CHAPTER
14
ACTION RESEARCH
IN INDUSTRY

Lewin’s concern for significant social problems of the day had originally led him, in his paper on Taylorism in 1920, to deal with the role of work in man’s life. Though he recognized that the industrial setting was a bitterly controversial issue in the United States in the late 1930’s, he did not hesitate to turn his attention to it when the opportunity arose in 1939. The occasion was the opening of a new manufacturing plant in a rural community in Virginia by the Harwood Manufacturing Corporation, of which I was an officer. The factory management faced many critical problems in trying to train three hundred inexperienced apprentices—people from the Virginia mountains—to meet the high standards of the production of the industrialized areas of the North. The trainees—mainly women with no factory experience—were eager to work, but on the job their work pace was slow and their output was low. After the customary twelve weeks of training required for reaching the skill level of an experienced worker, the local trainees produced only about half as much as apprentices doing similar tasks in northern plants.

Lewin was invited to visit the plant to meet with the staff to discuss the problem. Thus began a collaborative relationship that lasted for eight years. The plant manager reviewed the baffling
human problems he was having. He explained that the employees' wages were higher than those they had been earning as domestics, farmworkers, or waitresses, that they felt good about their jobs, and yet the turnover was extremely high. Of immediate concern was that the workers were not producing enough and the plant was suffering heavy losses. The engineering department and the supervisory staff had tried all the known systems of rewards to increase production. At best the improvement was small. Continued supervisory pressure resulted only in an increase in the number of workers who quit their jobs.

In a problem-solving session that lasted all morning Lewin made a number of observations. One was that the employees' failure to meet management's requirements might be due to their feeling that the production goal set by the company was impossible to attain. The disparity between their own output—attained with great physical effort—and the production goals set by management was so great that the employees experienced no feelings of failure in not reaching it. There was nothing either inside or outside the plant to give the quota social reality.

Lewin suggested a number of methods to try to change the situation. The first was to stop putting pressure on individual employees. The second was to deal with workers as members of small groups rather than as individuals. Third, find some methods to give the group the feeling that the standard was realistic and could be reached. Lewin's recommendations were followed. The situation began to improve, but there were still too few workers meeting the company standard. Since Lewin had stressed how important it was for the employees to be confident that the goal could be met without strain, the management decided to take a step previously rejected. This involved offering jobs to experienced people who lived in other communities. A plant about forty miles away was closing and thus putting a large number of skilled workers out of work. Many of the latter were willing to take jobs at Harwood if the company could assure them of regular employment, help them find new places to live, and defray some of the moving costs.

In other circumstances these conditions might not have been
acceptable, since many members of the community where Harwood had its plant were unemployed. The town officials strongly opposed giving jobs to outsiders, but were persuaded to let the program be tried. About sixty highly skilled, experienced operators were added to the roster of Harwood employees and these newcomers were soon meeting management's production standards. For about two weeks the earlier employees remained at their low level of production. Then, slowly, they began to improve their output. Since the apparently unattainable goal was being reached, it began to look really practicable. What the experienced newcomers could do, the original trainees could also do.

Lewin made a number of visits to the plant. He was popular with production workers and supervisors alike—popular for himself and for his suggestions. Normally, these employees would have been suspicious of a foreigner, especially a psychology professor with no industrial experience who spoke English with a German accent. But Lewin won their confidence by his warmth, his understanding of their problems, and his good humor. They soon came to respect him for teaching them new ways of doing and thinking. His first baffled attempts to understand their southern drawl amused them; and they were flattered by the way he quickly adopted some of their expressions, such as the retort "That's snake oil" when he felt that an explanation was bogus.

Lewin actively encouraged the Harwood management to start a program of research and to employ Alex Bavelas, then at the University of Iowa, to plan and put into effect a series of small-group studies on human factors in factory management. This was agreed to and Bavelas launched a number of pioneering experiments. The earliest was aimed at discovering the effect of giving employees greater control over their output and an opportunity to participate in setting their own goals. The suggestions for this study came in part from the earlier food-habits experiments in which housewives had carried out decisions they had shared in making and in part from the autocracy-democracy study of Lippitt and White.
Group Decision

Bavelas began by holding meetings, lasting for about thirty minutes, several times a week with a small group of high-producing operators. The atmosphere was informal and no pressure was used. Everyone was encouraged to discuss the difficulties he would encounter if the group wanted to increase its daily production. The discussion revealed that people on the same job used different methods. These were examined and the advantages and disadvantages were analyzed. When the group suggested ways of overcoming the difficulties it anticipated, management agreed to help make the changes that were recommended.

The group was then asked to vote on the issue of increasing its own daily output. Each worker would decide for himself, but in the reinforcing context of the group setting. The group decided to lift output from the prevailing high ceiling of 75 units to 87 units, a level never before attained. It decided to reach the goal within five days—and did so. Later, the group raised its goal to 90 units, reached it, and later maintained it for five months, during which time other groups in the plant showed no significant increase.

This occurred because the act of deciding has the effect of linking motivation to action. Lewin explained, “Motivation alone does not suffice to lead to change. This link is provided by decisions. A process like decision making, which takes only a few minutes, is able to affect conduct for many months to come. The decision seems to have a ‘freezing’ effect which is partly due to the individual’s tendency to ‘stick to his decision’ and partly to the ‘commitment to a group.’” Lewin stated that a discussion would have an outcome different from a decision. To test this hypothesis, Bavelas compared the effectiveness of group discussion with group decision. He held separate meetings with two other groups of skilled operators. But here the agenda consisted only of discussion about raising production rather than making a decision to do so. He found that for the discussion group only a slight improvement followed. This seemed
to confirm that the condition precedent to action is decision, that discussion by itself is not enough.

Self-Management

In another experiment, Bavelas studied the use of “pacing cards” as a way toward greater self-management in the work situation. He had a small group of workers plan their own hourly pace by means of such cards. So long as they kept at or above the required minimum quota, workers could plan their own hourly and daily work level. (They were on piece work, so the more they produced, the higher their earnings.) According to Lewin, the fairly constant output of a production worker is quasi-stationary. Production therefore could be increased by strengthening the forces tending toward higher levels or weakening the forces tending to push production down.

In this experiment, Bavelas found a marked increase in the output of the pacing-card group. It raised its production from a level of 67 units to 82 and stabilized at this level. The control group remained unchanged. Such a rise, Lewin observed, could not have been achieved by pressure methods, which bring on fatigue, aggressiveness, nervousness, and marked variation in output. But by diminishing the forces tending toward lower production by means of his pacing-card device, Bavelas was able to bring about a marked increase of output accompanied by relatively low tension—a necessary ingredient of stable production.

As is almost inevitable in a business enterprise, experimentation at Harwood had to be subordinated to practical factory needs. Promising research often had to be interrupted because of unexpected changes in production schedules or operating plans. Yet Bavelas, and then French, who succeeded him, were able to enroll many of the 600 plant workers and almost all of the plant’s managers in one experiment or another over the years 1940–1947.
Leadership Training

In every industrial organization a main goal is to improve the rate of production. One means of doing this at Harwood was to train foremen for leadership. Appointed to their jobs because of their technical know-how, these supervisors already had the required mechanical skills. But leadership ability and style varied considerably from person to person. Could the supervisors’ leadership skills be strengthened by new insights into their role as group leaders?

With the Lippitt-White study of authoritarian and democratic leadership as a point of reference, Lewin discussed with French setting up a new program of leadership training in which all levels of supervisory management would participate. Role playing, sociodrama, problem solving, and other action techniques were to be emphasized; lectures and discussions of theory would be few and brief.

The overall purpose of the leadership-training experiment was to equip the supervisors with more effective methods of winning cooperation, building trust, improving morale, and handling the disciplinary problems of their subordinates. Training these supervisors called for practices of self-examination, feedback, openness, confidence building, and group problem solving—all new in industry.

The success of the experiment at Harwood encouraged French to employ many of the same techniques at the first session of the National Training Laboratories in Bethel, Maine, in 1947. Since then the leadership training methods begun in industry have become integral parts of sensitivity training programs.

Changing a Stereotype

French was aware that businessmen, although they pride themselves on being fact-minded, base any number of their personnel policies on stereotypes and not on scientific fact finding. A stereotype
which confronted the Harwood management was the traditional attitude toward hiring older workers for machine jobs. The growing labor scarcity during World War II made it necessary to hire any workers who were available. But the suggestion that the policy be changed, and women over thirty years of age be employed, was vigorously resisted by supervisors at all levels. To overcome this attitude French held a number of staff meetings at which he offered objective scientific evidence that women over thirty could acquire the needed skills. Although the supervisors listened attentively and seemed impressed, their reluctance to hire older women remained as strong as ever.

French doubted that presenting more facts would change the supervisors' attitudes and decided that it would be necessary for the staff to discover the facts for themselves. Only in this way would the necessary insight be developed—the recognition of discrepancy between fact and belief. Toward this end, French suggested that top staff members undertake a research project of their own. If older workers were inefficient, it would be practical to determine how much money the company was losing by retaining the older women already on the job—women who, for the most part, had been given employment as hardship cases—as, for example, widows or women whose husbands were unable to work. French's suggestion was acted upon. The main cost factors considered were daily output, turnover, absenteeism, and speed of learning.

While French was to be available for counsel if wanted, the staff members were to conduct the project themselves. They determined the best methods of collecting data and made all other decisions. The project was theirs, not his. After a thorough study of the records over a period of several months, the results revealed surprisingly that the older women not only equaled but actually surpassed the younger women in work performance. Analysis of learning speed gave similar results: the older workers learned new skills more rapidly. Absenteeism and turnover comparisons also favored the older workers. Thus, on the basis of criteria of efficiency specified by the staff itself, women over thirty were as good as—if not better than—those under that age. The result was in sharp contrast to the
staff's expectations, but, the findings being their own, they trusted them.

This, however, was only winning half the battle. The task still remained not only of informing but—as it turned out—of convincing those members of the managerial staff who had not participated in the research. They continued to remain rigidly set against the employment of the older women. They too had to be re-educated. Before going into this phase of the project, the staff sought a sample reaction. They selected a representative forelady and asked her how one of the older workers in her unit was getting along. She answered that this woman was one of the mainstays of her assembly line. Similar queries about each of the eight older workers in her department of seventy workers brought similar glowing reports.

Since this forelady had expressed such satisfaction with the older workers in her department, she was asked if she'd be willing to use any additional women over thirty to fill still-open places in her unit. The suggestion shocked her; she rejected it. Her reason was that older workers would create problems and not solve them. They would take her time and only produce inferior quality. Women over thirty, moreover, were not strong enough to stand the pace.

It was obvious that the forelady's own satisfaction with the older women in her unit had no influence on her stereotype. Unaware of her inconsistency, she could be objective in evaluating specific individuals but not in her general view of the same matter. The older women she knew continued to be "exceptions." The vigor of her reaction made it apparent that the supervisors could not be won over as individuals and that re-education of the entire supervisory staff as a group would be required. This was undertaken, and later group decisions were reached recommending that an experiment be made in the training of new, older workers to see if they could make a record consistent with that of older women already in the plant. In this way, the idea of hiring older women workers gradually came to be accepted.

This experiment demonstrated that the manner in which an experience is introduced functions as a decisive factor. When the members of a group participate in a program to discover the facts about
their own beliefs, the findings they make will stimulate changes in their conduct. The experiences they acquire—and share with others—as part of fact-finding research make possible the establishment of new behavior patterns which otherwise would be rejected.

French recalls that Lewin locked him in my office in New York and made him dictate an article on this experience in changing the stereotype toward older workers—an incident which, French says, "illustrates his ability to see and appreciate a potential contribution even when he first heard it as only a casual anecdote. Who else would have been so ready to say, 'That ought to be published,' when it did not conform at all to the conventional methodological criteria?"

Overcoming Resistance to Change

One of the most serious managerial problems at Harwood during the years of Lewin's association was the resistance of production workers to changes in methods and job operations necessitated by competitive conditions, engineering progress, or consumer demands. When model changes occurred in the plant, as they did several times a year, it was necessary to transfer workers from old jobs to new ones. They were taken from jobs on which they were highly skilled and placed on new ones which required considerable time for the development of skill. Workers always resisted these transfers and they were times of frustration for both operators and management.

Evidence gained in interviews supported the judgment that the resistance to the change and the slow relearning were primarily motivational problems. Morale of the group appeared low, and many members were despondent. The interviews gave evidence of frustration, of loss of hope of ever regaining the former level of production, of feelings of failure, and of a very low level of aspiration. The frustration evidently was due to a "loss of face," em-

bodied in the contrast between the previous high status and present reduced status.

Between 1940 and 1946 a number of small-group studies had been made to discover if it were possible to transfer workers more smoothly from old jobs to new ones, and if technological changes in job methods could be introduced without the usual manifestations of hostility and fall-off in production. These inquiries suggested that participation methods might provide solutions to the problem of overcoming resistance to change. An experiment along these lines was planned involving job changes.

An appropriate situation did not arise until the fall of 1947, after Lewin died. French, aided by Lester Coch, the personnel manager, was able to carry out the experiment as planned. The investigation called for introducing the required changes in jobs in three different ways, each involving a different degree of employee collaboration in working out details of the proposed new job assignments.

The first group did not participate in any way: the workers were told of the changes in their jobs, and the production department explained the new piece rate. The second group was asked to appoint representatives to meet with management to consider methods, piece rates, and other problems created by the job changes. The third group consisted of every member of the unit—not just the representatives. They met with management, took an active part in detailed discussions about all aspects of the change, made a number of recommendations, and even helped plan the most efficient methods for doing the new job.

The differences in outcome of the three procedures were clear-cut and dramatic. Average production in the non-participation group dropped 20 per cent immediately and did not regain the pre-change level. Nine percent of the group quit. Morale fell sharply, as evidenced by marked hostility toward the supervisor, by slowdowns, by complaints to the union, and by other instances of aggressive behavior.

The group which participated through representatives required two weeks to recover its pre-change output. Their attitude was cooperative, and none of the members of the group quit their jobs.
The consequences in the total-participation group were in sharp contrast to those in the non-participating group. It regained the pre-change output after only two days and then climbed steadily until it reached a level about 14 per cent above the earlier average. No one quit; all members of the group worked well with their supervisors, and there were no signs of aggression.

The motivation and morale of each group was apparently proportional to the degree that it shared the decision making. French concluded that “the experiment showed that the rate of recovery is directly proportional to the amount of participation and that the rates of turnover and aggression are inversely proportional to the amount of participation.”

Lewin had said that the constancy of the level of production at Harwood or at any similar plant could be viewed as a quasi-stationary process in which two types of forces are in gear: those component forces pushing production in a downward direction and those pushing production up. The difference in the strength of these forces makes the difference of production level between the participating and the non-participating group.

French pointed out that before the changes were introduced, each of the three groups had reached a level slightly above the production index of 60 units per hour, indicating that an equilibrium had been reached between the driving forces (such as the need to reach the quota) and the restraining forces (such as the avoidance of strain imposed by the difficulty of the task). With the job transfer, the component forces changed—but differently for the participating and non-participating groups. For the non-participating group, a new force pushing in the direction of restricting the level of output was created by the frustrations of the job transfer. Thus, it rejected the force toward higher production. On the other hand, the participating groups accepted both the new situation and the management-induced force toward higher production. In consequence, the additional forces working toward increased production were strengthened, hence the better recovery rate and the absence of aggression, grievances, and tension.

The Harwood studies just cited serve to illustrate how Lewinian
methods helped shift the focus of industrial management from mechanistic engineering approaches to social-psychological concepts. The great interest in recent years in the humanization of industry stems in large measure from Lewin's emphasis on the dynamics of groups at work. Much of the recent research on the relationships between managerial approach, employee productivity, and job satisfaction is due to his influence.

While many people in industry would probably not recognize Lewin's name or be likely to have read his writings, the views that enlightened executives express are clearly recognizable to those who know of their origins as emanating largely from Lewin.