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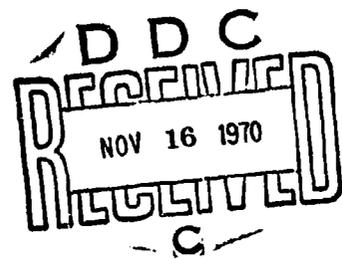
THE PRACTICE OF ORGANIZATION DEVELOPMENT:
A SELECTIVE REVIEW

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This is a review and integration of the major empirical literature on organizational development practice. Covered are the Managerial Grid, Survey Feedback procedures, sensitivity training, and socio-technical systems approaches.			

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THE PRACTICE OF ORGANIZATION DEVELOPMENT:
A SELECTIVE REVIEW

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State of the Art

From the beginning of history, man has tried to deduce how organizations might best be structured and how they could best function to create the order and stability necessary for the preservation of the organization. Early attempts, such as Hammurabi's Code and Plato's Republic, concentrated on the organization of society: the state itself. Since the nineteenth century, this same task has received the attention of executives, administrators, theorists, and scholars, with respect to more restricted types of organizations: business firms, government agencies, voluntary organizations, etc. The trend has been to postulate and describe in detail one "best" form of organization, as is illustrated most clearly by Weber's (1947) early work on the theory of bureaucracy. Following this work, many others have provided models, schemes, principles, and systems for the structure and functioning of organizations, always aimed at describing how to run an effective and enduring system.

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²Alan Frohman, Charles "Pat" Waters and David Bowers generously gave direction and encouragement to this work. While we gratefully acknowledge their help, we, alone, are responsible for interpretations and implications drawn in this paper.

The earliest of these, such as Taylor (1911) and Gulick and Urwick (1937) described rather tightly defined, almost rigid, sets of principles which supposedly created equally well-defined and structured organizations. Later, in the 1930's and 40's, an emphasis was placed on the human side of the organization by investigators such as Roethlisberger and Dickson (1938) and executives such as Barnard (1938). The culmination of this line of thought can be found in March and Simon's (1958) dynamic description of Organizations. More recently, a new focus of concern has been explored by investigators such as Cartwright (1951), Likert (1961, 1967), and Beckhard (1969). This is the field of organizational change, organization development, or, as we shall refer to it, "O.D."

As opposed to concern for stability and certainty, this new field represents a concern for change, innovation, challenge, and development in organizational functioning. This shift of emphasis from stability to change and innovation, is not really surprising. It is simply a reflection of the incredible rate of change that society as a whole has experienced over the past hundred years, and of the continuous increase in this rate. As a result, while for over seventy years the focus was on establishing stable internal structure and functioning of organizations, this focus is now one way of keeping pace with changes in the society outside the organization and facilitating changes in patterns of organizational structure and functioning.*

Thus, societal change produces pressures for organizational change, and has created a boom in the field of O.D., much as the new technology

*While our present concern is with change, this should not be taken to imply a lack of concern for stability. Indeed, the processes of stability and change are not exclusive of one another but are, rather, complementary (e.g., see Frohman, 1969 and Schon, 1967). This is not to say that the processes of stability and change cannot be at odds, but only that such is not the case in effectively functioning organizations.

of the early part of this century led to emphasis on the stable structure of large organizations and the development of administrative theory and application. Unfortunately, there is another parallel between these two situations. The greatest failing of early administrative theory was the lack of empirical research. Writers produced lengthy treatises on the principles of administration, but neglected to check back with reality to test these principles in terms of empirical results. Today, the research on O.D. is very clearly lagging behind the practice.

Let us, however, be more explicit as to just what we mean by "O.D." Operationally, organization development is a planned effort to improve the functioning and effectiveness of an entire system through applications of behavioral science knowledge to the processes and structures of the system. Our definition is similar to that proposed by Beckhard (1969), and has several important elements.

First, O.D. involves the whole system, not just a few individuals or groups. Change must be related to the total organization. As Beckhard (1969) says, "There may be tactical efforts which work with sub-parts of the organization, but the 'system' to be changed is a total, relatively autonomous organization" (p. 12). This factor distinguishes O.D. from management development. The latter focusses on an individual or a group of individuals and typically aims to improve the skills, attitudes, or knowledge of the individual. An O.D. effort may affect skills, attitudes, and knowledge, but will primarily emphasize such organizational factors as leadership, group processes, roles, and inter-group relationships.

The second element of our definition refers to the goal of O.D., that is, the improvement of organizational functioning and effectiveness. By

functioning we mean the social psychological, psychological and physical indices of the organization's members and groups. These are measured in terms of leadership behaviors, group processes, role perceptions, medical factors and attitudes such as satisfactions. By effectiveness we mean the traditional engineering measure of output divided by input, times 100, as well as less concrete factors. Organizational effectiveness can include such criteria measures as the organization's ability to adapt to external and internal demands; the processes by which goals are defined, the degree to which they are shared, and the success of the system in attaining goals; the integration of individuals and groups into the organization and the communication processes supporting such integration; and, the climate of the system, in terms of the degree of support and freedom provided to the members.¹

Third, our definition says that O.D. works on the "processes and structures of the system." Processes are the dynamic, on-going social and psychological factors by means of which an organization actually functions. Examples include the processes of communication, influence, and goal setting. Structures offer a framework for providing the long term stability of the system. They are, essentially, configurations of the organization's members relative to one another. The network of reporting relationships and authority and hierarchy are examples of structural factors.² To draw a crude analogy, in the human body, the

¹Other ways of looking at effectiveness are offered by Bennis (1966), Beckhard (1969), and Yuchtman (1967).

²Lengthy treatment of the structural factors influencing organization functioning and effectiveness can be found in Porter and Lawler (1965) and Frohman (1969).

system of blood vessels and, in fact, blood itself, are structures, while the flow of blood in the body is a rather complex process.

Finally, O.D. is planned. Who does the planning is important, and will be discussed later, but the crucial point there is that O.D. does not involve random tinkering with organizational processes and structures, but is rather a planned change effort, designed to improve a system by changing it in ways that have been shown to lead to improvements in other cases or ways which theoretically should lead to improvements in effectiveness.

A recent paper (Kolb and A. Frohman, 1970) outlines a number of critical steps in the planning and implementation of an O.D. program. Because of the importance of careful planning, we will briefly present the steps in the process of planned change enumerated by Kolb and A. Frohman. They conceive of planned change as a dynamic seven step process: scouting, entry, diagnosis, planning, action, evaluation, and termination.

The scouting phase involves the scanning of the client system or target of change. In the scouting phase the consultant (change agent) looks for the best point of entry and assesses the degree to which he thinks that he is an appropriate resource for the system. The second phase, entry, entails the development of a "contract" as to the roles, expectations, goals, and methods of the persons and groups involved in subsequent steps of the change efforts. Diagnosis, the third step, starts with the client's felt problems and moves toward clearer identification of specific goals for the improvement of the functioning of the client system. Kolb and A. Frohman emphasize that diagnosis also consists of an assessment of the resources of the client as well as the consultant available for bringing improvement in the problem. That is, the skill and readiness of both parties are important factors. A number of diagnostic instruments are mentioned.

Planning, which starts with the results of the diagnosis, involves a careful articulation of the goals and possible resistances and action steps. The value of client-consultant collaboration is especially stressed by the authors in this step, although they deem it important throughout the change efforts. The action phase is the implementation of the developed plans and should run smoothly if the work of the first four stages was done well. The sixth phase, evaluation, is undertaken periodically; the success of the development activities in terms of subgoals should be monitored by the client and consultant in order to determine if termination or if replanning is necessary. The last phase, termination, can be consummated after success or failure. Kolb and A. Frohman point out two general criteria of success: the achievement of previously defined O.D. goals and improvement of the client's ability to sustain and improve himself, or as they call it, "ecological wisdom."

Having offered a definition of O.D. we turn to the state of the "behavioral science knowledge" referred to in our definition. How good and adequate is this basis for planning change? To put it simply, not very good at all. Says one researcher, "Despite the common occurrence of organizational change, its dynamics and underlying processes are understood in only rough, ill defined ways" (Barnes, 1969, p. 79). Greiner (1967) notes "a critical need at this time to understand better this complex process [organizational change], especially in terms of which approaches lead to successful changes and which actions fail to achieve the 'desired results'" (p. 199).

Blake, et al., (1964) and Mann (1962) have also commented on the need for more and better measurement of the results of O.D. Blake, et al., state, strangely enough, large scale organization development is rare, and the measurement of results is even rarer (p. 133).

Friedlander (1968), while referring primarily to the use of sensitivity training as an O.D. method, makes points relevant to the entire field of O.D.:

For the most part, previous studies have focussed upon sensitivity training sessions rather than upon organization development programs and thus have contributed less to our knowledge of *organizational* improvement. They have dealt with single case studies rather than with several groups or organizations and have thereby precluded comparisons of the relative effectiveness of *different* processes upon outcomes. They have focussed entirely upon outcomes with little or no specification or description of the processes and have provided us with little information about how to utilize or improve the processes. Or they have described the processes with no systematic evaluation of the impact and have left us with no data on their usefulness. If we are to improve outcomes of change programs *we must at some point study comparative changes in the effectiveness of different work groups (or organizations) and then link these changes to the respective process interventions initiated by the trainer-consultant.* [Italics added; p. 380.]

Overall, there is a need for comparative studies of full O.D. programs, including evaluation of the processes and the results obtained. This need is emphasized by the fact that a recent major text on planned change contains only one research report involving the analysis of data and no comparative research at all.

One might think that organizations sponsoring their own, internal development and training programs would take more seriously the need for evaluation of results. This assumption would seem unjustified, on the basis of some evidence provided by Catalanello and Kirkpatrick (1968). These authors surveyed 86 organizations involved in human relations training. Of 47 responses, they found only 21 which "indicated efforts at evaluation in terms of behavior change, [while] of these 21, only 12 indicated that they measured behavior before the program as well as after. Only one used a control as well as an experimental group and only two did any statistical

analysis" (p. 8). Finally, only 16 of the 47 organizations attempted to determine whether the training program was achieving the desired results in terms of performance, turnover, cost reduction, grievance reduction, or other criterion measures. Moreover, the authors felt their results could be generalized to "training programs of all types."

A critical view of evaluative O.D. research is given in the results of a survey on the application of behavioral science concepts in organizations (Rush, 1969). Out of 302 firms sampled, 180 reported that these concepts need more developmental research to improve their applicability to management and organizational functioning. Nonetheless, the vast majority of respondents indicated that behavioral science or O.D. programs were of use in their own firms. We can only conclude that the need for O.D. is seen by the users as quite separate from the need to undertake evaluative research on its effects.

In sum, it would seem that good research, in terms of design and evaluation, is generally lacking; that good comparative research, involving similar or different O.D. programs in different or similar organizations, is practically non-existent; and, there is little evaluation of O.D. and training programs by the organizations involved. However, having presented this rather dismal "state of the art," we shall turn to the brighter side of the overall picture. There does exist a fair volume of useful O.D. studies, as well as reports which relate in significant ways to O.D. without specifically focussing on O.D. research. These studies are the subject of the remainder of this review.

Contributions to O.D.

The research studies to be discussed all make substantive contributions toward our understanding of O.D. Broadly, they fall into two categories:

(1) research dealing with specific types of O.D. programs; and, (2) research concerning rather unique O.D. applications based on certain behavioral science principles. We shall not confine ourselves to research which meets nominal "scientific" requirements, such as control groups, pre- and post-treatment measures, instruments of proven reliability and validity, and careful analysis with attention to extraneous variables. For one thing, were we to consider only studies of true scientific rigor, we would find ourselves with few studies to consider. This is partly due to the relative infancy of the field, and partly a reflection of the general inadequacy of research in this field, which was dealt with above. This inadequacy extends to much of the research done concerning the application of behavioral science knowledge in industry. For example, Blumenfield (1966) on attitude change as a criterion in training, Miraglia (1966) on human relations training as a method of improving performance, and Campbell and Dunnette (1968) on the effectiveness of T-group experiences in managerial training, all conclude that inadequate research and evaluation exists concerning their respective topics.

There is a second, and more powerful reason, for rejecting adherence to scientific rigor for O.D. studies. That is, much O.D. work, while not conforming to true scientific standards, provides significant insights into procedures and dynamics of the O.D. process. This should not be surprising. The field of O.D. owes much to social psychology and group dynamics, but relatively little to "scientific" psychology. As we see it, the purpose of O.D. research is not simply to control and statistically analyze a minute portion of behavior within organizations. Rather, the aim is to provide meaningful data and insight into O.D. strategies and processes. Meaningfulness

is not always gauged in statistical terms. O.D. research must be meaningful to the O.D. practitioner, who must be able to apply such research results, and to the client systems which contribute to the research. Friedlander (1968b) has noted that "the rich understanding and knowledge that we might gain tends to be constrained by our esoteric methods and purposes which are likely to exclude the subject from explorations and implementations meaningful to him. ...To the extent that the subject is excluded from the research situation the researcher is also excluded..." (p. 376).

While meaningful research is not necessarily "scientific," it is possible to enhance the potential meaningfulness and contribution of research efforts by adherence to scientific standards, provided that the method does not displace the goal of better understanding of O.D. We will discuss research of scientific rigor as well as non-rigorous work, the only essential requirement being that at least, in our opinion, the work contributes to the understanding and advancement of the O.D. field.

O.D. Programs

These O.D. efforts are called programs because they are planned in some detail around some central theme or strategy of intervention. We will deal with studies concerning four types of O.D. programs: (1) the "Managerial Grid," or Grid O.D.; (2) survey feedback; (3) the socio-technical systems approach; and, (4) sensitivity training, or T-groups. Our descriptions of these programs will be necessarily brief; books have been written about each. The concern here will be with research that has explored the processes and outcomes of the methods involved in these O.D. programs.

GRID O.D.

This program was developed and popularized by Blake and Mouton (1964, 1968). Despite the widespread acceptance of Grid O.D. by business and

industry, there has been relatively little hard data concerning the outcomes of the program, although several publications have dealt in detail considerable length with the methods and procedures.

Essentially, Grid O.D. is based on two key variables--concern for production and concern for people. These are represented as the axes of a graph and scaled from one to nine. The most effective organization, Blake and Mouton contend, maximizes both concerns or is "9, 9" on the graph. Since the two variables are independent of one another, an infinite number of types of organization is theoretically possible. The purpose of Grid O.D. is to move a system toward the "9, 9" goal. Through the Grid, managers are purportedly able to analyze their own behavior and discover the behaviors conducive to high productivity and good interpersonal relationships. The total system is changed by means of a six-phase program involving:

- (1) laboratory-seminar training in a one week session designed to introduce the participant to behavioral science concepts and their applications;
- (2) team development training for a supervisor and his subordinates, during which the team examines intragroup work relationships in light of their knowledge acquired during phase one;
- (3) intergroup development, where the focus is on relationships between two-interdependent work groups;
- (4) organizational goal setting by top managers;
- (5) planned actions directed toward goal attainment; and,
- (6) stabilization through review and evaluation.

While there have been numerous testimonials to the effectiveness of Grid O. D., few true research evaluations have been made. Blake and Mouton and Barnes and Greiner (1967)* have reported in some detail

*The evaluation design used is reflected in the authors' credits. Blake and Mouton served solely as the change agent-consultants, while Barnes and Greiner independently evaluated the results of the program.

on the results of one Grid program. Although no control comparison was used and some of the data collections were post hoc, a wide variety of data was presented which generally indicated improved organizational health and efficiency. The authors themselves point out that it would be gross over-simplification to assume the improved conditions were directly due to the Grid program, but their rather thorough analysis clearly points to a rather favorable impact of their O.D. efforts.

The site of the study was a large plant (about 4,000 employees) of a multi-plant firm. The plant had a reputation for technical competence and meeting production goals. In 1959, a new plant manager took over, and a year later the parent firm merged with another organization, leading to changes in top management policies, including termination of a prior "cost-plus-profit" contract between the plant and the parent firm. In 1962, all plant personnel began phase one of the Grid program. It is not clear what proportion of the members completed all six phases, but it does appear that all six phases were used to some extent. Late in 1963, evaluation began, by which time almost all managers and technical people had completed phase one and participation in other phases was underway.

Barnes and Greiner reported a substantial increase in profitability over the period 1960 to 1963. They further determined that 44 percent of this increase was due to reduction in controllable costs, primarily traceable to manpower reduction. However, about 13 percent of the 44 percent controllable cost increase was attributable to improved operating procedures and higher productivity per man-hour. This amounted to an increase in profit of several million dollars which the authors felt was due to the Grid program. Comments by plant personnel indicate that the program's impact on efficiency was, in general, perceived as quite favorable.

Other measures also showed a favorable impact of the Grid O.D. program. For example, the number of meetings increased by 31 percent (for a sample of managers) from 1962 to 1963, while greater emphasis was reported on team work and problem solving. Post hoc analyses of attitude and value change indicated changes consistent with the values inherent in the Grid concepts and program.

Overall, it seems reasonable to conclude that the Grid O.D. program was associated with increased organizational effectiveness. What, then, are the implications for O.D. in general, that may be derived from this research? Barnes and Greiner conclude that "behavioral science and human relations education can assist with large-scale organization development under certain conditions" (p. 155). These conditions would include:

"demanding but tolerant headquarters,"
 highly involved top management,
 emphasis on team problem solving and mutual support with regard
 to work-relevant issues,
 work which "requires some inter-dependent effort and common values."

Another very important aspect of the O.D. program was the use of line managers as instructors for phase one training sessions. Senior line managers who assumed key instructor roles, during phase one, later stood out as among the most improved managers, as reported by their subordinates. The researchers suggest, "it seems likely that the 'instructor' roles helped to reinforce their attempted 9, 9 behavior back on the job" (p. 155).

Two further implications can be drawn from this report. First, the significant change in the relationship between plant and headquarters (prior to the O.D. program) may have "unfrozen" the plant, in the sense that the questioning of old ways and traditions may have been facilitated. This suggestion is supported by the fact that the plant was forced, at that time, to become less dependent on headquarters and generally more self-reliant. Thus, receptivity toward changes in procedures and behaviors would be increased. Second, the exposure of almost every manager at every level to

phase one of the program provided a common set of experiences, language, and learnings. Thus, changes in the desired direction would tend to be more uniform, and were supported not only by peers but by those at adjacent levels of management.

This study provided rather strong support for Grid O.D., however, another report by some of the same authors illustrates the failure of this same O.D. technique. Greiner, Leitch, and Barnes (undated) investigated the impact of Grid programs on six districts of a large federal agency, over a period of three years. Their dependent variable was "organization climate," defined as the organization members' combined perceptions of the degree of task-people integration in the organization. That is, they were essentially interested in how well the organization was moving toward the 9, 9 goal.*

The results obtained by Greiner, et al., showed that there was, in fact, no change at all in climate in any of the six districts. In no district--large or small, East coast or West coast--did the "primary" or predominant climate yield to the onslaught of the Grid O.D. program. Further analysis revealed that the remarkable similarity of climates in each district and the total lack of change were due to the top management of the agency. That is, top management's methods of handling intense pressures from sources outside the agency were transmitted to and adopted by all of the districts, and these methods had major effects on the climate. Thus, at least two of Blake, et al's (1964) conditions, noted above, were violated: the top administrative, or headquarters, group was not supporting the O.D. effort and was not involved in the program. We can derive still another significant concept from this example of O.D. failure. That

*Note that "hard" criteria, such as health and efficiency measures, are now replaced by an assumed equivalent measure of effectiveness: the degree to which the organization approaches the 9, 9 ideal.

is, the goals of the O.D. program with regard to organization climate were clearly incongruent with the climate top management generated for the organization.* Thus, this uninvolved top management group provided the most salient model for district management, resulting in the lack of success of a time-consuming and costly O.D. program.

We shall consider in greater detail this issue of congruence between O.D. efforts and other organizational variables in a later section, as well as touching on the problem with respect to other types of O.D. programs. Let us now go on to the second group of O.D. program efforts: the survey feedback approach.

SURVEY FEEDBACK

The following O.D. research studies possess at least one common element: a paper and pencil survey was administered to part or all of the organization's members and the results "fed back" to the participants. This methodology was developed at the Institute for Social Research of The University of Michigan, in the 1950's, by Mann, Likert, and their associates (Mann, 1962; Mann and Likert, 1952; Neff, 1965). The survey feedback process begins with the development of a questionnaire. This instrument is administered to all relevant persons in the organization and the data obtained is analyzed and summarized in ways which are clear and meaningful to the organization. The data usually deals with variables such as leadership behavior, group processes, satisfactions, contextual factors, structural arrangements, role perceptions, and so on. The specific variables of interest are usually determined by the research staff and the client system. Some basic reasons for making the O.D. program a joint researcher-client effort from the very beginning are the need

*Whether this was, in fact, the best climate is at this point immaterial.

to respond, in terms of the program, to the particular demands and idiosyncrasies of the client system, and to involve the client system in the program, maximizing understanding and commitment (Miles, et al, 1969; Neff, 1965).*

The feedback process is of major importance. Written reports or summaries to top management have been found to be of little value. After much trial and error, Mann concluded, "The process which finally appeared to maximize the acceptance and utilization of survey and research findings can be described structurally as an interlocking chain of conferences" (Mann, 1962, p. 609). The organization is seen as a pyramid of interlocking groups. Each manager or supervisor is head of a "family group," and is also a member of another family group composed of his peers and supervisor.

The actual data reported to each family head deals with organizational group factors affecting that unit. Data is usually treated so that specific respondents, and sometimes even specific groups are not overtly identifiable. It is of great importance that the data be presented in a format which makes it easy to understand and use. Data that focusses on specific organizational variables and work group processes can readily be used for diagnostic purposes, that is, for identifying problems and facilitating their understanding by all members of the family, or unit, through sharing of the data.

It is the responsibility of each supervisor, or family head, to share the data with his subordinates so that examination and interpretation of relevant information can take place. However, these feedback meetings serve a useful purpose entirely aside from the sharing of survey data. First, communication often occurs relating to organizational issues and conditions

*Beckhard (1969) has developed an interesting variation of the paper and pencil survey. He collects data by means of interviews with a representative "diagonal slide" of the organization (that is, managers at all levels are interviewed, but no individual is the direct superior or subordinate of any other). The data is studied and synthesized for feedback in terms of the frequency with which specific issues came up in the interviews.

which has little to do with the data but is of high concern to the group. Neff (1965) notes, "the chain of meetings down and up the organizational hierarchy stimulate the flow of information and feeling which provide the basis for change decisions" (p. 36). These meetings also provide a means by which group members can interact and become better acquainted with one another and, following Homans' model, become more favorably disposed toward one another.

Neff (1965) has identified three phases in the process of data feedback and utilization in a group meeting. First, members of the group must overcome skepticism and defensiveness and accept the data as a valid picture of the situation and the group. At this point in the process, Miles, et al. (1969) suggest that the data can have any combination of three effects: (1) the data may corroborate the group's views of itself and its functioning; (2) the data may present information contrary to some beliefs; and (3) the data may prompt interest and inquiry into why persons responded as they did.

The second phase, Neff states, involves acceptance of responsibility. That is, the group members must recognize that they had a hand in creating the conditions represented in the data and that they are, therefore, responsible for changing these conditions.

Finally, the group must focus on specific data items and, using these as a basis for discussion, determine what implications the data have for the group in terms of changes in group processes. It is important to note that simply providing the leader or supervisor with the data is not sufficient for this phase to be successfully carried through. However, if supervisors have been trained in the methods and skills of leading group problem solving discussions (e.g., Maier, 1963), then action plans in response to salient problems should result.

The feedback group discussion part of the survey feedback process is of greater importance than the survey part. There are at least three reasons here. First, as we noted above, improvements in communication, within groups and up and down the hierarchy are common and can be useful in improving effectiveness. Second, Maier (1955) had identified two major dimensions of decision making: (1) the objective quality of solutions; and, (2) the acceptance of the decision by those who must carry it out. Quality is often enhanced when individuals possessing relevant information are involved in the problem solving process. Acceptance and motivation to carry out the solution is usually increased by participation in relevant phases of problem solving.* Thus, group discussion and problem solving can improve the quality and acceptance of decisions. Third, it has been pointed out by Cartwright (1951) that the group can be a powerful tool for change in three ways. That is, the group can serve as (1) the agent of change, (2) the medium through which change is introduced, and (3) the target of change efforts. By convening a group to study information that group has generated about itself, in order to produce salient alterations in itself, the forces of the agent, medium, and target are aligned with and congruent with other forces toward change, rather than acting in opposition to change.

Thus, the survey feedback process values use of refined survey methods to obtain meaningful data which is presented to groups at all levels of the

*Several specific points to be considered in conducting a group problem solving meeting are outlined by Frohman (1969b). A. Frohman (1970) offers a technique by which conflict between groups or individuals can be managed in problem solving utilizing behaviors that facilitate quality solutions and encourage commitment. Also Maier (1963) provides an exhaustive treatment on the application of group problem solving processes.

organization. Under appropriate conditions, with skilled leaders, the group processes can be expected to result in improved communication, decisions of high quality and strong group support, and increased commitment to organizational change in the direction of improved effectiveness. Let us now consider some examples of the survey feedback method. Most of these O.D. efforts involved elements other than a survey and feedback of data, but these elements were key factors in each of the change attempts we will discuss.

Changing the structure and functioning of an organization. Seashore and Bowers (1963) report on the implementation and outcome of a major organizational change program in a factory employing 800 people. An O.D. program using the survey feedback technique was carried out in three departments, while two other departments served as control subjects. Several objectives were determined prior to the O.D. effort including (1) an increase in the emphasis on work groups as the basic functioning units of organization; (2) an increase in the amount of supportive behavior shown by supervisors and among workers; (3) a larger role for employees in relevant decision making areas; and, (4) greater interaction and influence among work group members. These goals were to be attained through changes in four specific areas: (1) changes in policies to bring them in line with desired practices; (2) structural modifications such as changes in the size of work groups and improved role clarity; (3) cognitive changes among managers in terms of understanding new styles and patterns of behavior; and (4) behavioral skill development in terms of interpersonal relationships and group problem solving processes.

"The chief methods for facilitating change were to be: (1) an increase in the number and variety of problem solving and coordinating meetings at various levels, (2) seminars, conferences, and similar instruction and discussion meetings,

(3) information given to supervisors at all levels concerning the earlier survey results, and (4) personal counseling and coaching by the [Survey Research Center] agent and by supervisors at all levels. A key factor in these change activities would be the application of the 'linking-pin' concept in the formation of groups; that is, an effort would be made to create effective groups with membership conforming to the formal organization structure, and with overlapping membership to aid coordination vertically through the organization." (Seashore and Bowers, 1963, p. 25)

The results were generally quite favorable for this O.D. program. For all four of the primary objectives, substantial improvements were observed in the experimental units, as compared to the control units. Of the 11 dependent variable measures, six changes were statistically significant. Employee satisfaction in the experimental units was clearly superior to the comparison departments. Four variables charting the effectiveness of the departments showed mixed results but generally favored the experimental units. In retrospect, this lack of rapid improvement in performance is not, however, surprising. Likert (1967) explains that it may take a number of years for a successful O.D. program to affect performance, since performance is affected by leadership and group processes. Once these changes have stabilized, changes in performance will begin to show up. Empirical data for this point has been presented by Likert and Bowers (1969) and Frohman (1970).

Three specific implications can be derived from this study. First, the importance of top management support is clearly recognized and used as a major facilitator of change. Furthermore, the support and cooperation of the union was obtained. Thus, the O.D. program had strong legitimation from top management and the union, as well as the active involvement of both.

A second point concerns the clarity of structure and policies within the organization. The authors noted "an unusual degree of fluidity, ambiguity

and formlessness in the pattern of activities" in this firm. This condition, plus a number of market and technological changes, served to delay and confuse several change attempts. Thus, it would seem that O.D. efforts should be grounded in a comprehensible and reliable picture of the existing state of the organization. If anomalies and ambiguities are common, then the change strategies should be designed to take these factors into account. For example, the aim may be to create certain structures or policies rather than to change those existing.

Finally, this study shows the importance of flexibility in an O.D. program. Although the above description appears to represent a tightly planned and conducted model, this was not truly the case. Many minor modifications were made in the O.D. plan during the course of the effort. There are two obvious reasons for this. First, we have already noted the rapidity of environmental change, and this type of change, along with the new demands imposed on the organization, does not slow down or stop for the convenience of O.D. practitioners. Second, information may be uncovered during the O.D. effort which has great relevance for the program, possibly suggesting different approaches toward the successful development of the organization. For these reasons an O.D. program should be flexible and have periodic review during the developmental process.

Management by participation. The second survey feedback program we will review again involved Bowers and Seashore, as well as Alfred Marrow of the Harwood Manufacturing Corporation. In 1962, Harwood acquired its major competitor, the Weldon Company (Marrow, Bowers, and Seashore, 1967). Although the two firms were similar in size, technology, markets and products, the former was well managed and growing while the latter was poorly managed,

inefficient, and slowly losing its market profitability. Weldon was clearly in need of help, and what had started as a typical merger became a sizeable development effort.

The aim of the O.D. program at Weldon was to reshape the technology, training, policies, and managerial styles along the lines of Harwood. The Harwood model of management was based on a philosophy of full usage of human resources through open communication and participation in relevant decision making areas. While we consider this program as within the survey feedback tradition, there were in fact quite a variety of specific changes and change interventions made entirely aside from the survey feedback aspect of the program. Several outside consultants were involved in this multi-faceted program.

The researchers identified eight "main events" in the program to improve the effectiveness of Weldon: (1) A unit system of production was introduced, which put workers into semi-autonomous groups. Corresponding changes were made in plant layout, work flow, production methods, and equipment. (2) A vestibule training program was established for new employees. (3) An "earnings development program" was undertaken. This consisted of intensive work and coaching for all sub-standard workers. (4) Training seminars in interpersonal relationships were held for supervisors and staff. (5) Group problem solving meetings were set up for workers and their supervisors. (6) A blanket rate increase was introduced, due to change in production method. (7) Employment selection tests were instituted. (8) Chronic low performers were fired.

The combination of O.D. efforts resulted in a 30 percent increase in production in less than one year. Although imperfect, the analysis design used was rather sophisticated in that it was possible to sort out to some

extent the effects of each of the main event change interventions. Thus, it was estimated that the earnings development program contributed 11 percent of the 30 percent gain, while weeding out low performers and interpersonal relations training each represented a 5 percent gain in productivity. Three percent of the gain was attributable to the group problem solving meetings. Other measures, such as employee attitudes, motivations, and satisfactions, generally showed modest improvements. In discussing the change in the overall management system, the authors concluded that "a radical transformation was accomplished. In all areas of managerial activity, Weldon shifted from an authoritative (and in some ways exploitative) system to one based on consultative values and principles" (p. 223).

This study is perhaps the best researched O.D. program yet reported, and provides quite a few significant insights into the O.D. process. The set of main events shows the emphasis placed on the improvement of both social and technical factors, and on keeping one aligned with the other. The degree to which the social and technical systems are complementary and integrated has a strong bearing on organizational effectiveness. By looking at Weldon as a composite of interacting and interdependent people and machines, the change strategy enveloped almost every aspect of organizational structures and functions. A change in either the social or technical system was considered in light of its compatibility and accommodation into the other system.*

A second point concerns the change process directly. The major transition of merger not only may have unsettled the organization, thus

*We shall discuss the socio-technical approach to O.D. in much greater depth in the next section of this report.

making change easier, but may have "forewarned" the members of changes planned by the parent firm. This expectation of change was reinforced and clarified by the openness of the new management. Weldon staff members visited Harwood and obtained concrete and realistic ideas of the desired end-state of the change program. Change plans were not secret but open and shared, and expectations had a concrete reality base.

Third, the program employed a systemic perspective. That is, the O.D. efforts were aimed at almost all levels, structures, and processes in Weldon, in order to produce change in the total organizational system. Thus, change efforts were not narrowly confined but were multiple and diffuse, encompassing the entire system. Furthermore, there was a high degree of coherence within the O.D. program, so that specific change efforts reinforced and built upon one another.

The breadth of the program leads to a fourth observation: the program represented quite a risk to the parent firm, in terms of the costs and efforts expended, but, as we have just noted, these were not haphazard gambles, but planned and integrated. This is another important feature of the Weldon program. In fact the researchers state, "one reason for the success of the Weldon program, we believe, lies in the sheer amount and variety of resources put to work" (Marrow, et al., 1967, p. 239).

Again we see that the support and involvement of top management was a significant feature of an O.D. program. Recalling the Grid O.D. failure discussed earlier, which conspicuously lacked such top level support, it seems reasonable to suggest that this may be a necessary element of a successful O.D. program.*

*This is not to suggest a direct causal link or to say that top management support and involvement is sufficient for successful O.D.

Finally, we must note that the thorough analysis and documentation of this study provides an excellent model for other investigators, planners and practitioners of O.D. This is not to say that all O.D. should be based on this model, but only that the field would profit greatly if more investigators and practitioners took equal care in the design and analysis of their own forms of O.D.*

Top management O.D. One common factor in the research reviewed above has been the practice of external researcher-change agents working with a large number of organization members at all levels of the system. Grid O.D. is, to some extent, an exception, since trained line supervisors were used as instructors for phase one seminars at lower hierarchical levels. Still, there seems to have been a good deal of activity by the external agents throughout the system. The following study (Frohman and Waters, 1969) differs from the above in that while it was organizational in plan and in impact, the primary emphasis was on work with the top management group. This focus on top management had two objectives: (1) to develop the top executives into a coordinated, smoothly functioning team; and, (2) to develop the individuals in the top group as internal change resources for their own subordinates and for lower levels. Thus, the success of the program was to a large extent contingent on the outside consultant's work with just the top echelon of the system. As in the study by Marrow, et al. (1967), survey feedback played a meaningful part in the O.D. effort, but was by no means the only tool used in the program.

The organization involved was one region of a national fire, and casualty insurance company, employing about 360 people. It was headed by a

*A recent study shows that the improvements in Weldon have remained stable (Seashore and Bowers, 1970).

resident vice president who had eight direct subordinates, including the personnel manager, a key figure in the change effort. Thus, the top team was composed of nine men.

The outside consultant reported his O.D. activities in terms of seven "critical events" (Waters, 1969): (1) Examination of group processes in top management meetings; (2) survey and feedback to sales managers, resulting in job redefinition; (3) change of appraisal system; (4) alteration of the system for setting sales quotas; (5) sharing and discussion of survey feedback data at all levels of the organization; (6) skill training sessions for top management; (7) a major organizational restructuring with involvement at all levels. There were these further, broader, aspects to the O.D. program. First, the outside consultant adopted a general strategy of focussing on problems and issues raised by members of the top group, regarding their own "work-life space." Thus, the specific content of the consultant's activities depended on the situation, and was not determined by a tightly planned or "packaged" program. Second, the role of the personnel manager was modified from its traditional nature to that of a "coach-counselor," skilled in working closely with people at all levels. Third, the top management group participated in a team development laboratory, in order to reinforce new attitudes and behaviors and improve interpersonal relationships.

The program was designed to include thorough research and evaluation of its processes and outcomes. To achieve this end, the outside team consisted of a researcher as well as the consultant. Two other regions of the parent firm which did not receive consultant assistance, were used as comparison controls, and identical forms of data were collected in all three regions. This data included before and after measures of organizational structures, processes, and performance.

The survey instrument was composed of 18 indices, constructed to measure supervisory leadership, peer leadership, group processes (such as influence and decision making), and satisfactions (e.g., with the job, pay and peers). Improvement, in comparing the before and after measures, was considered to be change toward a more participative-consultative management, as defined by Likert (1961, 1967). Overall, there was a general decline in these 18 organizational health indices for all three regions, but the average decline was more than twice as great in the comparison regions as in the experimental region. Fifteen of the eighteen changes showed the experimental region superior. Looking at the direct target, the top management group in the experimental region, there was a general improvement on the 18 indices, and 8 of the changes were statistically significant. The top teams of the comparison regions showed a general decline on the 18 measures, comparing their before and after scores. Thus, the O.D. effort was successful in slowing a general decline in organizational "health" and significantly reversing this decline for the top management group.

Performance indicators clearly showed the experimental region superior to the others. For all nine regions in the company, the average percent change was zero on each factor. While the control regions did slightly worse than the overall average, particularly on sales, the experimental region did considerably better, particularly on sales.

A third source of data was provided by taped, in-depth interviews with each member of the top management group. Content analysis of these tapes

showed that the client concurred fully with the changes indicated by the survey data and performance measures (Frohman and Waters, 1969).

This study reinforces our earlier conclusions concerning the importance of top management support and involvement. Aimed primarily at two percent of the members of the organization--the top group--the program was clearly associated with improved organizational health and performance, relative to comparison units. It would seem that top management cannot only support and encourage O.D., but can serve as an internal resource and catalyst for change, acting to facilitate change downward through the system.

In this study, we should not ignore the importance of the personnel manager, who served as direct internal "linker" between all organizational levels and the outside consultant team. The role of the individual who obtains knowledge from sources external to an organization and disseminates this information to those who can use it within the system, is only beginning to be understood (Havelock, et al., 1969).

There are two other features of this O.D. program of which we should take particular note. First, there is the matter of a relatively unstructured plan (as opposed, for example, to Grid O.D.). In this case, the consultant was able to respond to the client system as he perceived their emerging needs and demands. As he observed the top team functioning, he would react and intervene in what he felt were appropriate ways. Obviously, considerable interpersonal competence and a degree of clinical understanding are necessary for the success of such a strategy. Second, the team development lab for the top group played an important part in the program, due to its timing and focus. The top group was at the point where sensitive interpersonal issues could be surfaced and discussed. Through work on group skills and management styles,

a climate had evolved that greatly facilitated and enhanced the openness and confrontation of the lab setting. Thus, coming at the end of the O.D. program, the lab not only reinforced previous learnings but also dealt with new issues on the interpersonal level, increasing the impact of the program and the effectiveness of top managers as they worked with each other and their subordinates in applying their learnings.

Survey feedback in a school system. To this point we have discussed survey feedback programs with considerable evidence of success. While O.D. programs which are not successful are probably less likely to be reported, it is true that programs which fail can be as useful (if not more so) for the understanding of O.D., than those which succeed. Miles, et al. (1969), report on a survey and feedback approach to O.D. in a small school system which, at best, had equivocal results.

Following the survey, "summarized data displays were fed back first to the top administrative group which engaged in diagnosis and problem solving. Then each building principal repeated this process with his faculty in a series of meetings... [Then] cross-building 'task forces' were set up to work on problems noted in the feedback sessions, and their proposals were considered for action by the administrative group" (Miles, et al., 1969, pp. 463-464).

The research design had been carefully constructed to mitigate contaminating factors and to yield quantitative data focussing on power equalization, communication, and norms in the school system. The results "did not show more than chance fluctuation in the 36 indicators studied for the administrative group and the 43 examined for the teachers" (p. 466).

From the report of Miles, et al., we can derive several possible causes for his lack of success. These factors illustrate some points we have already

made above. First, there were no action decisions made by those involved in the feedback sessions. The feedback data was discussed but no plans were made to implement the results of these discussions. Second, no durable structure was offered or developed for continuing the O.D. work or supporting organizational changes. It is likely that the feedback program was seen as an isolated event with no general relationship to the organization or its processes. Third, the top administrators were given little time to fully understand and use the data before lower levels became involved. Finally, the researchers themselves note that their measures may have been "somewhat insensitive to change." The importance of reliable, valid, and sensitive measures of organizational health and efficiency for the purposes of organization development and O.D. research hardly needs reemphasis.

Summary of survey feedback O.D.* We have seen that there is much more to the successful application of this type of an O.D. program than the collection of data which is then given back to the organization. The essential nature of a survey feedback program is the use of the groups providing the data, the data source as the target, that is, as the primary aim of change, and as the agents of change. When the feedback participants are not, in fact, the agents of change, as in Miles, et al's, study where the feedback discussions produced no action plans, little organizational change should be expected. Within this framework, we have derived several specific "observations."

*A number of the elements of the studies just reviewed have been further tested and amplified in comparative research of differing O. D. techniques by Frohman (1970). The research confirms many points suggested here. The report of the research is part of this series of reports.

First, and most obvious, is the need for a research design which can accurately monitor the effects of the program and assess the changes that occur. Second, it appears that successful survey feedback programs are flexible, and can be altered as ongoing processes, in order to meet the immediate needs of the client system. Third, this need for flexibility extends to the means used in the O.D. effort. The survey feedback parts of the successful programs, while key factors in the overall efforts, were but one of several specific change interventions. Fourth, we have in every case seen the importance of top management support and involvement in the O.D. program. Finally, we have at times noted the significance of considering both the social and technical components of organizational systems. For the most part, this concern is implicit in survey feedback O.D. We now turn to a third type of O.D. program which makes this social-technical balance of primary focus of the change effort, that is, the socio-technical systems approach.

SOCIO-TECHNICAL SYSTEMS

Earlier, we noted that Marrow, et al., commented on the utility of viewing the organization as an interlocking arrangement of social and technical systems. This means that alterations in the structure by which the workers relate to each other (the social system) or in the equipment and process layout (the technical system) are considered in light of their fit with one another. It is this fit, or integration of men and technology, that accomplishes organizational tasks. The socio-technical systems approach to O.D. developed primarily from the work of several researchers at London's Tavistock Institute. We will discuss two reports from this group which document the results of the socio-technical approach.

Some social and psychological consequences of the long-wall method of coal-getting. Trist and Bamforth (1951), studying the British coal mining industry, found that two different social organizations with the same technology were associated with markedly different levels of productivity. The "composite" method involved six-man teams, self-selected and responsible for the total process of ore extraction. These teams were split into shift pairs. One pair would do whatever was needed when they came on duty and the next pair would take up the task at whatever stage they found it. All men were multi-skilled and each man in a crew of six was paid the same wage on the basis of what they produced as a team. Each group set its own standards and exercised control over its own functioning with little interference from management.

A second form of organization, called the "conventional" method, was introduced following the installation of a conveyor system which made mining along a greater length of the coal face possible. This method conformed to the traditional "scientific management" model, in that the process was divided into small units and individual workers were assigned to narrow, compartmentalized tasks with no rotation and little opportunity for social interaction. The worker was paid for his individual performance and his manager played a large role in planning and setting standards.

The researchers found that the job fractionation of the conventional method, while supposedly based on reduction of training costs and increased worker efficiency, did not take into account the affiliative needs of miners doing dangerous work, the amount of coordination required among miners regardless of tasks, and the competition and status jealousy generated by different pay scales. Table 1 shows the differences between the two forms

of social organization, both using the same new conveyor technology, in terms of performance measures.

A second coal mining study (Trist, Higgin, Murray and Pollock, 1963) examined the results of a shift from the fractionated conventional method to the composite form of organization. Over a period of eighteen months, the investigators found a 32 percent increase in productivity.

TABLE 1*
Performance Data of Composite and Conventional Mining

	<u>Composite</u>	<u>Conventional</u>
Total Manpower	41	38
Average Number of Tasks/Man	3.6	1.0
Average Progress at Shift End (Percent)		
in advance	22	0
normal	73	31
lagging	5	69
Productivity (Percent of Est. Potential)	95	78
Output per Man-shift (tons)	5.3	3.5

*Constructed from data in Trist, Higgin, Murray and Pollock (1963).

Katz and Kahn (1966) provide further insight into the implications of this data by analyzing the substantial difference between the two mining methods in terms of three principles of work satisfaction. First, there is the sense of completion obtained in finishing a meaningful job. Second,

workers require a degree of control over their own activities. Third, there is a need for social relationships with co-workers. As the above discussion shows, each of these factors is satisfied by the composite method, while the conventional method is inadequate for fully meeting any of the three needs.

It may be stretching our definition somewhat to consider the above studies as O.D. programs. In fact, the researchers reported primarily on conditions they found existing in a number of coal fields and were involved more in gathering data than in creating change. However, the researchers did report their dramatic findings to the governing agencies of the coal mines with the aim of influencing management toward the composite mining method. The overall result of their dissemination efforts must be termed at best a partial success, in terms of organizational change goals.

This lack of success can be traced, in part, to some of the O.D. principles we derived and discussed earlier. Perhaps of greatest significance is the fact that top managements of the mining organizations were never really involved with the researchers or with change efforts. Neither were union or government officials concerned with the study. The research was performed only at the local level, when local officials willing to participate. Not only were the top officials uninvolved, but they actually felt threatened, as part of the larger social system when the changes were suggested. Finally, the researchers found it particularly difficult to communicate their results to other mining organizations which had not been directly involved in the studies. We have already noted the importance, and neglect, of dissemination and utilization research in relation to change programs (Mann and Likert, 1951; Havelock, et al., 1969).

The Ahmedabad Experiment. Rice (1958), another Tavistock researcher, developed an O.D. program in an Indian weaving mill. The installation of automatic looms, accompanied by individual task specialization, led to a decline in the quality and quantity of woven products. Rice introduced a number of radical changes in the organization of the mill. Tasks were made interchangeable, thus providing workers with meaningful job units, the number of job levels were reduced from nine to three, allowing for greater social contrast among workers, and semi-autonomous work groups were created and placed in charge of all tasks associated with a group of automatic looms, giving workers much greater control over their job activities. Morale and motivation rose amazingly; a supervisor was required in the weaving shed to prevent the men from working during their meal break. Over the next two years productivity rose 15 percent, while the proportion of damaged cloth declined from 32 percent to about 15 percent toward the end of the experimental period. However, the transition was by no means smooth; these measures varied over the two year period, but the general improvement was supported by a flexible approach to problems as they came up. Many minor changes were introduced that served to improve and maintain the new system. Here, again, we see the importance of flexibility in an O.D. program.

Summary. The socio-technical systems approach is conceptually straightforward: the social and technological aspects of the total system must be considered in their relation to one another, when O.D. is undertaken. If a social system is not considered when a technological change is made, the results may be lowered performance; when both are considered and altered to maintain a balanced fit, then performance may increase as intended. However,

as the above studies indicate, the application of this approach is by no means simple, and requires as well-designed and coordinated an O.D. effort as any we have discussed previously. We have also seen that this approach, to be successful, cannot ignore the O.D. elements demonstrated in other successful O.D. programs. Overall, the socio-technical systems approach seems to be particularly valuable, due to its explicit focus on what may be a key relationship in our technologically advanced and changing society: the interaction between men and machines.

SENSITIVITY TRAINING PROGRAMS

In the past few years the use of T-groups has developed from an esoteric and little-known training device into a popularization approaching the status of a cult. There have been many testimonials to its beneficial effects as well as analyses of its failure or misuse (Schein and Bennis, 1965). We do not wish to argue these issues, but will present a conclusion after briefly discussing several studies on the use of T-groups in O.D.

While T-groups have been adapted for O.D. purposes, the nature of this method aims at individual change. Essentially, the goal of such training is to provide the individual with realistic feedback concerning his own behaviors in a climate which facilitates acceptance and critical examination of the feedback. In this way, the participant better understands himself and his behavior, and, if he is so motivated, to change attitudes and behavior. To get through the often rigid defenses and rituals of everyday life which work against accurate self-perception and openness to feedback, the affective aspect of interpersonal relationships is heavily emphasized. Cognitive understanding is seen as based on and developing from effective understanding. As some authors note, "Seeing's believing,

but feeling's the truth." The particular utility of sensitivity, or laboratory, training for O.D. comes from the fact that the process is growth and development oriented. Laboratory training is not a therapeutic technique and is appropriate for individuals who are relatively healthy to begin with. Various "horror stories" highlight the inadvisability of this process for individuals with serious mental or emotional disturbances.*

The original T-group format consisted of 8 - 12 strangers and a trainer, put together in an isolated environment for a period of one to two weeks, with no specific agenda. The adaptations we could mention are numerous, but fall into two basic categories: (1) the "family" group, composed of a work or peer group and their supervisor, and, (2) the "diagonal slice" group, composed of individuals of different levels such that no person has a direct hierarchical relationship with any other, but all are members of the same organization. The research studies reviewed below cannot truly be termed systematic O.D. programs, as in no case was the entire membership of the organization involved in the training program. Such thorough involvement is, in fact, unusual, due to the time and effort required to completely "cover" an organization with T-group methods. Still, these studies, which we will discuss only briefly, illustrate well the achievements and problems of laboratory training as an O.D. method.

A field experiment: increasing supervisory consideration. One of the common goals of sensitivity training is to help participants develop more humanistic and affect-based interpersonal relationships. To empirically determine how well this goal is achieved through laboratory training,

*Obviously, we have grossly oversimplified this brief description of sensitivity training. For an adequate presentation, the reader is referred to Schein and Bennis (1965) and Bradford, Gibb and Benne (1964).

Carron (1964) conducted a field experiment with research and development managers. Participants completed a questionnaire both before and after training, and their responses were compared with those of an untrained group of otherwise similar managers. The key dimensions were (1) the degree of concern the individuals expressed for the amount of consideration he showed toward others and (2) the degree to which he pressed for goal attainment by planning, scheduling, etc. This latter measure is termed "initiating structure."*

The results showed that the trained managers did place greater emphasis on consideration and less value on initiating structure as compared to the untrained group. Here, however, we run up against a common failing of research on individual change, that is, we are not told how or whether these attitudinal changes were reflected in the behavior of the trained managers. The remaining T-group studies to be discussed have been selected to focus on behavioral outcomes of such training.

Transfer of training. Oshry and Harrison (1966) examined the issue of how well laboratory training is applied to on-the-job behavior. Using a questionnaire which measured the diagnostic approaches to interpersonal work problems of middle managers who had participated in T-groups, they found that new diagnostic orientations were learned as a result of the training. However, they also found that participants were unable to turn these learnings into action, because they saw no clear connection between the new perceptions and the job. This outcome is of considerable significance, for it shows that even when dissemination is effective,

*For a more detailed description of these concepts and measures, see Fleishman (1953) and Stogdill and Coons (1957).

utilization does not necessarily follow. When change occurs at the individual level, a great deal of further effort seems required to carry over such change to the group and organizational levels.

Training and supervisory job behavior. Underwood (1965) provides additional data on behavioral changes brought about by laboratory training. He matched 15 managers who underwent T-group training with 15 non-participants, on the basis of department, hierarchical level, and age. For 15 weeks following the training program these 30 managers were observed by trained reporters, who recorded changes in behavior and how these changes affected supervisory performance. Analysis of the observers records showed that the trained group exhibited more changes in job behavior than the untrained group. These changes, however, were judged to be in the direction of less effective supervision.

This result may well be an illustration of the importance of defining O.D. goals that are congruent with the goals of the organization. Even though the training, in this case, was successful in producing change, it was unsuccessful from the organizational viewpoint, since the changes were not of the sort required by the system. The notion of O.D. program-client system congruence is discussed further later.

Effects of different consultation methods on laboratory training outcomes. Friedlander (1966, 1967, 1968) has used sound methodological procedures to develop an instrument to survey perceptions of group functioning. Using this instrument, he measured the impact of three different consultation methods used with research and development work groups which participated in laboratory training. Three key O.D. variables were defined: (1) laboratory contact between client and

consultant; (2) interaction during training (trainer role and behavior, session climate, and content); and (3) post training contact. The survey was administered one month prior to and six months after the training. Table 2 highlights the results of the survey.

TABLE 2*
Comparison of Three Consultation Processes

	<u>Length of Consultant Commitment</u>	<u>Average Change on Six Indices of Group Process and Interaction (Group Behavior Inventory)</u>
Group A	4 day lab	- .01
Group B	6 hours pre-work + 3 day lab	- .03
Group C	10 days pre-work + 3 1/2 day lab + 5 days post-work	+ .45

*Constructed from data in Friedlander, 1968, Table 2, p. 393.

Friedlander, concluding his work, states:

"To the extent that generalizations can be made from this study, the implications are rather clear. Organizational development programs which are ongoing, integrated and context based are far more effective than single laboratory training sessions in creating increased effectiveness and interaction patterns for family work groups. Adding to this increased impact is the utilization of an internal consultant group which facilitates data gathering and action steps initiated by both client and consultant in the pre-work and post work phases of Group C." (1968, p. 395)

Although there is limitation of the generalizability of Friedlander's study due to small sample size, the unique population studied, the specific

training program, and the large disparity among the work activities of the three groups involved, it does make a significant contribution to our understanding of O.D. processes.

The findings of Friedlander are reinforced by Davis (1967). Davis discussing the key factors in the highly advanced, ongoing O.D. program at TRW System, notes that the critical aspects of training and development are (1) pretraining orientation and post-training follow-up, and (2) the development of internal resources for change. For example, in order to embrace the application of sensitivity training at TRW, the laboratory group reconvenes once every other week after the original training, to discuss problems of transference and application. To build internal line capability for change while providing the perspective of an outside consultant, the outsider is paired with an internal person and together this team plans and conducts segments of the overall O.D. program.

Observations. Sensitivity training is a powerful psychological tool; this is probably one reason for its fad-like popularity. Sensitivity training, however, focusses on individual development, not system change. It is, therefore, most appropriate when individual change is desired. Still, it seems that when used with knowledge, skill, and care sensitivity training can be a valuable O.D. instrument. This does not mean that laboratory training is generally appropriate, or useful in most circumstances. Rather the use of sensitivity training must be contingent on a diagnosis and understanding of the specific organization involved which reveals that individual growth is a critical element of organizational change. Second, the work of Davis (1967) and Friedlander (1968) makes clear the importance of change interventions and mechanisms beside the lab training itself. If

the training is to have an organizational impact, it must be made organizational relevant. One important means for enhancing this relevance is by seeing that the laboratory training is a coordinated part of a broad O.D. effort. In addition, it is important that the participants are prepared for the experience and have the opportunity to work in depth on the application of the lab experiences to job-related problems after the actual laboratory is over. Further discussion of this fundamental point is found in another report (Frohman, 1970).

Several of the studies reviewed to this point illustrate the utility of a variety of different change efforts as part of a coordinated O.D. program, and, after a careful diagnosis, it is probably in this regard that laboratory training is most valuable: as one of many specific change tools in a comprehensive O.D. effort, rather than as a self-contained O.D. program. Furthermore, recalling a point of Kolb and A. Frohman, other activities must be undertaken in order to build within the organization a capability for internally-initiated change since T-groups do not, by themselves, provide this capability.

The research studies we will consider below, however, are clearly not O.D. programs, and, in some cases, not oriented toward organizational development but more akin to the traditional areas of management and supervisory training. We include these reports in this review because they make points of major significance to O.D. some of which have been raised and discussed earlier, and some which we will proceed to derive.

Research and Practice with O.D. Relevance

While some of the points made by the following studies are redundant to our earlier discussion, these reports will be used primarily to derive

two major O.D. principles which have been touched on but not developed in the above treatment of O.D.

PARTICIPATION

Many studies have shown the value of participation by workers in decisions relating to changes in procedures and job structures. We shall briefly review a number of studies which report the advantages and limitations of participation.

Overcoming resistance to change. This study by Coch and French (1948) is frequently referred to as a "classic" and is so well-known generally that it is hardly necessary to review in detail. We noted earlier the large amount of valuable O.D. research which has come out of the long-term program at the Harwood Company, and this is one of the earliest reports in that series.

Briefly, four groups of workers were involved in a technical change. One group was merely told about the changes, another was moderately involved in the change decisions, and the remaining two groups were totally involved in designing the change over. The results showed that the no participation group declined in efficiency and, for that group, grievances and turnover increased. The moderately involved group did fairly well in relearning their new tasks after an initial drop in efficiency; also there was no turnover and only one grievance. The participative groups recovered to their previous rate of production almost immediately and improved to a degree greater than either of the other two groups. Furthermore, there was no turnover and no grievances in the groups that were involved in designing the job changes. A few months later the no participation group were exposed to another change, but this time under conditions of total

participation. Coch and French found that, this time, they learned the new job rapidly and their production increased to new high levels.

Joint Goal Setting

In a study with particular relevance to client-consultant relationships in O.D., A. Frohman (1970) found that a joint goal setting procedure between the two parties before work was undertaken lead to much better results than if only one party or neither the client nor consultant attempted to collaboratively establish objectives. When a technique based on effective problem solving steps and interpersonal conflict resolution methods was used by representatives of two organizations to joint goals, it was found that the information exchange, favorable impressions of one another, trust, influence, agreement, and feelings of satisfaction and commitment were quite high relative to cases where the technique was not carried out. Thus, we again find evidence of the value of interaction and influence among "helpers" and "helped."

Other studies. Other studies, for example, Levine and Butler (1955) on accuracy of performance evaluation; and Marrow and French (1945) on management in studying changing hiring policy; have also demonstrated the value of involvement and participation procedures when some form of change is considered. Maier and his associates (Maier, 1970) have produced a long series of laboratory experiments on changing group work procedures which repeatedly demonstrate the effectiveness of participation in decision making. Maier (1970) concludes that such participation in decision-making leads to sound motivation, clarification of attitude differences, security of group membership, constructive social pressure, prevention or removal of

misunderstanding, good two-way communication, and respect for human dignity" (p. 202). We can also see that participation in decision making satisfies Katz and Kahn's (1966) principle of work satisfaction, that workers require control over their environment.

With all of these positive aspects, are there any limitations to participation through group decision making? The following two studies provide some data to answer this question.

The experimental change of a major organizational variable. The organizational variable changed by Morse and Reimer (1956) was the level at which decisions were made in four clerical divisions of a large insurance company. In two divisions the level of decision making was moved dramatically downward; policies and procedures were determined by the workers themselves. In the other two divisions decision making was moved, just as dramatically, upward; workers had no say in any job matter. After one year it was clear that the worker-run divisions were superior to the other on measures of satisfaction. Productivity had also increased in all divisions; however, in the two hierarchically controlled divisions, productivity rose more than in the other divisions. The experiment was terminated at this point, partly due to loss of interest by top management who felt the changes were too extreme in both experimental conditions to be very meaningful, and partly due to internal management problems unrelated to the experiment. This was unfortunate, as interpretation of these results has often placed great emphasis on the time factor.

Likert (1967) argues that authoritarian control, as in the divisions where the level of decision making was raised, can result in short run increases in performance, but over the long run the effect is the destruction

of the organization through the liquidation of human resources. Likert also notes that it may take several years before an O.D. program to increase participation begins to pay off in improved performance. Indeed, in the two hierarchically controlled divisions morale was clearly declining. Whether, in what way, and after how much longer a time period the performance measures would have been affected is an unanswered question.

The major point of the Morse and Reimer study, is that participation does not necessarily yield immediate benefits to the organization. It is even conceivable that where short-run performance is of utmost importance (for instance, in the case of an army unit in combat) an authoritarian approach to decision making is better than a participative approach; however, the "cost" in the long run may be far greater.

Participation in a Norwegian shoe factory. French, Israel, and As (1960) attempt to replicate the study by Coch and French, using improved experimental controls and measurement. The data showed that they had, in fact, succeeded in increasing participation in decision making for the experimental groups. Performance measures did not, however, show any superiority for the participative groups. This failure to affect productivity was explained by suggesting that the actual areas of decision making were not very relevant to the workers. A number of attitude measures dealing primarily with job satisfactions, showed that participation had a positive impact only if the workers expressed low resistance to the change methods and felt that participation was legitimate. An important factor seems to have been that the Norwegian workers did not generally view the form of participation used as legitimate. For them, legitimate participation would be primarily through their union organization. Thus, an O.D. design which is effective in one social system (the United States)

may be much less effective in a different society (Norway). For that matter, intervention strategies appropriate for one organization may not be for another. This, of course, is part of the many cogent reasons for diagnosis before intervention.

Having detailed some of the benefits and limitations of participation as an O.D. method, let us briefly review a case study which illustrates very well the application of participative principles.

Changing top management in an automotive plant. One of the clearest case studies of a major changeover in an organization, involving participative principles, and its subsequent effects on organization functioning, is presented by Guest (1962). The author interviewed a sample of upper and lower level workers of an automotive assembly plant just before the top manager was replaced and then again three years after the succession.

The first interviews in 1953 disclosed that the top manager felt himself under a great deal of pressure from his superiors and in turn was seen as placing severe autocratic demands and pressure on his subordinates. Almost all communication in the system was directed downward; little lateral or upward transmission occurred. Threats of punishment and loss of job were the motivators used to elicit obedience. Line/staff relations were poor and morale was generally quite low. In 1953 the plant was very poor, relative to similar plants, on production, efficiency, labor costs, safety, grievances, absenteeism, and turnover.

The new top manager used an open and participative style of management. He instituted work group meetings on a regular basis and spent time with subordinates at all levels. He encouraged upward and lateral communication and initiated several technical changes. He assured the

workers of job security, encouraged informal relations, and rotated workers to familiarize them with different parts of the organization. Finally, he encouraged the participation and influence of people at all levels, in decision making. After the new top manager took over, Guest reports that the health and efficiency indicators noted above all improved substantially and remained so for the next three years of the study.

The key factor in the study seems to be the ability of the new manager to handle the pressure from above by making internal organizational adjustments, primarily along the lines of increased involvement and participation of workers. It is possible that in this system the short-run gains obtainable by increased autocratic pressure had been "played out." Continued pressure was obviously doing no good. The study illustrates how, even in an organization in such a sorry state as was this one, a skillful internal manager, as the new manager apparently was, can rebuild effectiveness through participative methods. We also see again the significance of top management involvement.

Summary. The study by Guest (1962) is a unique case example, thus we should be quite cautious about generalizing the results. Other of the studies cited above (Morse and Reimer, 1956; French, Israel and As, 1960) illustrate the limitations of participative procedures, and suggest that such methods are not invariably successful or appropriate. For example, Vroom (1960) has presented evidence that personality plays an important part in the acceptance by workers of participative supervisory styles, and A. Frohman (1968) has shown that some persons clearly prefer to be directed and not have a part in job structuring. In short, participative methods may be a potent O.D. technique in some settings.

Still, the research literature is highly consistent in pointing out participation as one of the basic factors in successful change, and most of the O.D. research studies we have reviewed confirm this observation. While this is more obvious in some cases than in others, we can say that every one of the successful O.D. reports reviewed here has, to some extent, taken into consideration and made use of participative principles. Indeed, our entire discussion of participation is essentially a restatement and reinforcement of Cartwright's (1951) observation that successful change involves the system undergoing change as the source, target, and agent of change.

In the following section we turn to a more thorough discussion of the target of change and the relationship between the goals and methods of the O.D. program and the needs of the target system.

CONGRUENCE AND INCONGRUENCE

We have at various points in the above discussion referred to the congruence between O.D. strategies and the existing organizational conditions and needs. To highlight the importance of congruence, we will refer to several of the studies already reviewed, as well as some additional examples.

Organizational conditions. A primary issue here is the relationship between various organizational levels and the effects of the O.D. effort on this relationship. Fleishman (1953) gives an example of incongruent conditions between a "trained" level and the next higher level, as a result of leadership training for plant foremen. Results indicated that training in consideration as a leadership attribute had not transferred into behavior on the job. In fact, the amount of consideration that the

trained foremen showed after two to ten months back on the job was less than that of a comparable untrained group. In analyzing this outcome, Fleishman found that the managerial style of the trainees' superior was a more significant determinant of the trainees' leadership behavior than was the training. He concluded that "the attitude that is right in the training situation may be very different for the one that pays off in the industrial environment" (1953, p. 322), depending, it would seem, on the attitudes of the trainees' superior. A systemic O.D. effort takes this factor of inter-level congruence into account by moving progressively down the hierarchy, such that a higher level of management always reinforces the changes occurring at the next level down. Grid O.D. is a prime example of such a strategy, but even here we have seen an O.D. failure (Greiner, et al.) when the highest management level was excluded from the effort.

A dramatic illustration of the effect of the ongoing organization on the application of new training is also given by Sykes (1962). To increase general efficiency in a contracting firm, top management called in a team of management consultants. Based on their recommendations a training program was developed for all levels of management, beginning with first line foremen, concerned with basic business practices and human relations in groups. In the initial round of training sessions a number of grievances came up through discussion of existing conditions, relative to the ideal concepts outlined in the course. In line with the aims of the whole program, these grievances were compiled and submitted to the head of the firm for response and action. Although all levels did undergo training, little was done about the grievances. The foremen, who

had suspected that top management was not really interested in organizational change, thus had their doubts confirmed. As a result, turnover was 20 percent among foremen in the year following the development efforts, while this figure averaged 2 percent in prior years. Incongruence between the goals of the training effort and top management produced an eventual outcome which was quite harmful to the organization.

This same sort of utilization failure was evident in the studies discussed earlier by Miles, et al. (1969) and Trist, et al. (1963). In both cases the success of their efforts was diminished due to basic incongruence between O.D. means and aims, on the one hand, and the current state of the organizational systems as determined by the actions and goals of top management, on the other. In the same sense, there was obvious congruence between change aims and the top management style and goals in the case detailed by Guest (1962). Obviously, a primary factor was that the top manager was the agent producing the changes, but it is also likely that this individual was able to diagnose to some extent the state of the system and what changes could alter that state without violating the primary goals he saw as desirable.

In sum, an O.D. program may be well advised to either systematically cover the entire organization, including top management, with considerable involvement from the top, or to start at the top and work downward so that the application of learning at one level or division is not blocked by conditions or attitudes unreceptive to change in adjacent or higher levels of the system.

Organizational needs. There should also be congruence between the O.D. effort and the organization, in terms of the relevance of the program

to the needs and functions of the system. The O.D. effort must be aimed at meeting the adaptive needs of the organization, and this can only be achieved if the methods used focus on the problems surfaced by the system and facilitate transference and institution of new insights and behaviors within the system.

Earlier we saw that Carron (1964) was able to increase consideration scores of managers via laboratory training. The training studied by Underwood (1965) may have led to similar results, but clearly this outcome was undesirable since the subsequent behavior of the trainees was judged less effective than a comparison group. The point is that whether an increase in supervisory consideration is needed should be determined prior to the O.D. effort, rather than discovered after changes are attempted. One key to effective O.D. application is joint diagnosis and goal setting. Such steps should not stop with the beginning of the O.D. efforts, but should be a continuing process and an integral part of the program, as is well illustrated by the reports of Marrow, et al. (1967), Frohman and Waters (1969), Kolb and A. Frohman (1970).

Summary. The issue of congruence is as complex as it is fundamental and touches on many aspects of O.D. We have tried to indicate the importance of joint diagnosis and goal setting by the O.D. practitioner and client system regarding the state of the organization and its adaptive needs. This is an important step in designing an O.D. program that is congruent with the ongoing operations and structures in the system as well as congruent with the needs of the system in terms of the specific changes required for more effective organizational functioning. It would seem that this issue is frequently ignored, in the hope or assumption that

the values and aims of the O.D. practitioner or his "package" are identical with those of the organization involved. That this is not always true has been amply demonstrated by the studies cited above and many other experiences unreported in the literature.

The skills required on the part of the change agent in order to face this problem are not simple skills. To some extent it seems possible to build an O.D. program which is oriented toward these congruency problems which must be faced early in the process of O.D. But it is probably true that a good deal of the burden in facing these problems must remain based in the interpersonal skills of the O.D. practitioner.

Conclusion

By this time it should be obvious that we are in need of some framework for understanding O.D. and change generally. Unfortunately, the state of the art is such that theoretical conceptions are often rather unique, and while there have been useful and insightful attempts at such schemas, there is no generally accepted frame of reference, outside of a few basic observations. Thus, let us at least offer a few observations, based on our learnings from the research reviewed above. The list should be considered incomplete and tentative, but it will hopefully be generally acceptable.

- Systemic observations:
- (1) The support and involvement of top management is a prerequisite for successful O.D. change.
 - (2) Organizations are complex systems with a variety of interrelated parts. Thus, the entire system must be exposed, or at least potentially open, to the efforts of the change agent.
 - (3) There must be an "inside linker" as well as an external source of change.

- (4) If O.D. is to continue as an ongoing process within a system internal change resources must be developed.

- Clinical observations:
- (1) The system involved in change must be the source, target, and agent of change.
 - (2) The change agent must be familiar with a variety of conceptual orientations toward change.
 - (3) The change agent needs a flexible approach in both diagnosis and treatment. He should be able to use a variety of methods to uncover problems in the system as well as to provide corrective steps.

In conclusion we should note that behavioral science is but one discipline which contributes to organization development. Extensive reference to other relevant fields are in the work of Havelock, et al. (1969), Bowers (1970), and A. Frohman (1970). Furthermore, the application of law, economics, political science, and mathematics, all can assist in the development of organizations toward increased effectiveness. All such applied disciplines, including behavioral science, are in their infancies as regards their development into truly scientific fields of inquiry with respect to organization development. As obvious, and redundant, as it is, we must conclude that much more research and knowledge is required before organization development becomes less of an art and more of a science.

REFERENCES

- Argyris, C. Explorations in consulting-client relationships. *Human Organization*, 20, 1961, 121-133.
- Argyris, C. *Interpersonal Competence and Organizational Effectiveness*. Irwin-Dorsey: Homewood, Ill., 1962, Harrison, R. Impact of the Lab on perceptions of others by the experimental group, 261-271.
- Argyris, C. *Integrating the individual and the organization*. New York: Wiley and Sons, 1964.
- Baker, G. and Chapman, D. *Man in Society and Disaster*. New York: Basic Books, 1962.
- Barnard, C. *The functions of the executive*. Cambridge: Harvard University Press, 1938.
- Barnes, L. Approaches to organizational change. In W. Bennis, et al., (Eds.) *The planning of change*. New York: Holt, Rinehart and Winston, 1969.
- Barrett, J. Individual goals and organizational objectives. A study of integration mechanisms. Unpublished doctoral dissertation; The University of Michigan, 1970.
- Bartholomew, D. A test of homogeneity for ordered alternatives. *Biometrika*, 1959a, 46, 36-48.
- Bartholomew, D. A test of homogeneity for ordered alternatives. II. *Biometrika*, 1959b, 46, 328-335.
- Bartholomew, D. Ordered tests in the analysis of variance. *Biometrika*, 1961, 48, 325-332.
- Beckhard, R. *Organization Development - Strategies and Models*. Reading, Mass.: Addison-Wesley, 1969.
- Benne, K. and Birnbaum, M. Principles of changing. In W. Bennis, K. Benne and R. Chin (Eds.). *The planning of change*. New York: Holt, Rinehart, Winston, 1969, 328-335.
- Bennis, W. *Changing Organizations*. New York: McGraw-Hill, 1966.
- Bennis, W., Benne, K., and Chin, R. *The planning of change*. New York: Holt, Rinehart and Winston, 1969.
- Berkowitz, N. Comments on the preceding article. *Journal of Applied Behavioral Science*, 1969, 5, 411-422.

- Berlew, D. and Hall, D. The management of tension in organizations. *Industrial Management Review*, 1964, 6, 31-40.
- Blake, R., Mouton, J., Barnes, L. and Greiner, L. Breakthrough in organization development. *Harvard Business Review*, 1964, 42, 133-155.
- Blake, R. and Mouton, J., *The Managerial Grid*. Houston: Gulf, 1964.
- Blake, R. and Mouton, J. *Building a dynamic corporation through grid organization development*. Reading, Mass.: Addison-Wesley, 1969.
- Blood, M. and Hulin, C. Alienation, environmental characteristics, and worker responses. *Journal of Applied Psychology*, 1967, 51, 284-290.
- Blumenfeld, W. Attitude change as a criterion in training. *Training and Development Journal*, 1966, 26 22.
- Bowers, D. and Norman, R. Strategies for changing an organization. *Innovation*, 1969, 1, 50-55.
- Bowers, D. *Perspectives in organizational development*. Research report to United States Office of Naval Research, 1970.
- Bradford, L., Gibb, J., and Benne, K. *T-group theory and laboratory methods*. New York: Wiley, 1964.
- Brayfield, A. and Crockett, W. Employee attitudes and employee performance. *Psychological Bulletin*, 52, 1955, 396-424.
- Bunker, D. Individual applications of laboratory training. *Journal of Applied Behavioral Science*, 1965, 1, 131-148.
- Bunker, D. and Knowles, E. Comparison of behavioral changes resulting from human relations training laboratories of different lengths. *Journal of Applied Behavioral Science*, 3, 1967, 505-524.
- Campbell, J. and Dunnette, M. Effectiveness of T-group experiences and managerial training and development. *Psychological Bulletin*, 1968, 70, 73-104.
- Carron, T. Human relations training and attitude change: A vector analysis. *Personnel Psychology*, 1964, 27, 403-424.
- Cartwright, D. Achieving change in people: Some applications of group dynamics theory. *Human Relations*, 1951, 4, 381-392.
- Catalanello, R. and Kirkpatrick, D. Evaluating training programs: The state of the art. *Training and Development Journal*, May, 1968, 2-9.
- Chin, R. The utility of systems models and development models for practitioners. In W. Bennis, et al., (Editors). *The Planning of Change*, New York: Holt, Rinehart, and Winston, 1969, 297-312.

- Clark, J. A healthy organization. *California Management Review*, 1962, 4, 25-32.
- Clark, J. V. Authentic interaction and personal growth in sensitivity training groups. In W. Bennis, et al., (Eds.). *The Planning of Change*, New York: Holt, Rinehart, and Winston, 1969, 395-407.
- Coch, L. and French, R. Overcoming resistance to change. *Human Relations*, 1948, 1, 512-533.
- Converse, P. The nature of belief systems in mass publics. In D. Apter (Ed.) *Ideology and Discontent*. Glencoe, Ill.: The Free Press, 1964.
- Davis, S. An organic problem-solving method of organizational change. *Journal of Applied Behavioral Science*, 1967, 3, 3-21.
- Denova, C. Is this any way to evaluate a training activity? *Personnel Journal*, 47, 1968, 488-493.
- Dickson, W. and Roethlisberger, F. *Personal Counseling in an Organization*. Boston: Harvard Business School, 1966.
- Drabek, T. and Haas, J. Laboratory simulation of organizational stress. *American Sociological Review*, 1969, 48, 223-238.
- Dyer, W., Maddocks, R., Moffitt, J. and Underwood, W. A laboratory-consultation model for organizational change. *Journal of Applied Behavioral Science*, 1970, 6, 211-227.
- Fisher, S. and Lubin, A. Distance as a determinant of influence in a two-person serial interaction situation. *Journal of Abnormal and Social Psychology*, 1958, 56, 230-238.
- Fleishman, E. Leadership climate, human relations training and supervisory behavior. *Personnel Psychology*, 1953, 6, 205-222.
- Foundation for Research on Human Behavior. An action research program for organization improvement. Ann Arbor, Michigan, 1960.
- French, J., Israel, I., and As, D. An experiment on participation in a Norwegian factory. *Human Relations*, 1960, 13, 3-19.
- Friedlander, F. Performance and interactional dimensions of organizational work groups. *Journal of Applied Psychology*, 1966, 50, 257-265.
- Friedlander, F. The impact of organizational training laboratories upon the effectiveness and interaction of ongoing work groups. *Personnel Psychology*, 1967, 20, 289-307.
- Friedlander, F. A comparative study of consulting processes and group development. *Journal of Applied Behavioral Science*, 1968, 4, 377-400.
- Friedlander, F. Behavioral research as a transactional process. *Human Organization*, 27, 1968b, 369-379.

- Frohman, A. The role and contribution of Ph.D. scientists in an industrial R and D laboratory. Unpublished Master's Thesis, Massachusetts Institute of Technology, Sloan School of Management: Cambridge, Mass., 1968.
- Frohman, A. Analysis of the development of some of the forces in the technical assistance relationship. Massachusetts Institute of Technology, Sloan School of Management, 1969.
- Frohman, A. The development of impact of a joint goal setting technique for conflict resolution. Unpublished doctoral dissertation, Sloan School of Management, Massachusetts Institute of Technology, 1970.
- Frohman, M. The impact of the characteristics of organization on information flow. Psychology Department, The University of Michigan, Ann Arbor, Michigan, 1969.
- Frohman, M. A look at problem solving. Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, Ann Arbor, Michigan, 1969b (multilith).
- Frohman, M., and Waters, C. Building internal resources for organizational development. Institute for Social Research, Ann Arbor, Mich., 1969.
- Frohman, M. and Havelock, R. The organizational context of dissemination and utilization. In R. Havelock, et al., *The Planning of Innovation*. Institute for Social Research, Ann Arbor, Mich., Chapter 7, 1969.
- Frohman, M., Frohman, A., and Hite, A. Strategies for organization development: A systematic review (To be published), Foundation for Research on Human Behavior: Ann Arbor, Mich., 1970
- Frohman, M. and Sashkin, M. *The practice of organization development: A selective review*. Research report to the United States Office of Naval Research, 1970.
- Frohman, M. *An empirical study of a model and strategies for planned organizational change*. Research report to the United States Office of Naval Research, 1970.
- Gardner, J. *Self-Renewal*. New York: Harper, 1964.
- Greiner, L, Leitch, D., and Barnes, L. The simple complexity of organization climate in a government agency. Unpublished research report. Undated.
- Greiner, L. Patterns of organization change. *Harvard Business Review*, 1967, 45, 119-130.
- Guest, R. Organizational change: The effect of successful leadership. Homewood, Ill.: Irwin, 1962.

- Guilford, J. *Fundamental Statistics in Psychology and Education*. New York: McGraw-Hill, 1956.
- Gulick, L., and Urwick, L. (Eds.) *Papers on the Science of Administration*. New York: Institute of Public Administration, Columbia University, 1937.
- Gurin, G. *Inner-city Negro youth in a job training project*. Ann Arbor: Institute for Social Research, The University of Michigan, 1968.
- Gurin, G., Veroff, J. and Feld, S. *Americans View Their Mental Health*. New York: Basic Books, 1960.
- Harris, C. (Ed.) *Problems in Measuring Change*. Madison: University of Wisconsin Press, 1963.
- Havelock, R., Guskin, A., Frohman, M., Havelock, M., Hill, M., and Huber, J. *Planning for Innovation*. Institute for Social Research, Ann Arbor, 1969.
- House, R. T-group education and leadership effectiveness: A review of the empiric literature and a critical evaluation. *Personnel Psychology*, 1967, 20, 1-32.
- Hovland, C., Harvey, O. and Sherif, M. Assimilation and contrast effects in reaction to communication and attitude change. *Journal of Abnormal and Social Psychology*, 1957, 55, 244-252.
- Hunt, J. and Hill, J. The new look in motivation theory for organizational research. *Human Organization*, 1969, 28, 100-109.
- Indik, B., Seashore, S., and Slesinger, J. Demographic correlates of psychological strain. *Journal of Abnormal and Social Psychology*, 1964, 69, 26-38.
- Kahn, R., et al. *Organizational Stress: Studies in Role Conflict and Ambiguity*. New York: Wiley, 1964.
- Kahn, R. and Morse, N. The relationship of productivity to morale. *Journal of Social Issues*, 1951, 7, 8-17.
- Katz, D., and Kahn, R. *The Social Psychology of Organizations*. New York: Wiley, 1966.
- Katzell, R. Personal values, job satisfaction and job behavior. In H. Bovrow (Ed.) *Man in a World of Work*. Boston: Houghton-Mifflin, 1964, 341-363.
- Kolb, D. and Frohman, A. An organization development approach to consulting (To be published) *Industrial Management Review*, 1970.
- Lawler, E. and Porter, L. Antecedent attitudes of effective managerial performance. *Organizational Behavior and Human Performance*, 1967, 2, 122-142.

- Lazarus, R. Dynamics of psychological stress. *American Psychologist*, 1964, 19, 400-411.
- Levine, J., and Butler, J. Lecture vs. group decision in changing behavior. *Journal of Applied Psychology*, 1952, 36, 29-33.
- Lewin, K. Group decision and social change. In G. Swanson, T. Newcombe, and E. Hartley (Eds.) *Readings in Social Psychology*. New York: Holt, 1952, 459-473.
- Likert, R. *New Patterns of Management*. New York: McGraw-Hill, 1961.
- Likert, R. New patterns in sales management. In M. Warshaw (Ed.) *Changing Perspectives in Marketing Management*. Ann Arbor: Bureau of Business Research, Graduate School of Business Administration, University of Michigan, 1962.
- Likert, R. *The Human Organization*. New York: McGraw-Hill, 1967.
- Likert, R., and Bowers, D. Organization theory and human resource accounting. *American Psychologist*, 1969, 24, 585-592.
- Lippitt, R., Watson, J., and Westley, B. *The Dynamics of Planned Change*. New York: Harcourt, Brace and World, 1958.
- Locke, E. The relationship of success and expectation to affect on goal-seeking tasks. *Journal of Personality and Social Psychology*, 1967, 7, 125-134.
- Locke, E. What is job satisfaction. *Organizational Behavior and Human Performance*, 1969, 4, 309-336.
- Lorsch, J., and Lawrence, P. The diagnosis of organizational problems. In W. Bennis, et al. (Eds.) *The Planning of Change*, 2nd edition. New York: Holt, Rinehart and Winston, 1967, 468-478.
- Maier, N. *Problem solving discussions and conferences*. New York: McGraw-Hill, 1963.
- Maier, N. *Psychology in Industry*. Boston: Houghton-Mifflin, 1955.
- Maier, N. *Problem solving and creativity in individuals and groups*. Belmont, California: Brooks/Cole, 1970.
- Mann, F. Studying and creating change. In W. Bennis, et al. (Eds.) *The Planning of Change*. New York: Holt, Rinehart and Winston, 1961, 605-615.
- Mann, F., and Likert, R. The need for research on the communication of research results. *Human Organization*, 1952, 11, 15-19.

- Mann, F., and Neff, F. Managing major change in organizations. Ann Arbor: Foundation for Research on Human Behavior, 1961.
- Mansfield, E. The speed of response of firms to new techniques. *Quarterly Journal of Economics*, 1963, 77, 290-311.
- March, J., and Simon, H. *Organizations*. New York: Wiley, 1958.
- Marrow, A., Bowers, D., and Seashore, S. *Management by Participation*. New York: Harper and Row, 1967.
- Marrow, A., and French, J. Changing a stereotype in industry. *Journal of Social Issues*, 1945, 1, 33-37.
- McClelland, D. *The Achieving Society*. Princeton, New Jersey: Van Nostrand, 1961.
- McGregor, D. *The Professional Manager*. New York: McGraw-Hill, 1967.
- Miles, M. Changes during and following laboratory training: A clinical-experimental study. *Journal of Applied Behavioral Science*, 1, 1965, 215-242.
- Miles, M., et al. The consequence of survey feedback, theory and evaluation. In W. Bennis, et al., (Eds.) *The Planning of Change*. New York: Holt, Rinehart and Winston, 1969, 457-468.
- Miraglia, J. Human relations training: A critical examination of on-the-job effects. *Training and Development Journal*, 1966, 18-27.
- Morgan, J. and Sonquist, J. Problems in the analysis of survey data and a proposal. *Journal of the American Statistical Society*, 1963, 58, 415-435.
- Morse, N. and Reimer, E. The experimental change of a major experimental variable. *Journal of Abnormal and Social Psychology*, 1956, 52, 120-129.
- Mueller, Eva. *Automation in an Expanding Economy*. Ann Arbor: Institute for Social Research, The University of Michigan, 1969.
- Neff, F. Survey research: A tool for problem diagnosis and improvement in organizations. In S. Miller and A. Gouldner (Eds.) *Applied Sociology*, 1966, 23-38.
- Oshry, B. and Harrison, R. Transfer from here-and-now to there-and-then: Changes in organizational problem diagnosis stemming from T-group training. *Journal of Applied Behavioral Science*, 1966, 2, 185-198.
- Porter, L. *Organizational Patterns of Managerial Job Attitudes*. New York: Foundation for Management Research, 1964.
- Porter, L. and Lawler, E. Properties of organizational structure in relation to job attitudes and job behavior. *Psychological Bulletin*, 1965, 64, 23-51.

- Rice, A. *The Enterprise and its Environment*. London: Tavistock Publications, 1963.
- Rice, A. *Productivity and Social Organization*. London: Tavistock Publications, 1958.
- Roethlisberger, F. and Dickson, W. *Management and the Worker*. Cambridge: Harvard University Press, 1938.
- Rogers, C. *On Becoming a Person*. Boston: Houghton, Mifflin, 1961.
- Rush, H. Behavioral Science concepts and management application. National Industrial Conference Board, Study #216, New York, 1969.
- Schein, E. The mechanisms of change. In W. Bennis, E. Schein, D. Berlew and E. Steele (Eds.) *Interpersonal Dynamics*. Homewood, Ill.: Dorsey, 1964, 362-378.
- Schein, E. and Bennis, W. *Personal and Organizational Change Through Group Methods*. New York: Wiley, 1965.
- Schein, E. The individual, the organization and the career: A conceptual scheme. Sloan School of Management, Massachusetts Institute of Technology. 1968.
- Schein, E. *Process Consultation*. Reading, Mass.: Addison-Wesley, 1969.
- Schon, D. *Technology and Change*. New York: Delacorte, 1967.
- Schroder, H., Driver, M. and Streufert, S. *Information Processing Systems in Individuals and Groups*. New York: Holt, Rinehart, and Winston, 1966.
- Seashore, S. Communication. Background Paper. Mid-Career Education Project. Institute for Social Research, 1967.
- Seashore, S. and Bowers, D. *Changing the Structure and Functioning of an Organization*. Monograph No. 33, Ann Arbor: Survey Research Center, The University of Michigan, 1963.
- Seashore, S. and Bowers, D. The durability of organizational change, *American Psychologist*, 25, 1969, 227-233.
- Selye, H. *The Stress of Life*. New York: McGraw-Hill, 1956.
- Siegel, S. *Nonparametric Statistics*. New York: McGraw-Hill, 1956.
- Slesinger, J. and Harburg, E. Organizational stress: A force requiring management control. *Personnel Administration*, 1964, 3-39.
- Smith, A. and Frohman, M. Team development labs and organization development (To be published) *Organization Development Practitioner*, 1971. Presentation at O.D. Network Conference, June 14, 1970. Philadelphia, Pa.

- Sommerfeld, D. Job training programs in Detroit: A comparative study. Unpublished doctoral dissertation, The University of Michigan, 1969.
- Stephanson, R. Comments on the preceding article. *Journal of Applied Behavioral Science*, 1969, 5, 428-430.
- Stogdell R. and Coomb, A. (Eds.) Leader behavior: Its description and measurement. Columbus, Ohio: Bureau of Business Research, Ohio State University, 1957.
- Sykes, A. The effect of a supervisory training course in changing supervisors perceptions and expectations of the role of management. *Human Relations*, 1962, 15, 227-243.
- Tannenbaum, A. *Control in Organizations*. New York: McGraw-Hill, 1968.
- Taylor, F. *Scientific Management*. New York: Harper, 1911.
- Taylor, J. An empirical analysis of a four-factor theory of leadership using smallest space analysis. Duplicated research report to the United States Office of Naval Research, 1969.
- Trist, E., and Bamforth, R. Some social and psychological consequences of the long wall method of coal-getting. *Human Relations*, 1951, 4, 3-38.
- Trist, E., Higgin, G., Murray, H., and Pollock, A. *Organizational Choice*. London: Tavistock Publications, 1963.
- Turner, A. and Lawrence, P. *Industrial Jobs and the Worker*. Boston: Harvard University, Graduate School of Business Administration, 1965.
- Underwood, W. Evaluation of laboratory method training. *Journal of the American Society of Training Directors*, 1965, 19, 34-40.
- Valiquet, M. Individual change in a management development program. *Journal of Applied Behavioral Science*, 1968, 4, 313-325.
- Vroom, V. *Some Personality Determinants of the Effects of Participation*. Englewood Cliffs, New Jersey: Prentice-Hall, 1960.
- Vroom, V. *Work and Motivation*. New York: Wiley, 1964.
- Walton, R. *Interpersonal Peacemaking Confrontations and Third Party Interventions*. Addison-Wesley, Reading, Mass., 1969.
- Waters, C. Building internal resources for organizational development. In Executive Study Conference, *Managing Organizational Effectiveness*. Princeton: Educational Testing Service, 1969, 121-150.
- Watson, G. *Social Psychology: Issues and Insights*. Philadelphia: Lippincott, 1966.

- Weber, M. The theory of social and economic organization. Ed. T. Parsons. Trans., A. Henderson and T. Parsons, New York: Oxford University Press, 1947.
- Wilson, A. T. M. Some sociological aspects of systematic management development. *Journal of Management Studies*, 1966, 3, 1-18.
- Wilson, J., Mullen, D. and Morton, R. Sensitivity training for individual growth-team training for organizational development. *Training and Development Journal*, January, 1968, 47-53.
- Yerkes, R. and Dodson, J. The relationship between strength of stimulus to rapidity of habit formation. *Journal of Comparative Neurological Psychology*, 1908, 18, 459-482.
- Yuchtman, E. A study of organizational effectiveness. Unpublished doctoral dissertation, The University of Michigan, 1966.
- Zand, D., Steel, F. and Zalkind, S. The impact of an organization development program on perceptions of interpersonal, group and organization functioning. *Journal of Applied Behavioral Science*, 1969, 5, 393-410.