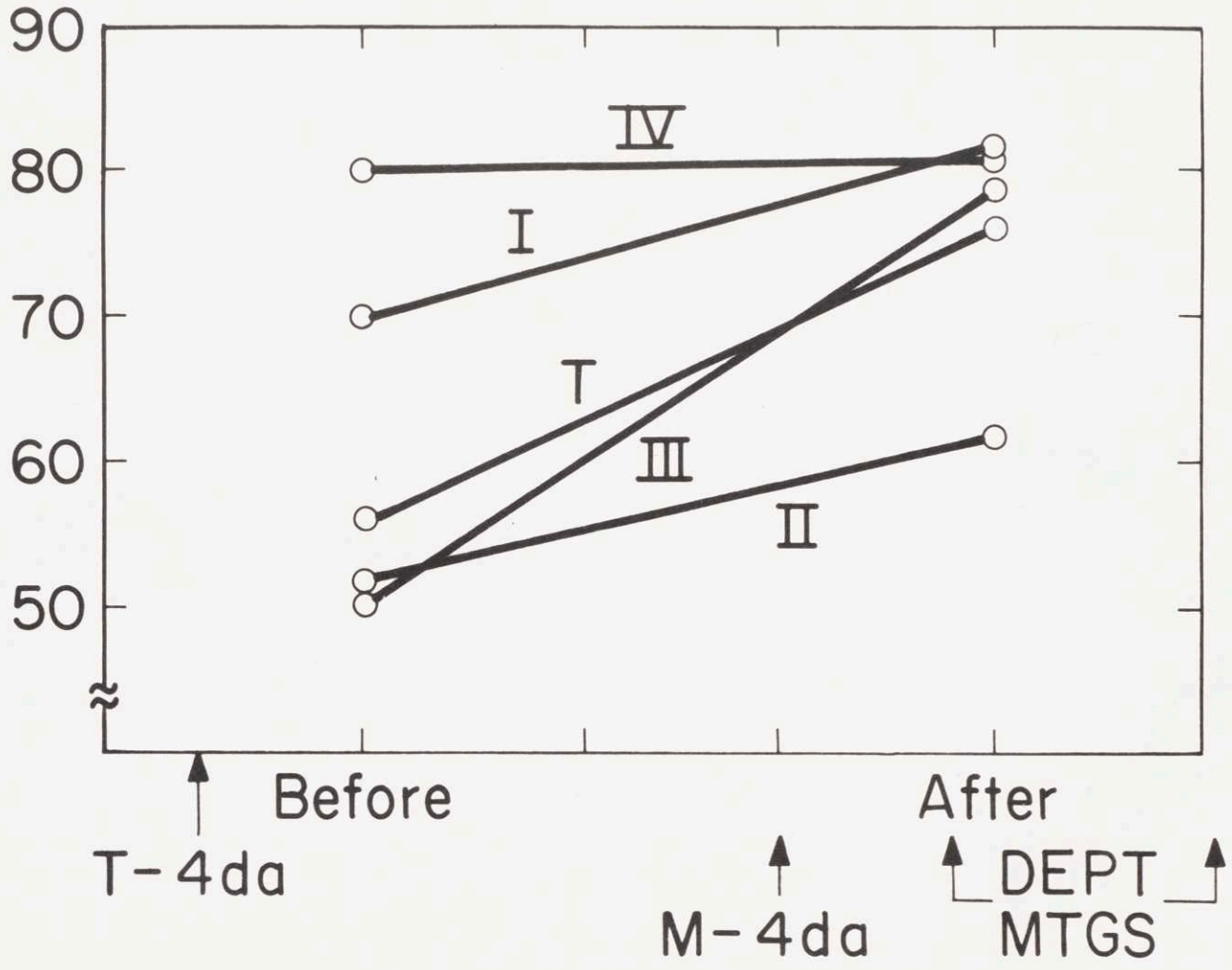

FIGURE 13. Change in communications measured by reported per cent of two-way communication in top management meetings and in staff meetings of four departments (Interview items IC.1 & IC.2).

managers report significant improvement in communications of all types, i.e., upward, downward and horizontal.

Power Distribution

Two objective measures were derived from analysis of staff meeting observation, as shown in Tables 8 and 9 and Figures 14 and 15. Four subjective measures from interview data are reported in Table 10 and Figure 16.

Leadership Acts Ratio

This index measures the degree to which an average subordinate performs leadership acts as compared to the boss. The derivation of the index is shown in Table 8, and Figure 14 shows the changes from before to after. Two groups (T and II) show an increase, and two groups (I and II) show no significant change.

Method of Decision Making

The derivation of an objective measure of the method of decision making is shown in Table 9. Figure 15 shows the change in three groups, two (T and III) showing a marked increase toward joint decision making, and one (group I) showing a slight decrease.

In the interview data managers from all five groups report a change toward joint decision making (Figure 16). The increase reported by group IV is insignificant, but Table 10 shows that reported changes for the total system are significant at less than the 0.001 level.

Thus both objective and subjective data indicate a trend in the system toward joint or participative decision making.

Table 8

Change in Power Distribution Measured by the Ratio of Leadership Acts by the Average Subordinate to Leadership Acts by the Boss. (Analysis of Staff Meeting Data).

	Management group		Top	I	II	III	Average
1.	Leadership acts by subordinates	Before	4	5	6	1	
		After	11	4	7	3	
2.	No. of subordinates	Before	4	4	6	6	
		After	4	4	3	6	
3.	Leadership acts by boss	Before	32	19	16	3	
		After	24	28	11	9	
4.	Leadership acts ratio $\frac{(1)}{(2)\ (3)}$	Before	0.031	0.066	0.062	0.055	0.053
		After	0.114	0.036	0.212	0.055	0.104
		Change	0.083	0.030	0.150	0	+0.051

Table 9

Change in Power Distribution Measured by The Per Cent of Decisions Which Were Reached Jointly. (Analysis of Staff Meeting Data).

	Management group		Top	I	II	III	Average
1.	Total number of decisions made	Before	20	9	-*	12	
		After	13	31	6	13	
2.	Joint-type decisions.	Before	7	0	-*	1	
		After	10	29	6	11	
3.	Decision index $\frac{(2)}{(1)} \times 100$	Before	35	100	-*	50	61.7
		After	77	94	100	85	85.3
		Change	+42	-6	-*	+35	+13.6

* No decisions were reached.

Table 10

Reported Per Cent Change in Power Distribution (Analysis of Interview data; Boss Excluded From His Group, Except as Noted)

Management group		Top	I	II	III	IV	Average	p****
Number in group		5	2	2	3	3	15	
Delegation (IIA.2)	Before	83.0	85.0	80.0	80.0	91.7	84.3	
	After	85.0	90.0	80.0*	83.3	91.7	86.4*	0.125
	Change	+2.0	+5.0	0	+3.3	0	+2.1	
Checking with boss (IIC.2)	Before	18.0	25.0	22.5	15.0	8.3	18.3	
	After	22.0	15.0	17.5	11.7	8.3	14.3	0.016
	Change	-4.0	-10.0	-5.0	-3.3	0	-4.0	
Consultation** (Method of decision) (IIB.1d, IIB.2b, IIIC.2a, & IIIC.2b)	Before	65.0	70.8	65.8	64.4	81.2	69.1	
	After	76.2	80.8	74.1	71.9	83.7	77.2	< 0.001
	Change	+11.2	+10.0	+8.3	+7.5	+2.5	+8.1	
Style of *** leadership (IID.2)	Before	78.3	60.0	55.0	71.7	81.7	73.3	0.008
	After	82.5	70.0*	72.5	78.3	79.3	79.3*	
	Change	+4.2	+10.0	+17.5	+6.6	0	+6.0	

* One person did not answer.
** Boss included in all five groups so that number in all groups is increased by one and for average by 5.
*** Boss included only in top management group so that number in this group and average is increased by one.
**** One-tail sign test.

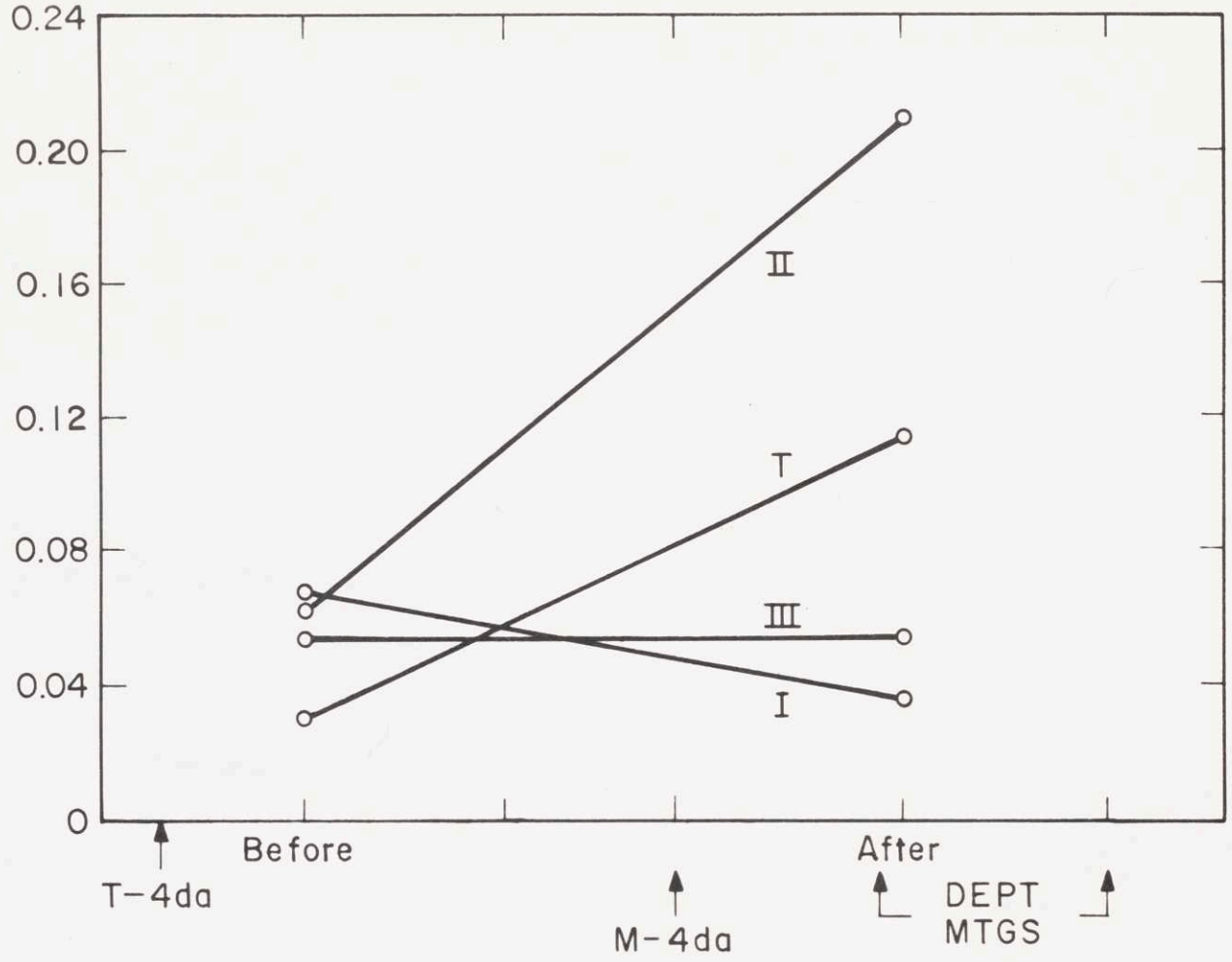

FIGURE 14. Change in power distribution measured by the ratio of leadership acts by the average subordinate to leadership acts by the boss in a top management meeting and in three department staff meetings.

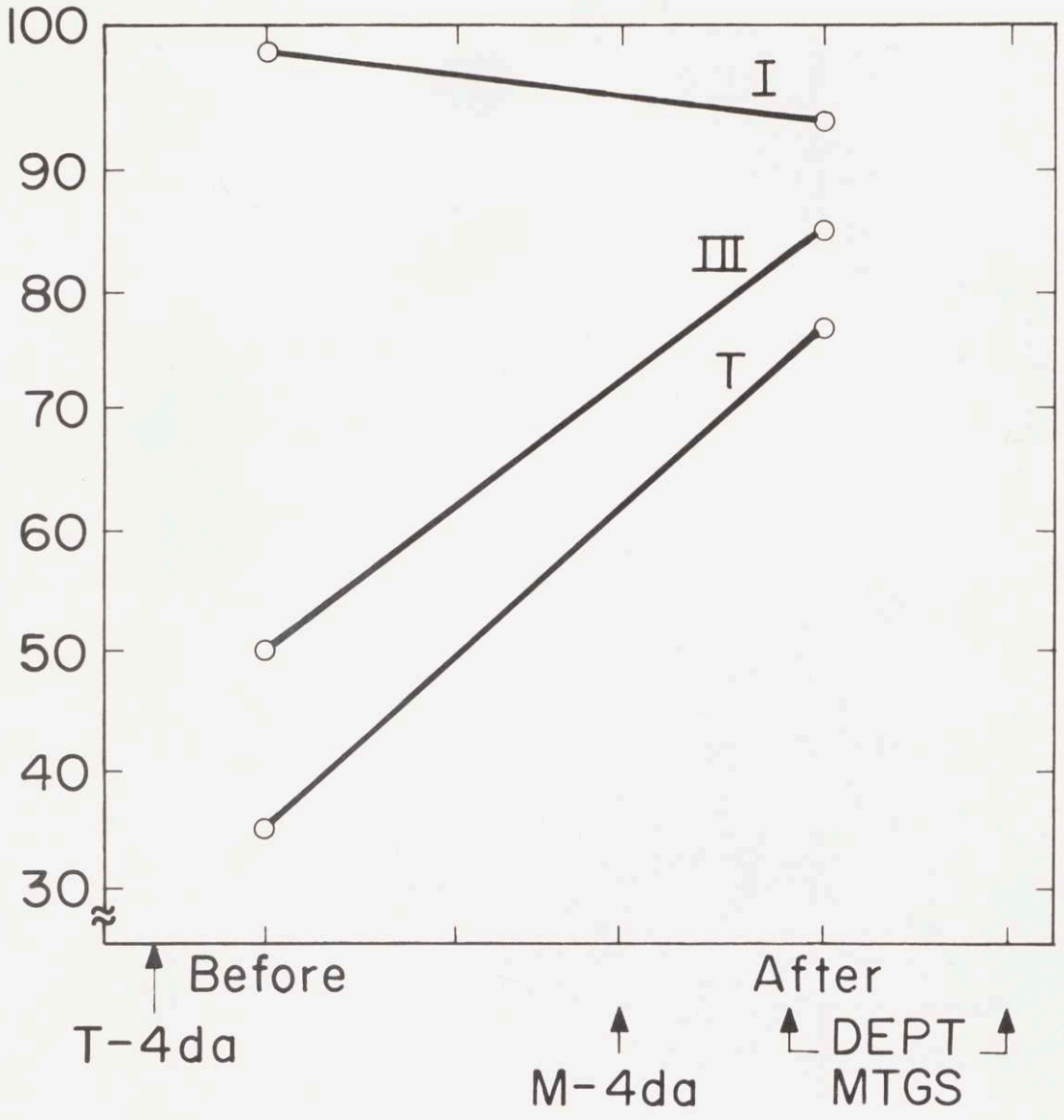

FIGURE 15. Change in power distribution measured by the per cent of decisions which are reached jointly in a top management meeting and in two department staff meetings. (In department II, the first staff meeting did not involve any decisions.)

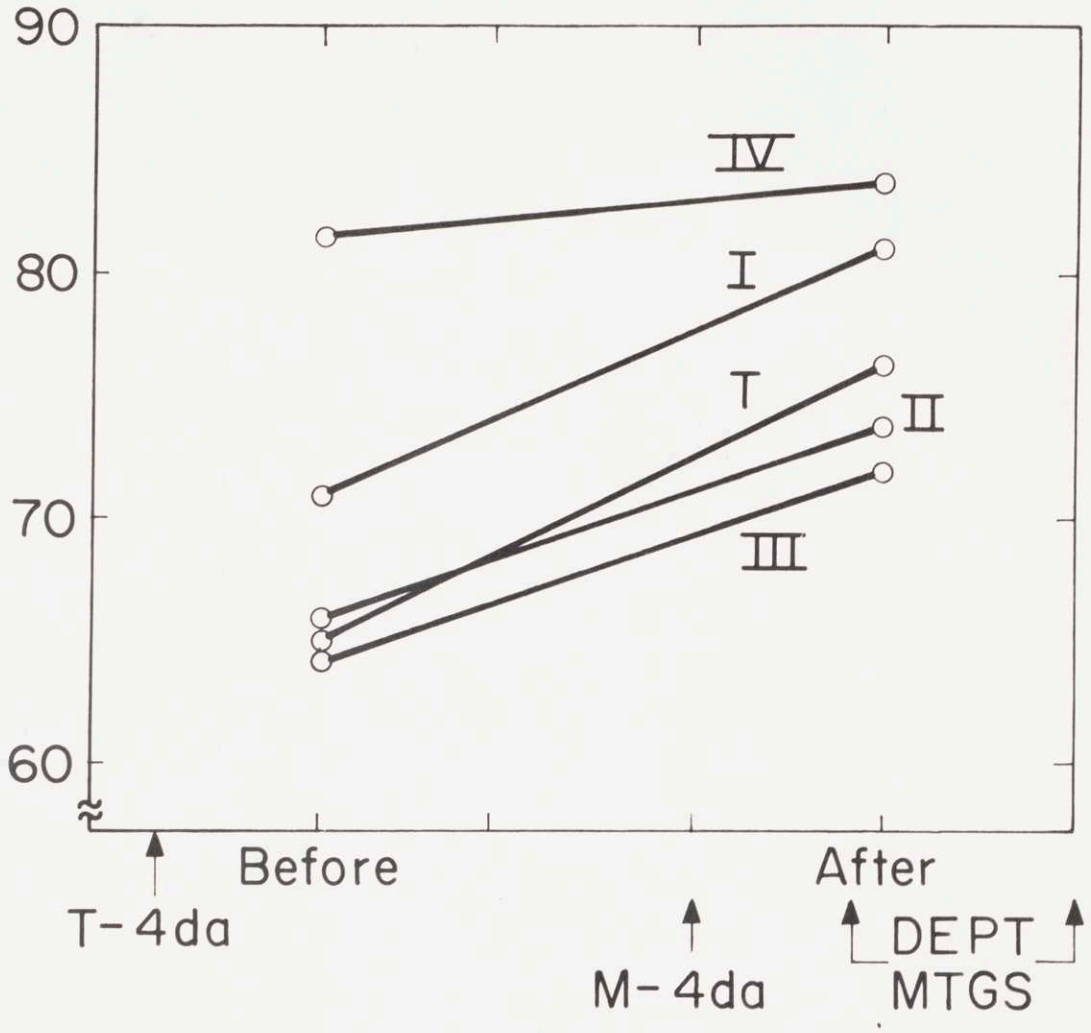

FIGURE 16. Change in power distribution measured by the reported per cent of decisions which are reached jointly in top management meetings and in staff meetings of four departments (Interview items IIB.1d IIB.2b, IIIC.2a, and IIIC.2b).

Other Changes

It can be seen from Table 10 that managers report significant changes in their style of leadership toward participative decision making so as to ensure commitment of subordinates. Managers also report in the after situation that they are checking less with their bosses before making a decision. But no significant changes are reported in delegation of authority for decision making to subordinate managers.

In summary, both objective and subjective measures indicate that there is a trend twoard increased power equalization in the system as measured by changes in method of decision making and style of leadership, and in the assumption of increasing number of leadership roles by subordinates. There is no significant change in the delegation of decision making authority.

Interpersonal and Group Skills and Attitudes

Analysis of data for this sector is reported in Tables 11 and 12 and Figures 17 and 18.

Concern for Maintenance

The method of calculating the index from staff meeting observation is shown in Table 11 and Figure 17 shows the changes from before to after. There is an increase in the case of three groups (II, III and T), whereas group I shows no significant change. For the total management system there is a trend toward increased concern for maintenance as measured by the per cent maintenance and summarizing acts in meetings.

Table 11

Change in Interpersonal and Group Skills Measured by Per Cent of Maintenance Acts. (Analysis of Staff Meeting Data)

Management group		Top	I	II	III	Average
1. Total Acts	Before	341	209	155	93	
	After	352	321	153	264	
2. Maintenance and summarizing acts	Before	2	2	4	0	
	After	16	2	8	13	
3. Concern for maintenance index $\frac{(2)}{(1)} \times 100$	Before	0.6	0.9	2.6	0	1.0
	After	4.6	0.6	5.2	7.9	4.6
	Change	+4.0	-0.3	+2.6	+7.9	+3.6

Table 12

Reported Per Cent Changes in Interpersonal and Group Skills and Attitudes. (Analysis of Interview Data; Boss not Included from His Group, Except as Noted)

Management group		Top	I	II	III	IV	Average	p***
Number in group		5	2	2	3	3	15	
Upward understanding (IVB.1a & IVB.2a)	Before	62.5	71.2	40.0	79.2	74.2	66.5	0.006
	After	79.0	85.0	42.5	83.3	75.4	75.0	
	Change	+16.5	+14.8	+2.5	+4.1	+1.2	+8.5	
Downward understanding (IVB.1b & IVB.2b)	Before	72.0	55.0	58.7	80.8	76.7	65.2	0.02
	After	84.0	65.0*	68.7	80.8	76.7	74.5*	
	Change	+12.0	+10.0	+10.0	0	0	+9.3	
Horizontal understanding (IVB.1c & IVB.2c)	Before	63.5	61.3	55.0	65.8	76.7	65.1	0.006
	After	82.0	83.7	51.2	78.4	78.3	76.6	
	Change	+18.5	+12.4	-3.8	+12.6	+1.6	+11.5	
Understanding** among departments (VD.2a)	Before	51.0	57.5	50.0	55.0	51.7	52.5	
	After	70.0	77.5	70.0	68.3	65.0	69.7	
	Change	+19.0	+20.0	+20.0	+13.3	+13.3	+17.2	<0.001
Mutual trust** among departments (VD.2b)	Before	44.1	45.0	70.0	58.3	55.0	52.2	
	After	69.1	72.5	70.0	75.0	65.0	70.0	
	Change	+25.0	+27.5	0	+16.7	+10.0	+17.8	<0.001
Openness of manager toward his boss (IIB.1b & IIIB.2a)	Before	68.5	76.2	91.2	87.0	90.8	80.5	0.363
	After	85.0	88.7	85.0	90.8	90.8	87.8	
	Change	+16.5	+12.5	-6.2	+3.8	0	+7.3	
Openness of group toward their boss (IIB.1c & IIIC.1a)	Before	52.0	60.0	55.0	65.0	70.8	59.8	
	After	69.5	67.5	57.5	79.2	75.8	70.8	
	Change	+17.5	+7.5	+2.5	+14.2	+5.0	+11.0	<0.001
Openness among peers (IIIB.2b)	Before	78.0	70.0	70.0	73.3	90.0	77.3	0.002
	After	96.0	90.0	70.0	90.0	90.0	89.3	
	Change	+18.0	+20.0	0	+16.7	0	+16.0	
Listening ability*** (IIB.1a & IIB.2a)	Before	59.1	61.7	78.3	63.8	81.2	67.7	
	After	68.3	76.7	86.6	70.0	83.7	75.7	
	Change	+9.2	+15.0	+8.3	+6.2	+2.5	+8.0	<0.001
Conflict-resolution*** ability (IIIC.3a & IIIC.3b)	Before	74.2	81.7	86.7	85.0	90.0	82.5	
	After	80.8	81.7	93.4	90.0	92.5	87.0	0.008
	Change	+6.6	0	+6.7	+5.0	+2.5	+4.5	
Experimental attitude** (IVA.2)	Before	59.1	60.0	55.0	63.3	56.7	59.1	
	After	72.5	77.5	60.0	66.7	66.8	69.4	
	Change	+13.4	+17.5	+5.0	+3.4	+10.1	+10.3	<0.001

* One person did not answer.

** Boss included only in top management group so that number in this group and average is increased by one.

*** Bosses included in all five groups so that number in all groups is increased by one and for average by 5.

**** One-tail sign test.

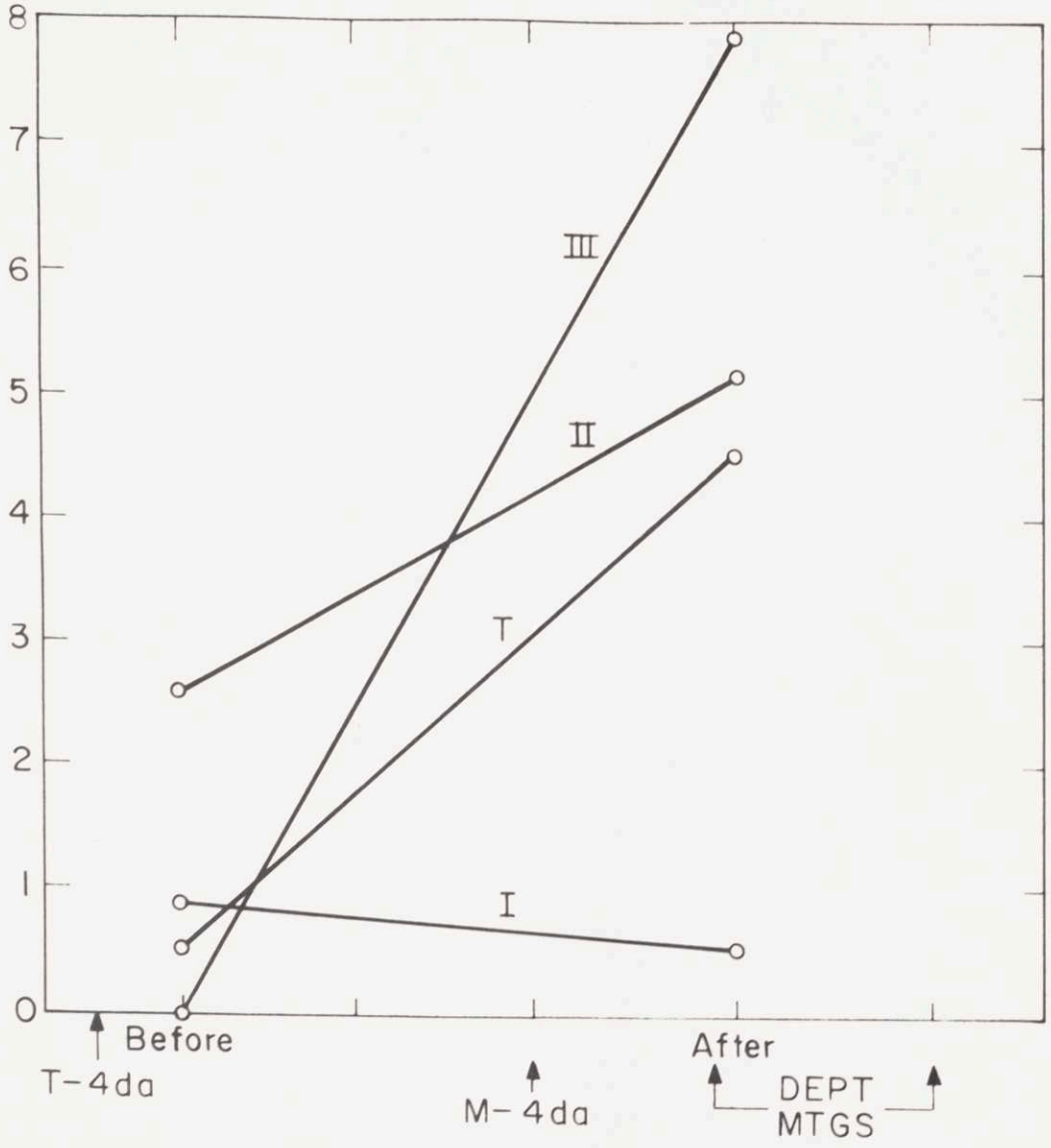

FIGURE 17. Change in interpersonal and group skills measured by per cent of maintenance acts in a top management meeting in three department staff meetings.

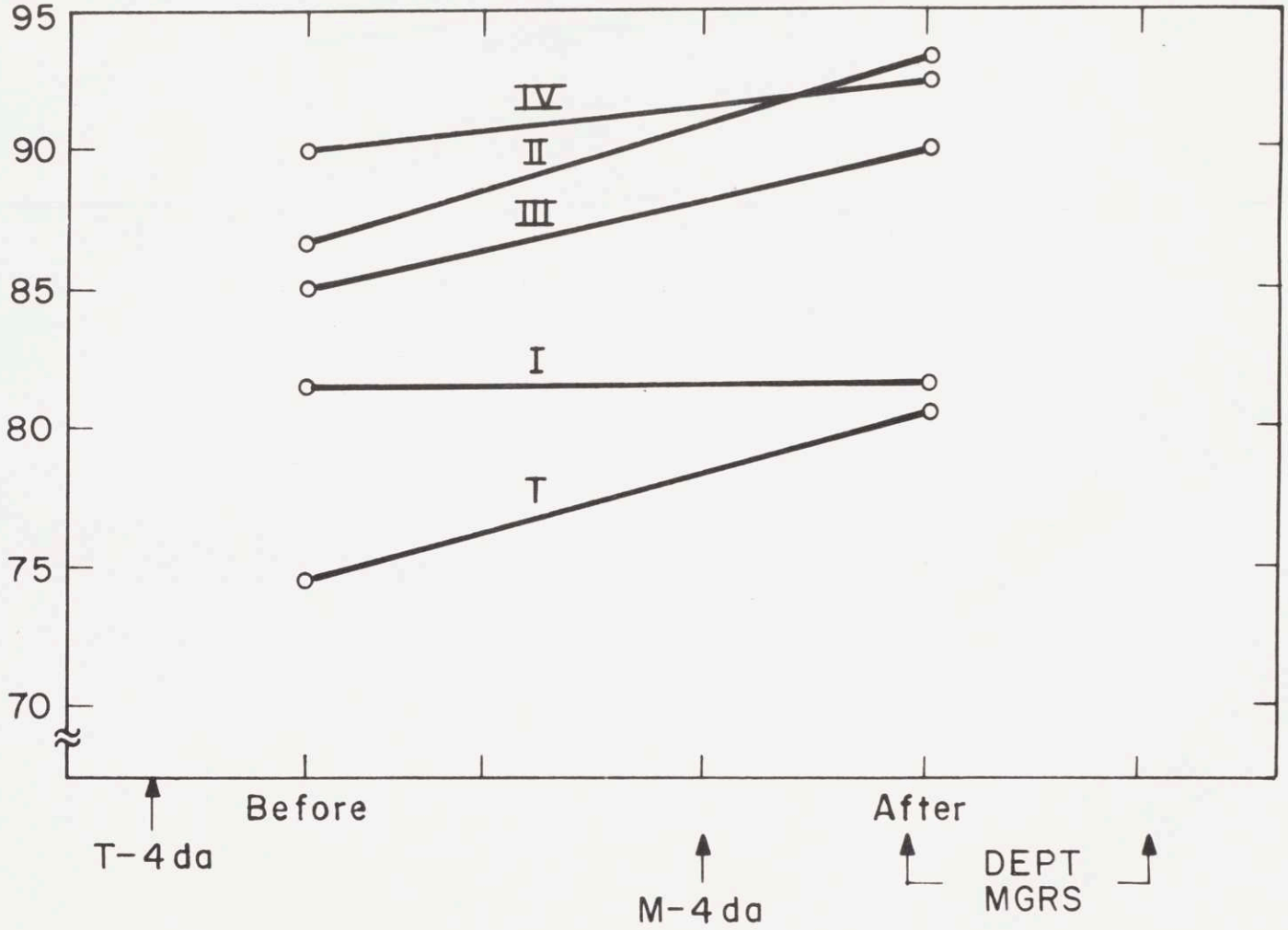

FIGURE 18. Change in interpersonal and group skills measured by reported per cent of conflicts resolved in top management meetings and in staff meetings of four departments (Interview items IIIC.3a and IIIC.3b).

Conflict Resolution Ability

The ability to face up to disagreements and conflicts instead of avoiding or suppressing them is closely tied to the concern for maintenance, because patching up relations requires both expressing and working through the conflicts. As shown in Figure 18, managers in all five groups report an increase in the conflict resolution ability of their groups, the change being insignificant in case of group IV. For the total system the reported increase is significant (Table 12).

To sum up, there is an increased concern for maintenance and an increased conflict resolution ability.

Other Changes

Changes in other attitudes and skills are shown in Table 12. Managers report significant increases in understanding, mutual trust, listening ability, experimental attitude, openness among peers, and openness of the subordinate group toward their boss. However, no significant change is reported in openness of a single subordinate toward his boss.

Management Goals

Changes in this sector were measured by interview data and are summarized in Table 13 and Figures 19 and 20.

Clarity of Goals

As can be seen from Figure 19, there is an increase in the clarity of goals for all five groups. Table 13 shows that the reported increase is significant.

Table 13

Reported Per Cent Change in Management Goals (Analysis of interview data; Department Manager is Included in His Group as Well as in Top Management Group).

Management group		Top	I	II	III	IV	Total	p*
Number in group		6	3	3	4	4	20	
Clarity of goals (IVB.3a & IVB.3b)	Before	65.8	65.0	73.3	71.2	83.7	71.5	
	After	75.8	78.3	78.3	75.0	87.5	78.7	
	Change	+10.0	+13.3	+5.0	+3.8	+3.8	+7.2	<0.001
Whole business vs sectional view (VD.1a & VD.1b)	Before	50.0	53.3	56.7	65.0	70.0	58.4	
	After	68.3	76.7	66.7	73.7	73.7	71.6	
	Change	+18.3	+23.4	+10.0	+8.7	+3.7	+13.2	<0.001

* One-tail sign test.

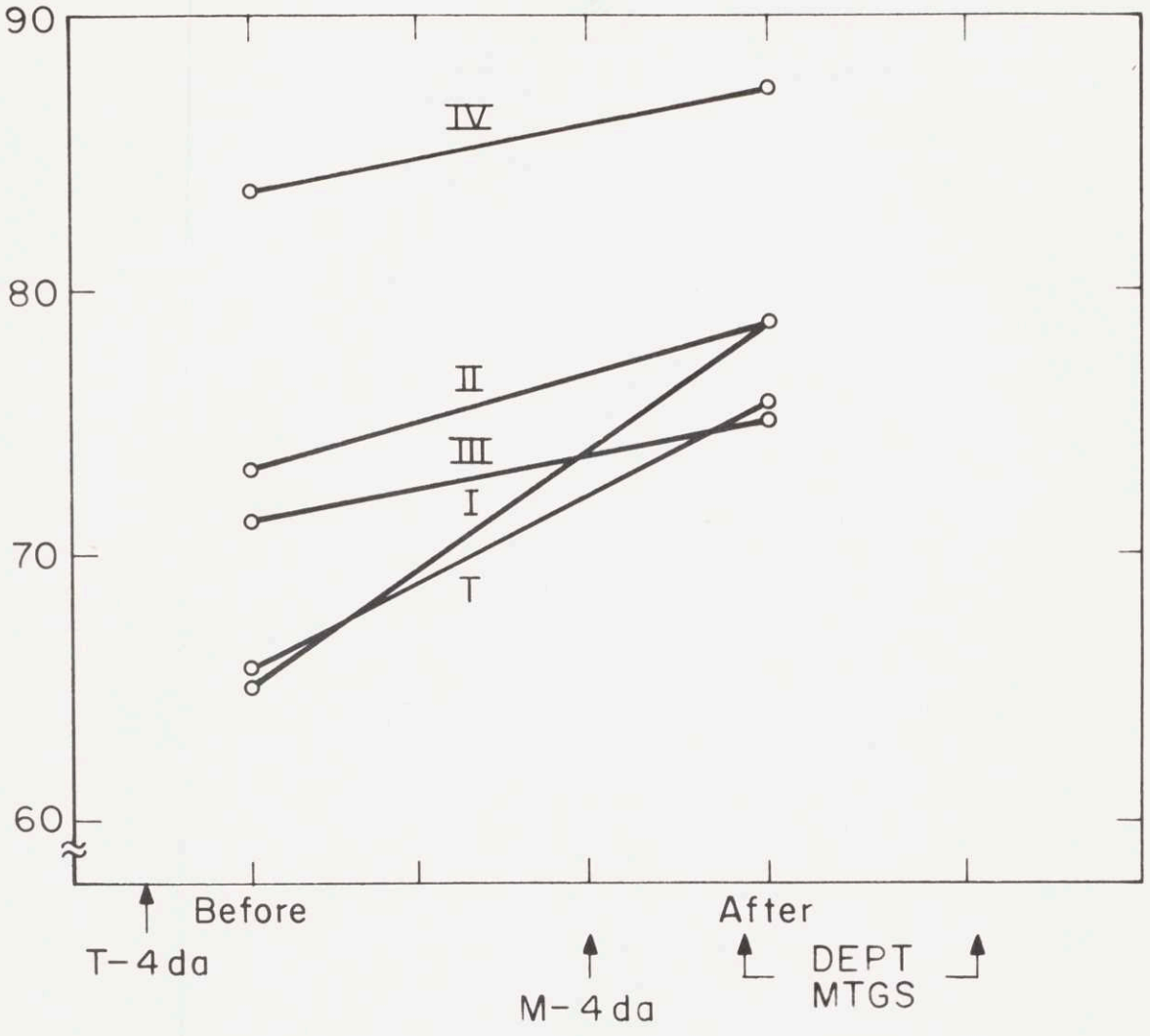

FIGURE 19. Change in reported per cent clarity of goals of top management group and four department staff groups (Interview items IVB.3a & IVB.3b).

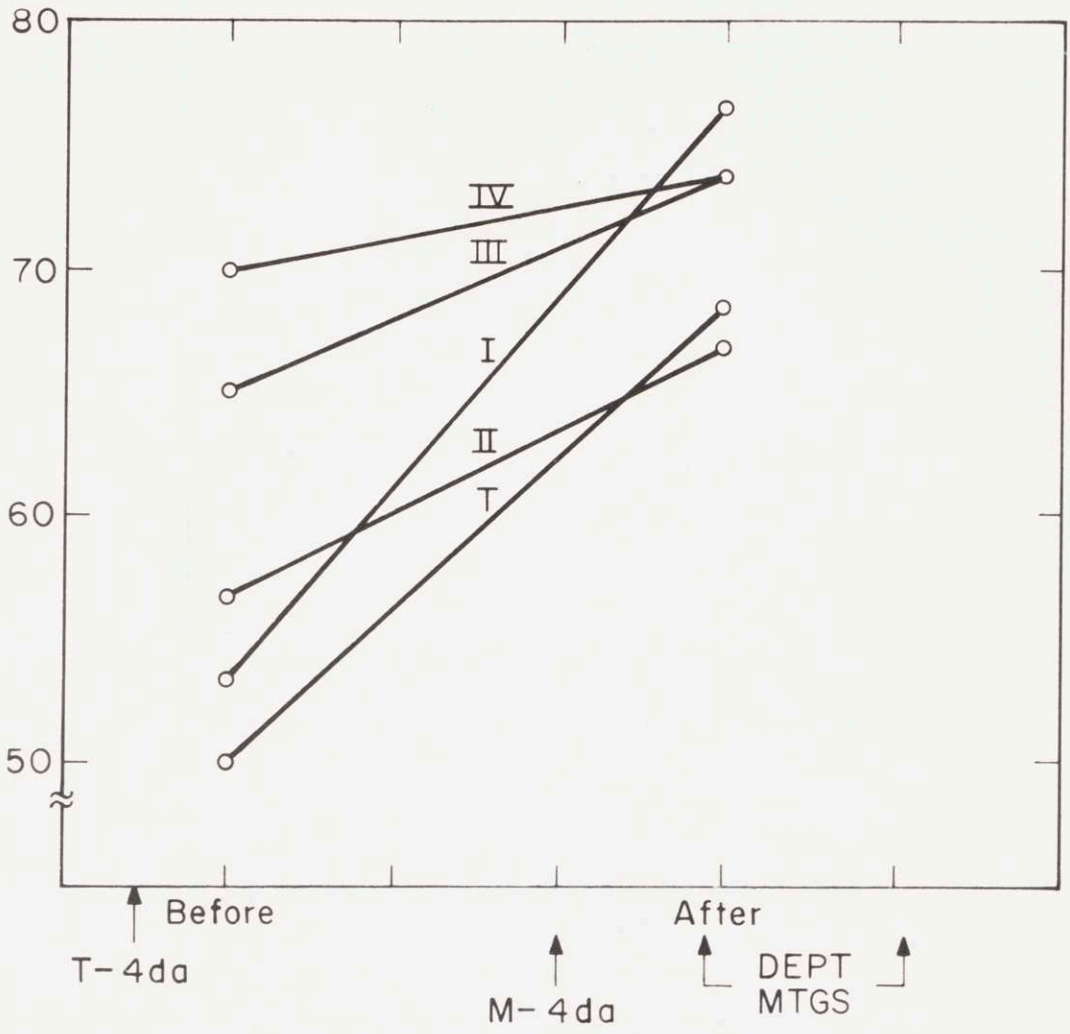

FIGURE 20. Shift in priority of management goals measured by reported per cent change from functional or sectional view to whole business view for top management group and four department staff groups (Interview items VD.1a & VD.1b)

Priority of Goals

Figure 19 shows there is a marked shift in priority of goals for all five groups measured by change from functional or sectional view to the whole business view. Table 13 shows that the reported change is significant.

To sum up, there is a better defining of goals in the system, and a better understanding of these goals on the part of members of the organization. There is also a decrease in the degree of sectionalism or compartmentalization within the organization. As a result, there is a greater willingness to subordinate sectional or functional goals in favor of the overall goals of the business. Managers also report that as a result of these changes the organization is functioning much better as a team than before.

Discussion of Results

Six hypotheses were derived from the theoretical model of Figure 4, which was developed as a paradigm for the study of programs of planned change. These hypotheses predicted the direction of change in various sectors of the management system. The findings presented in the last section indicate that the movements observed in the system are in the predicted direction. In general, it was found that there was an increase in problem solving competences, a shift in values toward those of Theory Y, an improvement in communications, an increasing equalization of power, an improvement in interpersonal and group skills and attitudes, and an improvement in the clarity and priority of management goals. By and large, the results were as

predicted. However, certain aspects of the results require further clarification and elaboration.

Issue of Fit between Behavioral and Interview Data

Certain aspects of the situations were measured by interview data as well as by behavioral data. In fact, in every sector other than management values and management goals, a key variable representing the sector was measured in both ways, and was shown in consecutive figures so as to facilitate the comparison. For example, objective and subjective measures for flexibility were shown in Figures 5 and 6; for ideation ability in Figures 7 and 8; for two-way communications in Figures 12 and 13; for method of decision making in Figures 15 and 16; and for two related variables from the sector of interpersonal and group skills and attitudes in Figures 17 and 18. Comparison of these pairs of figures shows three interesting patterns that are reproduced in Figure 21. Managers from three groups (T, II and III) report changes on most of these variables in the improvement direction, and their behavior is in the reported direction. Group IV reports very little change, but behavioral data for this group is not available. In group I managers report change in the improvement direction but there is no observed change in their behavior. Thus there is an inconsistency in this group which was referred to earlier. There can be two possible explanations for this inconsistency. The first is that there was no change in this group and managers knew it but for some reasons did not want to report the fact to the researcher. The second is that there was change in the

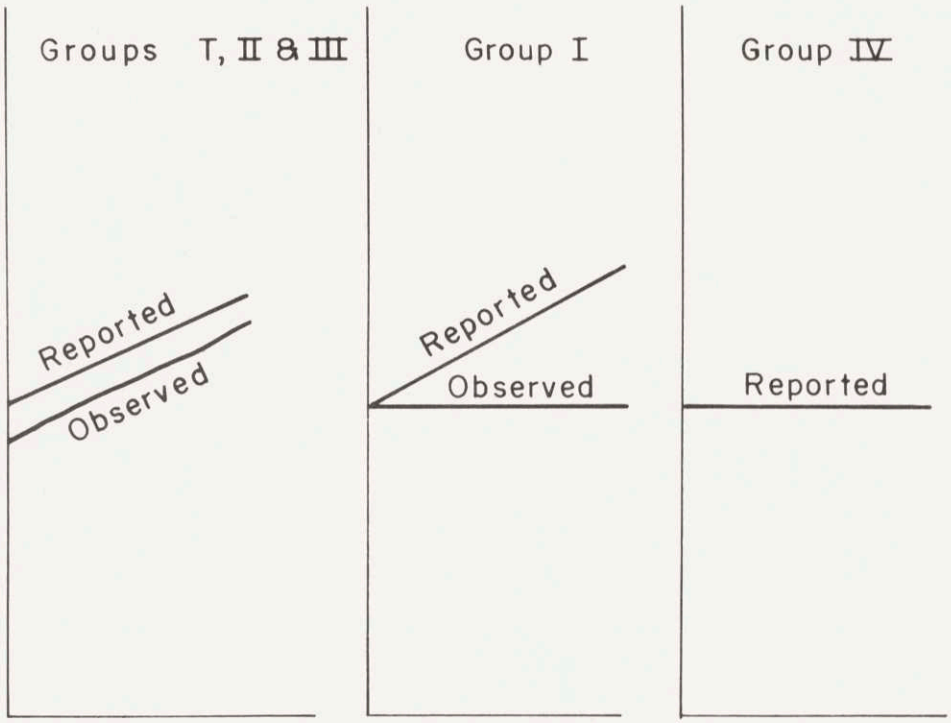

FIGURE 21. Types of correspondence between reported change and observed change in top management group and four department groups.

attitude of the managers but they had not yet acquired skills to translate it into their behavior, so that the reported change was measuring change in attitudes. The second explanation is the classic case of the gap between cognition and action. Just acquiring intellectual appreciation or even acceptance of a viewpoint does not ensure that the required behavior will automatically follow. The conversion process from cognition to action requires both motivation and practice. On two counts, it seems that the second explanation is the appropriate one. First is the fact that complete anonymity of data was promised so that there was no reason for the members of the group to withhold information. But more importantly, group I does show an upward movement in their behavior in the after-after situation (Figures 9, 10, 11 and Table 4). Furthermore, the interview with the managers confirm the fact that they did experience a change of attitude at their 4-day meeting in January, but did not know how to use the new knowledge until they had a chance to practice it in the back-home situation in their department meetings. At the time the after measures for this group were taken, they had had only one department meeting and this was only one day before the data were gathered. In addition a new member joined the group who had not been to the 4-day meeting. Between the after and the after-after situation, this group had a number of department meetings. In groups II and III there had been a department meeting much earlier with the change agent present, and they had held several staff meetings without the change agent. Groups II and III, therefore, had some time to practice the new behaviors in back-home situations before the after data were collected from them.

Changes that were found to be not Significant

Changes in Frequency of Downward Communications

Change in the frequency of downward communication was found to be not significant, although there was reported to be an increase in the effectiveness of these communications. One explanation for these findings can be that the frequency was adequate in the before situation, so that there was no need for change. What was needed was an improvement in the quality of communications in order to make them more effective. Though there is some evidence that supports this explanation,* no systematic evidence on this point was gathered during the present study.

Delegation of Decision Making Power

The changes in delegation were not significant. These changes refer to changes in the type of decisions that are made at each level, or changes in job sheets. In a large corporation, these formal changes may require longer periods of time than the few months over which the data for this study were collected. There may also be issues of standardization among divisions in terms of formal authority structures. Further research alone can provide definite answers.

Openness of a Subordinate Toward His Boss

There was no change in openness of a single subordinate toward his boss, but there was a significant increase in openness of subordinates as a group toward their boss. This may mean that in the initial stages of changes in a system, subordinates need the support

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*The author had asked some managers to elaborate on their replies on interview questions. The evidence, referred to here, comes from analysis of these elaborations.

of their peers in order to express their feelings, opinions and disagreements with their superiors.

Convergence of Values, Power and Goals

There is a noticeable convergence in the case of values, power distribution and priority of goals from the before to the after situation as shown in Figures 11, 15, and 20. This means that there has not only been an upward trend like other variables, but also a reduction of differences among system units (management groups). As a result the organization has become more closely-knit as a unit with common values and goals than was the case in the before situation. This change was obvious to an outside observer. Departments were working together more closely on common problems than before when they were spending their energies in blaming each other and trying to preserve their own little kingdoms. For example, in the after situation, two department heads went on a selling trip with the market manager. In the before situation, this would have had to be done by the marketing manager alone. The working together as a close-knit team on common problems had an important effect on the organization's capacity to handle its key problems that required close collaboration between departments. This will be illustrated by a case of one key problem in the product development area.

Change in Organizational Problem Solving

(A Case of New Product Development)

The division had a long standing problem of developing a new product. The competition had developed the product, and the emergence of the new product was cutting into the sales of the old product lines. The new product was also estimated to have a considerable sales potential of its own. The successful development of the new product not only offered growth possibilities, but failure to develop it would have meant considerable reduction in the existing business. The division had known of this problem for five years, and had made several efforts to develop the product, all of which ended in failure. In fact, the product was developed and marketed many times during these five years. But each time it had to be withdrawn from the market because of its poor performance in the field. The division had not been able to find out the cause of the poor performance. In the meantime, the competition had successfully developed the product and put it on the market.

During a first visit to the division in the before situation, the author found an atmosphere of despair in which departments were blaming others for these failures. The problem required close cooperation among departments but this was absent. So the real cause of the difficulty remained unrecognized. During the second visit, the atmosphere had changed dramatically. One could sense a feeling of buoyancy and optimism; the problem had been licked. A successful prototype run of the product had been completed, and the organization

was planning to enter the market. This had been achieved without the addition of any new technical competence. When the author went around interviewing managers, many of them cited the case of the solution of the product problem and other problems related to it. A few typical quotations are given below:

> "Greater willingness to work together crossfunctionally helped solve the product problem." Department head

> "It is not the addition of new technical people that helped in solving the product problem, but the fact that utilization of already existing technical competence has improved." Department head

> "One department was blaming another department for the failures. As they started working together, the problem was licked. They are now working together on the problem. I feel most pleased." Division head

> "More willingness to help each other, so we could locate the cause of the failure." Manager

Long-run Changes in the System

The after measures were taken 5 weeks after the 4-day meeting of the managers. The issue arises whether the measured changes were only temporary, having no lasting effect on the long range working of the system with respect to the organizational structure, policies and procedures. There are definite indications that this is not so.

First of all, the strategy of the program allows for a long period for consolidation of the changes. During this period (phase III and IV of the program) the change agent works with departmental groups in their natural settings. The evidence gathered in the after-after situation for group I indicates that the changes started at the 4-day meeting were getting successfully integrated in the day-to-day

working of the division. A few quotations will illustrate the point.

> "At the 4-day meeting and in subsequent department meetings we found out that we needed reorganizing of this department. ••• We have been busy reorganizing and it will take six more months to show results."
>
> "I find it easier to deal with managers from other functions who have been to a 4-day meeting."
>
> "We have become more of a group. As a business team, we are doing much better. ••• We have defined and recognized many of our problems. ••• Real tangible results. ••• We will have a strong product planning group. ••• More sharing of competences so that urgent problems get top attention."
>
> "We have now defined our policies and goals. ••• Our group has common goals now which have tied us together as a business team."

Evidence gathered in the after situation from other departments also showed that changes started at the 4-day meeting are already getting incorporated in the day-to-day working of the departments. For example, procedures for preparing agenda for staff meetings have changed in many cases so that any subordinate can now put on the agenda any item he would like to bring up at the meeting. The procedure for preparing annual budgets has changed so that it is being developed from the bottom up rather than from the top down. One group that never held regular staff meetings, has started holding them on a formal basis. These observations indicate that the changes measured were not of a temporary nature, but were interacting with and having effect on organizational structures, policies and procedures.

Summary

This chapter started with the discussion of some issues of analysis. Analysis of the data and the findings were then presented.

In the last section, the results and some major issues connected with them were discussed. In the next chapter, conclusions and implications of this study will be outlined, and then a few areas that seem promising for further research will be discussed.

CHAPTER VII

SUMMING UP AND LOOKING AHEAD

SUMMING UP

This chapter will provide a summary of the major conclusions of the work. It will also discuss the implications these conclusions may have for managements, consultants and behavioral scientists who are seriously interested in change programs and will designate further study and research which now seem needed as a result of this investigation.

Conclusions

The productive enterprise has come to occupy a pivotal role in the contemporary world, and is heading toward a position of dominance (Kerr et al., 1961, p. 125). Social science has developed a body of social knowledge which is based on more sound and more differentiated laws of human behavior. In recent years an increasing number of social scientists have been engaged in developing liaison between social knowledge and action. Some of them, working with industrial organizations, have aided in the development of new types of organizational change programs. It is the purpose of this study to develop a system model which provides a theoretical framework for studying the dynamics of such change programs; to develop instruments and other methods for measuring variables in the model; and to test

the validity of the model by showing how it can be used to study a new type of change program in a large industrial corporation and assess its effect on the management system.

Using system concepts, the models of Figure 1 and 4 present an integrated theoretical framework for the study of change programs, thus bridging the gap between interpersonal and problem solving models. The discussion in Chapter IV shows how processes of planned change, and the company program in particular, can be conceptualized in terms of the model.

A set of instruments were developed in order to operationalize the variables of the model. At the end of Chapter V, it is shown how each variable can be measured. Both self-report and behavioral measures were used. The former were derived from the interview schedule and the post meeting reaction questionnaire, and the latter from the observation of meetings and standard tasks.

The assumptions underlying the model are outlined in Chapter IV: that the model contains necessary, and a sufficient number of variables; that its various sectors are interrelated to form a closed loop feedback system, and that the system tends toward dynamic stability. A few specific hypotheses were derived from the model predicting direction of changes in the various sectors of the model.

The evidence was gathered during the course of a change program in a large industrial corporation. The data support, in general,

the assumptions underlying the model and show that the direction of change in various sectors is in the predicted direction.

Considering the total organization as a unit, the effect of the change program is an increase in problem solving competences a shift in values from Theory X to Theory Y, an improvement in communications, an increase in power equalization, an improvement in interpersonal and group skills and attitudes, and an improvement in the clarity and priority of management goals. Changes are more pronounced in some respects than in others. There is no significant change in the reported frequency of downward communications, delegation of decision making power, and openness of a subordinate toward his boss. There seems to be a trade-off between time to reach decision and quality of decision. Three patterns of the relationship between reported changes and observed changes can be identified. In the case of values, power distribution, and goals, there is not only an upward trend but there is a convergence in the after situation. It was also found that there is improvement in the ability of the system to solve organizational problems as exemplified by the case of new product development, and that there are some long-run modifications in organizational structures, policies and procedures.

The effects of the change program are company-wide. Blake and Mouton (1964, Ch. 13), studying another change program which has much in common with the company program, also report organization-wide changes. The new type of change programs have many common characteristics such as emphasis on interpersonal and group relations in their

diagnosis of organizational health, and a concern with the question of values. The specific predictions derived from the model of Figure 4 are thought to be applicable to all such change programs.

Implications

This study has many implications for managements that are interested in the potentialities of change programs for improving their operations. It also has significance for change agents and consultants who are currently involved or interested in developing competence in administering change programs, and for behavioral scientists who are interested in research on these programs. The major implications will be discussed now.

Implications for Managements

Managements that are interested in the potentialities of change programs from the standpoint of deciding whether to participate in them or not, should find the implications of the model, and particularly the findings, useful inputs to their decisions. The model shows that though the program may concentrate on one or a few sectors of the system, the changes get propagated to the other sectors of the system, ~~the changes get propagated to the other sectors.~~ Findings have shown the direction of these changes. Dotted lines in Figure 1 emphasize the long lag (3-5 years) involved before the effects are reflected in results; i.e., measures like profitability, growth, and return on investment. This perspective on what the program can do, and the lag in results should help prepare managements before they decide to participate in the program. This would avoid costly mistakes that have been made in the past by those who either

did not realize the consequences of the program (e.g., changes in values), or became prematurely impatient to see the effects on their profit-and-loss statements.

Once managers have a realistic view of the program and are adequately prepared for it, they should find much that can be of use to them. The effects of the program are not limited to interpersonal and group skills and attitudes alone; there is also an improvement in problem solving competences.

Implications for Change-agents, Consultants, and Behavioral Scientists (Researcher)

There are also a number of implications for change-agents and consultants who are already involved in administering change programs or plan to do so in the future. First, the model may be helpful in providing an over-all guiding framework for planning a long-range program of organizational change and in evaluating the effects of the program. Second, the instruments and methods of measurements developed in this study could be used as diagnostic tools for determining the state of the client system during various phases of the program. At the present time the change agents spend much time in diagnosis since they have to depend upon personal inquiries. Third, the findings may be of value to change agents during initial talks with the client in explaining the effects of the program. Fourth, the finding that changes may be reported in interviews when there is no change in actual behavior should alert change agents and researchers about relying solely on self reports for ascertaining the extent of change.

Fifth, the results indicate a need for greater emphasis on the consolidation phase. Although a meeting away from location helps in starting the changes, it is during the consolidation phase that managers acquire new skills practicing new behavior in their back-home situations.

LOOKING AHEAD

Needs for Further Research

This study has been exploratory in nature. It is natural, therefore, that it may suggest many areas for further investigation. There are issues of refinement of the instruments used in the study, or of replicating the study in other situations. These extensions are obvious enough not to require further discussion. There are, however, some major areas that are specially promising for future research. The author plans to investigate many of these areas, and the necessary arrangements have already been made.

Development of Additional Instruments and Standard Tasks

Many of the variables in this study were measured by the use of the interview technique, i.e., in a subjective way. Some of them can be measured in a more objective way. For example, upward understanding can be measured objectively by ascertaining the degree to which the boss is aware of the concerns of his subordinates (Read, 1962). It will also be useful to investigate the fit between interview data and the more objective measures. Most of the research in the area of organizational change has used self-reporting techniques such as questionnaires and interviews. Many objections have been raised to the validity and

reliability of such techniques for measuring changes (Kenneth, 1957). In the present study it was found that there is not always a one-to-one correspondence between self-reports and behavioral data. There is a definite need to develop more behavioral as well as derived measures.

Another promising avenue for future research is the development of standard tasks for measuring problem solving competences. The use of the Ranking Task in the present study has been encouraging. What is needed is the development of simple but organizationally relevant tasks which are meaningful to different levels and groups of managers, and which are simple enough to use in the field situation without computers or other complex equipment. Maier has been experimenting with the use of human relations cases, some of which have showed very promising results (Maier, 1963, Ch. 2) There is a great need to develop more standard tasks using cases from other fields, such as administration, marketing and finance. In longitudinal, or before-after studies, one needs not only one task but a set of comparable tasks.

Performance on Standard Tasks and Organizational Problem Solving

Problem solving competences such as time to reach decision and quality of decisions were measured by analyzing the performance of managerial groups on a standard task. The question arises as to how performance on such a standard task is related to performance on actual organizational problems. There is some evidence from the

present study to indicate a positive relationship between the two. However, there is a need for more systematic and rigorous research over a number of years, during which time the level of performance would be ascertained by administering tasks at regular intervals, as well as measuring and keeping records of organizational problem solving activities.

Change Processes

The model of Figure 4 should be subjected to further tests. In this study only a few hypotheses concerning direction of change in some sectors were tested. Interrelations among the sectors and variables can and should be tested. This would help in the isolation of some common factors, as well as the identification of sub-processes. Secondly, many more variables can be considered in each sector than was the case in the present study. One very fruitful area of extension is the problem solving sector. The problem solving process was split into four phases, and only a few key aspects of each phase were considered. The relationships between new problem-solving variables and other variables in the system can then be empirically tested. Thirdly, only one-shot before and after measurements on the system were made. Since the instruments are now available in a developed form and are simple to use, research can be incorporated as an integral part of the change program so that a number of readings can be taken on the system during change. Thus, one can not only study the effects of the change program as in this study, but also the process of change, i.e., the path through which the system changes.

Sequential hypotheses can be deduced from the model and tested against these data.

Different Strategies of Change

The present study was done in the context of a single strategy of change, i.e., the one used by the company program. There are other strategies of change such as initiating changes in organization structure (Lawrence, 1958), or using conference leadership and role playing techniques (Maier, 1963), or using training programs in decision making (Kepner and Tregoe, 1960). Comparative studies of different programs would throw light on the question of which of them is better for what purpose?

Problem Solving Competences and Economic Results

The purpose of this study had been to bridge the gap between changes in interpersonal and group factors and problem solving competences. Another major gap that remains to be bridged is the relationship between problem solving competences and economic results indicated by performance measures such as profitability, growth rate, and return on investment. There is no denying the fact that ultimately the effectiveness of a business organization will be and should be judged with respect to these performance measures.

There is an indication that the type of program considered in this study eventually leads to improvement in results measures. Blake and Mouton (1964, Ch. 13) report an improvement in profit figure of more than 30 percent in the case of a company that is now in its fifth year of a change program. Information from one of the

divisions of the company of this study where the program is three years old, indicates that the division came out of a down turn a year after the start of the program. The improvements are now showing on the P/(L) statement in a big way. Last year the division almost doubled its profits and has shown improvement on all performance measures when compared to budgeted estimates, competition, as well as absolute goals. It has been pointed out that the division under study in this research where the program is only six months old, has solved its key technical problem of the development of a new product. In due time this should result in an improvement in the P/(L) statement.

In conclusion, it is apparent that innovations in management which can cope with accelerating technological change are now emerging in the form of change programs similar to the one considered in this thesis. Such programs are aimed at improving organizational effectiveness through the strategy of implantating new values in management systems, values that are based on the full recognition of the dignity of the individual and are helpful in releasing the potential for collaboration and cooperation inherent in the human resources of organizations. There is a potential here that can be of immense help in improving not only human relations in organizations but the problem solving and decision making competences of their managerial groups.

Although a beginning has been made, much needs to be done in ascertaining fully the effects of these new innovations on management

systems, in understanding more thoroughly the processes and strategies of change, and in developing new social knowledge and better applications of it. This will not be easy and it will require immense effort and resources. Therein lies a tremendous challenge as well as a great opportunity for close collaboration between management and the behavioral scientist.

APPENDICES AND REFERENCES

APPENDICES

APPENDIX I

Meeting Analysis Form

APPENDIX I

MEETING ANALYSIS FORM

DATE: _____

LOCATION: _____

OBSERVER: _____

GROUP: _____

ANALYSER: _____

	CATEGORY	NUMBER OF ACTS									
		Boss	subordinates								TOTAL
	Maintenance										
	Summarizing										
	Asking for Suggestion & Evaluation										
	Asking for Development										
ORG.	Suggestion & Development										
ORG.	Evaluations										
GOAL	Suggestions & Development										
GOAL	Evaluations										
PROBLEM	Suggestions										
PROBLEM	Development										
PROBLEM Evaluations	Agreement										
PROBLEM Evaluations	Disagreement										
PROBLEM Evaluations	Total										
PROBLEM	Total Problem Activity										
	Total										
	Successful Suggestions										

APPENDIX II

Interview Schedule

APPENDIX II

INTERVIEW SCHEDULE

LOCATION:_____ DATE:_____

RESPONDENT:_____ JOB-TITLE:_____

I.

A. How would you describe communication in this plant?

1. Frequency of your boss's staff meeting

Number of times per month =_____

2. Your staff meeting

Number of times per month =_____

3. Cross functional meetings which you attend.

Number of times per month =_____

B. How effective is the communication?

1. Within your peer group.

2. Between you and your boss

3. Between you and your subordinates

C. 1. How would you describe communication in your boss's meetings with his staff

2. Your meeting with your staff

D. How would you rate the frequency of communication?

1. Between you and your boss

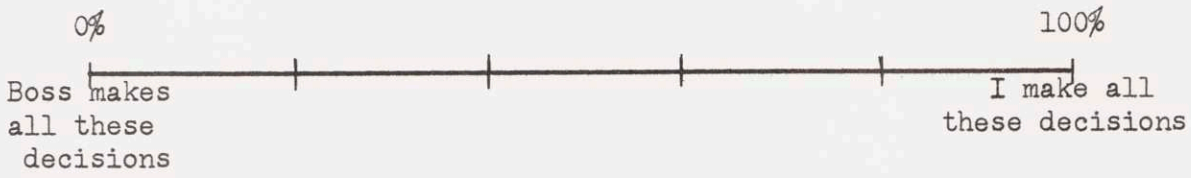
2. Between you and your subordinates

3. Between you and your peer group

II.

A. According to the defined responsibility of your position, there are a certain number of decisions which fall within your area of responsibility, and which you can and should be making.

1. Of these total decisions, what percentage are you actually making? In other words these are cases where you do not consult your boss prior to making the decision



2. Of these total decisions, what percentage does your boss let you make

B. Can you tell me something about the process of decision making?

1. Please imagine yourself in the Boss's Staff Meeting, what would you say about the following:

a)

b)

c)

d) 0% 100%

Boss acts as referee — Decisions are mutually (jointly) arrived at

2. Now please imagine yourself in your staff meeting

a) 0% 100%

I don't listen at all — I am a perfect listener

b) 0% 100%

I end up acting as referee — Decisions are mutually arrived at

C. 1. How much say do you have in decisions affecting your work?

0% 100%

None at all — Complete say

2. On an average how many times do you have to check with your boss before you make a decision?

0% 100%

Very seldom — Very often

3. Of the following people, who are generally involved in your decisions?

My boss's boss_____ My peers_____

My boss_____ My subordinates_____

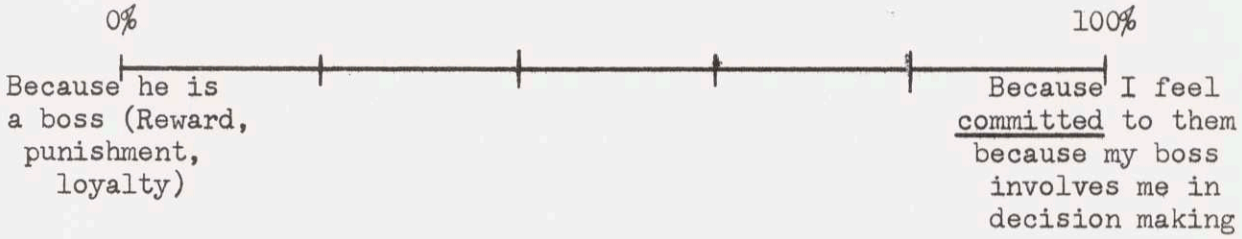
Myself only_____

4. How would you report on attentive listening in

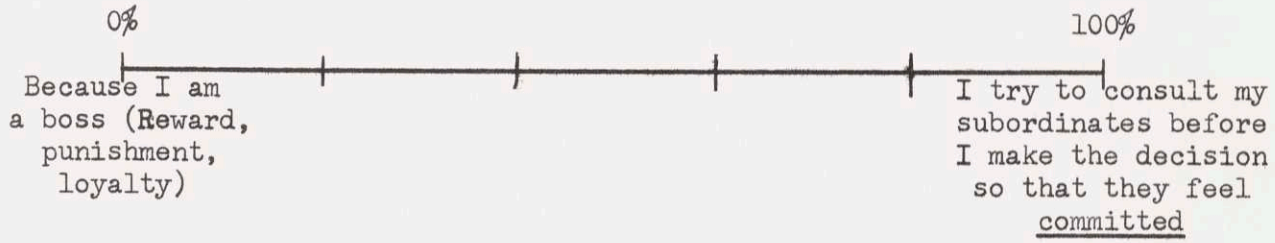
a) Your boss's staff group

b) In your staff group

D. 1. Why do you carry out your superior's decisions?



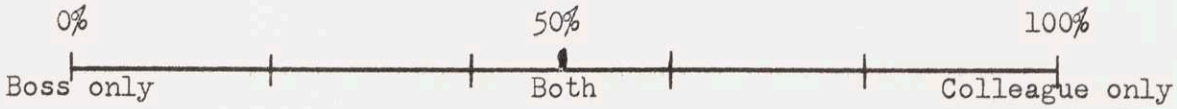
2. In your view, why do your subordinates carry out your decisions, i.e., how do you ensure that they carry out your decisions?



III.

A. How would you describe your relationships with your boss?

1. Do you see him as a boss, colleague or both



2. How close does he come to your conception of an ideal manager?

3. How would you describe an ideal manager? (His management philosophy, attributes and style)

B. 1. How willing is your boss to let you express your disagreements?

2. How free do you feel to express disagreements?

a) With your boss

b) With your peers

C. 1. How frequently are disagreements expressed in

a) Your boss's staff meetings

b) Your staff meetings

2. How are these conflicts handled?

a) In your boss's staff meetings

b) In your staff meetings

3. Of the total number of conflicts what percentage is not handled at all (shoved under rug)?

a) In your boss's staff meetings

b) In your staff meetings

IV.

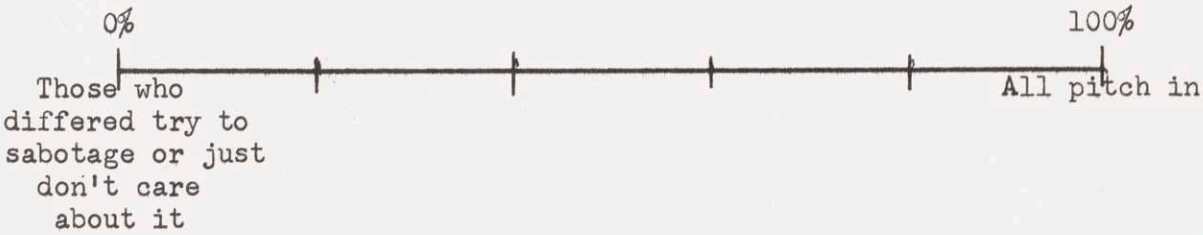
A. 1. To what extent are <u>new ideas</u> expressed around here?

2. What is the atmosphere here as far as trying out new ideas is concerned?

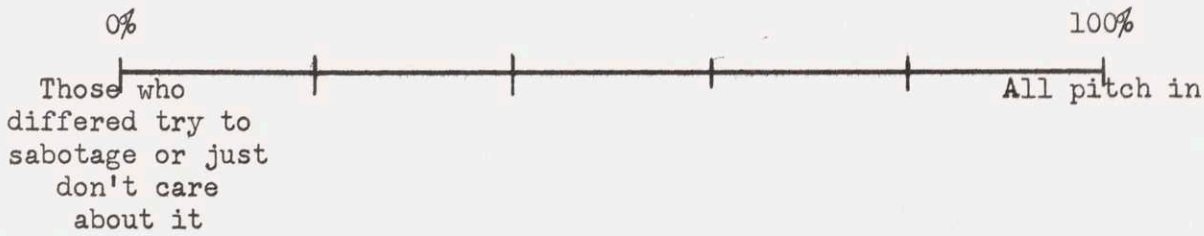
a) Chance of trying out any reasonable (50% chance of success)idea

3. Given a decision about which there were differing opinions at the time the decision was made. What is the chance that such a decision will be implemented?

a) Your boss's staff



b) Your staff group



B. 1. To what extent can you read accurately?

a) Your boss

b) Your subordinates

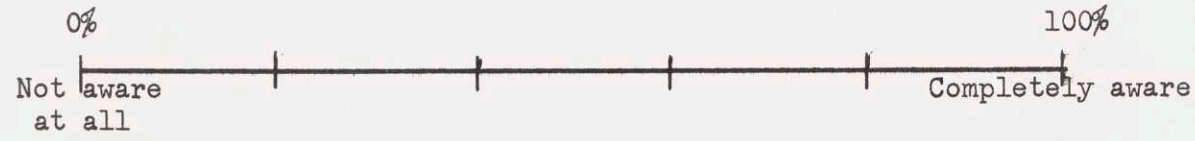
c) Your peers

2. To what extent are you aware of the true feelings and opinions of the following persons about the various issues which arise during your business transactions with them?

a) Your boss

b) Your subordinates

c) Your peers



3. How clear are the following groups about the goal they are striving for?

a) Your boss's staff group

b) Your staff group

C. 1. How would you rate the climate in the following groups?

a) Your boss's staff group

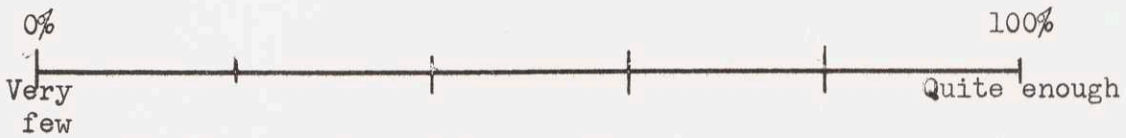
b) Your staff group

V.

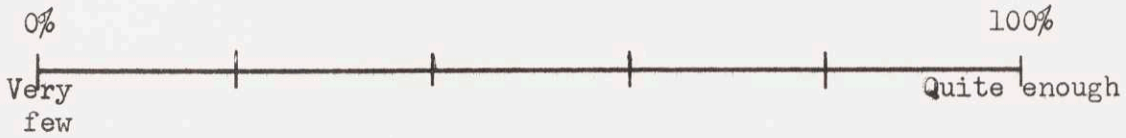
A. 1. Do you have adequate technical competences around here to solve the kinds of problems you face?

B. 1. How many alternatives get expressed and considered when you are working on a problem in

a) Your boss's problem solving meeting



b) Your problem solving meeting

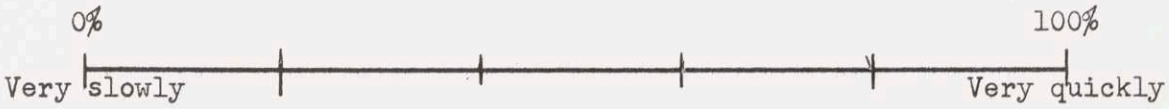


C. If there is any change in the external environment (competitive pressures, sliding prices, new demands), what can you say about the ease and the speed with which your department (section) will adjust to it.

1. Department

a) Ease

b) Speed



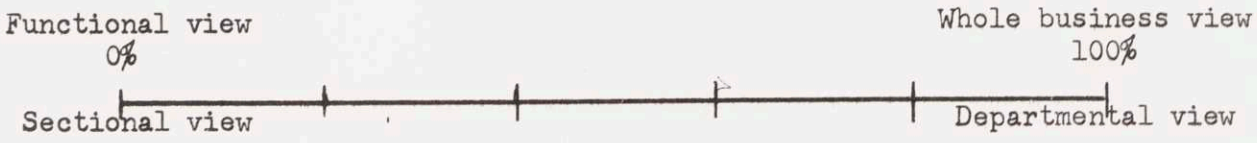
2. Section

a) Ease

b) Speed

D. 1. To what extent are various activities coordinated in

a) Your department, i.e.



b) Your section

2. How would you describe the feelings of various sections towards each other?

a) Understanding, i.e., knowing each others viewpoint (or stand) about issues of common concern

b) Trust

APPENDIX II

Post Meeting Reaction Questionnaire

APPENDIX II

POST MEETING REACTION QUESTIONNAIRE--PARTICIPANTS

LOCATION:_____ GROUP:_____ DATE:_____

RESPONDENT:_____ JOB-TITLE:_____

S1. Of the decisions arrived at this meeting, there are some which fall within your area of responsibility. How committed do you feel to implement these decisions?

0% 100%

No Commitment At All	Somewhat Committed	Moderately Committed	Fully Committed

S.2 a) Sometimes in a meeting, a person wants to talk but can't. He just does not get the opportunity to do so. To what extent did this occur to you during this meeting?

0% 100%

Never had Opportunity to Say What I Wanted to	Seldom Could Say What I Wanted to	Usually Could Say What I Wanted to	Had Opportunity To Say Everything I wanted to

b) What made it so?

_____

_____

_____

_____

S3. How satisfied are you with the way the chairman handled this meeting?

1. a) In general, how satisfied are you with this meeting?

b) What was there about this meeting that made you rate it as you did?

_____

_____

_____

_____

2. How satisfied are you with the final decision reached on the task?

3. Although you may or may not be in agreement with the particular decision this group reached, how satisfied are you with the way the group proceeded to its decision?

4. How satisfied are you with what you did in this meeting?

5. a) All things considered, how satisfied are you with the quality, i.e., the degree of excellence of the decision?

b) What about the decision leads you to feel that way?

_____

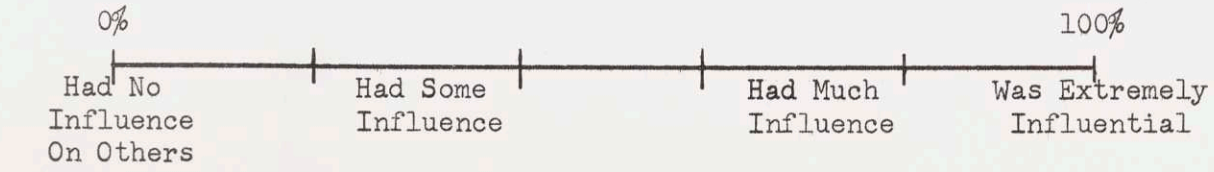
_____

_____

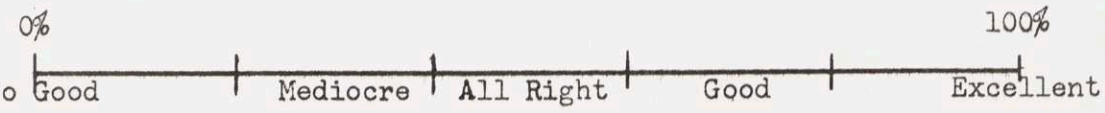
_____

6. In some meetings, <u>regardless of whether one agrees or disagrees with what is being said in the group</u>, it is hard to understand what is being said. How would you rate the communication in this meeting?

7. To what extent were you able to influence others in arriving at the final decision?



8. Considering the merits of the decision objectively, how would you rate it?



9. How open were group members in expression of their personal feelings and attitudes?

10. Please describe one important characteristic of this meeting which strikes you most.

_____

_____

_____

_____

11. How urgent to the organization was it to arrive at decisions on this meeting's agenda items at this time (i.e., at the time of the meeting)?

12. How important to the organization are the agenda problems that were considered at this meeting?

13. How much difference was there between your final opinion(s) on the question(s) discussed and the decision(s) which the group reached?

14. a) How much do you have at stake in the way the agenda problems were settled?

b) In what way will you be affected?

_____

_____

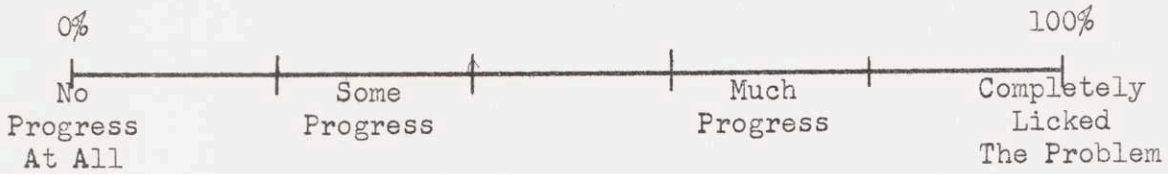
_____

_____

15. To what extent are you, or will you be, involved in putting into effect the decisions reached at the meeting?

16. How <u>clear</u> was the group about its goals?

17. How much progress was made toward the goal?



18. How far the group made intelligent use of the differing abilities of its members?

APPENDIX III

Meeting Observation Form
Description of Categories

APPENDIX III

MEETING OBSERVATION FORM

DATE: _____

LOCATION: _____ GROUP: _____ PURPOSE: _____ OBSERVER: _____

		T		I		M		E
Maintenance (Process)								
ORGANIZATION	Gives Suggestion and Development							
	Gives Evaluation (+ or -)							
GOAL	Gives Suggestion and Development							
	Gives Evaluation (+ or -)							
Asking for Development								
Summariz-ing								
PROBLEM	Gives Suggestion							
	Gives Development							
	Gives Evaluation (+ or -)							
DECISION	Type							
	Who made it							
	Whose Suggestion it was							
Residual								

APPENDIX III

MEETING OBSERVATION FORM

DESCRIPTION OF CATEGORIES

1. Maintenance (Process): All process comments of an interpersonal type, comments relating to or drawing out silent members. Process observations, related to 'Task' are not scored here.

   Example: 'I wonder why John has not spoken so far'?

2. TASK CATEGORIES

I. General: These three categories common to Organization, Goal, and Problem are:

   A. Summarizing: Process observations related to 'Task'. Comments summing up the progress of the problem.

   B. Asking for Suggestions and/or Evaluation: All question-type comments encouraging others to come out with suggestions or evaluations.

      EXAMPLES: Bill, what do you think we ought to do? (Asking for suggestion)

      Bill, what do you think about this idea? (Asking for evaluation)

   C. Asking for Development: Question-type comments asking for more information, elaboration of an idea.

      Examples: Joe, why should we do this?

      Joe, what was done in the past?

II. Organization Related: These categories relate to comments concerning how the group goes about organizing itself to do the task at hand, how it distributes the work at hand.

   A. Gives Suggestion and Development: Suggesting who is to do what, elaborating on the suggestion, giving reasons why it should be done this way.

      Examples: Let's have somebody write the major points on the board. (Suggesting)

This will be helpful for the following reasons... (Developing)

B. Gives Evaluation: Opposing (scored -), or supporting (scored +), a suggestion or elaboration.

III. Goal Related: These categories are applicable only where the group is meeting to consider more than one problem (usually not applicable to groups working on experimental tasks). When more than one problem is to be considered, one has to define the over-all goal of the meeting and also, to set a priority listing so that problems could be considered in their order of importance. This is akin to building an agenda for the meeting or defining the common goal.

A. Gives suggestion and Development: Proposing problems, defining problems, recommending a common goal, recommending priority order.

Examples: Today, we are meeting here to talk about plans for next year.

The problem which we face is really to decide what market or markets we want to cater to.

Can we work on the following problems.

Let us each bring up problems of our concerns.

I suggest that we first start with product policy, then move on to other problems.

B. Gives Evaluation: Opposing (Scored -), or supporting (scored +), a suggestion or elaboration.

Examples: I don't think this is a good idea. (scored -)

Bill, this is a fine idea, really helpful. (scored +)

IV. Problem Related: These categories relate to a single problem or task. The problem may have many aspects.

A. Gives Suggestion: Proposing alternatives or solutions.

Examples: One way to reduce our overtime cost is to institute tighter controls.

B. Gives Development: Elaborating on the suggestion.

Examples: By tighter controls, I mean ...

I suggest tighter controls because ...

C. Gives Evaluation: Opposing (scored -) or supporting a suggestion or elaboration.

Examples: I don't like tight controls. (scored -)

I think tight controls should be instituted. (scored +)

That is a fine idea. (scored +)

V. Decision Related: These are general categories applicable to organization, goal and problem.

A. Type: Three types are -

1. Single Type (S) - Where one person (usually the boss) makes the decision. Others normally remain silent.

2. Voting Type - Where a formal vote is taken. Two subdivisions here are minority versus majority type.

3. Consensus type:- Where opinion of each member is solicited. Sufficient discussion allowed, especially for the minority viewpoint, such that final decision seems to have general agreement of all to implement it, though individuals may disagree with the decision.

B. Who made it: Here should be entered the people who explicitly were for the decision.

C. Whose Suggestion was it: Here should be entered the people whose suggestion was finally adopted.

Residual Category: This is meant to record interactions which have neither value for the group maintenance nor are related to task. These may be some idiosyncratic needs of some people. In this category the interactions which cannot be scored in preceding categories may also be scored. This category will be rarely scored in observing business meeting. Such interactions will be rare in business settings.

APPENDIX IV

Ranking Task No. I
Ranking Task No. IA

APPENDIX IV

RANKING TASK NO. I

Listed below there are ten elements associated with the role of a manager in an industrial organization. Your task is to arrive at a decision on a ranking of these ten elements in terms of their importance to the effective performance of a given manager. Rank the most important element as number one, the least important as number ten, and similarly in between.

A. Making directives and orders as clear and concise as possible in order to avoid confusing his subordinates or placing them in ambiguous situations.

B. Effecting a firm and consistent separation between line and staff functions.

C. Reliance on explanation and persuasion rather than direct orders for obtaining action from others.

D. Directing the work of a relatively small number of subordinates so he can do a thorough job of control and evaluation.

E. Creating a climate where members of his unit are able to function effectively as a collaborative team.

F. Giving the subordinate increasing responsibility and an opportunity to exercise self-control.

G. Effecting a climate in his group such that a range of different ideas is encouraged and available for any given task or problem.

H. Knowing how best to motivate people to work hard, especially when they would otherwise tend to slack off or be lazy.

I. Fostering an emotional relationship between himself and a subordinate that is an open one in which each feels he can level completely with the other.

J. Ensuring that there is a unity of command so individuals will not be subjected to conflicting authority in their job performance.

APPENDIX IV

RANKING TASK NO. 1A

Listed below there are ten elements associated with the role of a manager in an industrial organization. Please rank these ten elements in order of their importance to your effective functioning as a manager. Rank the most important element as number one, the least important as number ten, and similarly in between.

A. Exercising authority firmly, not only for decisions but to discipline the organization.

B. Fostering a climate in which the feelings and opinions can be openly and freely expressed.

C. Establishing a regular performance appraisal system so that he can keep up a check on his people.

D. Using the powers (rewards and punishments) vested in him by the company to ensure that the people under him follow the company way of doing things.

E. Delegating responsibility as well as authority as rapidly as the subordinates can handle it.

F. Considering as his primary responsibility the development of his subordinates as competent managers.

G. Seeing to it that management decisions are rationally arrived at and are always based on company goals.

H. Managing through explanation and persuasion rather than direct orders.

I. Ensuring the development of a system of controls and measurements which keep him promptly informed of the various units under him, and permit him to initiate a corrective action.

J. Working towards the integration of the individual goals of his people with the company goals.

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