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THE DRUNKARD'S SEARCH IN BEHAVIORAL SCIENCE*

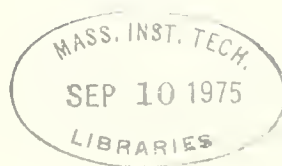
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THE DRUNKARD'S SEARCH IN BEHAVIORAL SCIENCE

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The philosopher Abraham Kaplan has related the story of the drunkard's search:

There is a story of a drunkard searching under a street lamp for his house key, which he had dropped some distance away. Asked why he didn't look where he had dropped it, he replied, "It's lighter here!"¹

The moral of the drunkard's search applies, I believe, to our efforts in applying behavioral science to management. No matter where we behavioral scientists have dropped our keys, we continue to search where it appears lighter.²

Today I would like to dwell on some recent aspects of our drunkard's searching into applications of the behavioral sciences to management. I would like to mention a few areas in which things have appeared lighter and which I feel represent important future directions.

First, I shall turn to the breakdown of some old myths and cherished beliefs, and the new truths which appear to be replacing them. Then I shall refer to new emphases in topics being studied, ways of studying them, and the theoretical approaches being developed.

¹A. Kaplan, The Conduct of Inquiry, 1964, p. 11.

²I should hasten to add that I believe that the drunkard's search is quite widely applicable to most kinds of inquiry, whether in physics, civil disorders, or making laws. In fact, Kaplan described the drunkard's search in a book called The Conduct of Inquiry.

Finally, I shall mention an important effort to apply the behavioral sciences to management which illustrates these new directions.

OLD MYTHS

Myth 1: The Hawthorne Studies Proved the Validity of the Human Relations Approach.

One of the most sacred of the sacred cows in the field is the famous Hawthorne Studies, carried on between 1924 and 1932 at the Hawthorne Works of the Western Electric Company. We are told by such authors as Arnold Tannenbaum in his introductory volume, The Social Psychology of the Work Organization, that "their surprising and dramatic results rocked the foundations of traditional management theory. . . Well before they were through, the experimenters began to discover some things of an order quite different from what they had expected. Among these was the power of the informal organization."³ This method of discovery is truly a fine example of a drunkard's search!

The main results of the studies are based upon a series of experiments in the relay assembly test room, a special experimental room where five operators assembled small relays as they had done previously in their own departments. The experimenters varied characteristics of the physical working conditions, primarily the length and timing of rest pauses, to examine their effect on production. Surprisingly, they found that there was a general upward trend in productivity regardless of the particular rest pause being used.

³A. Tannenbaum, 1966, p. 17.

F. L.

The authors attribute this change to changes in human relations:

From the attempt to set the proper conditions for the experiment, there arose indirectly a change in human relations which came to be of great significance . . .⁴

Recently, the scientific worth of the Hawthorne Studies has received scorching criticism from Alex Carey, a member of the University of New South Wales in Australia, of all places. After a probing analysis of the evidence and methods, he concludes: "The results of these studies far from supporting the various components of the "human relations approach," are surprisingly consistent with a rather old-world view about the value of monetary incentives, driving leadership, and discipline. It is only by massive and relentless reinterpretation that the evidence is made to yield contrary conclusions. To make these points is not to claim that the Hawthorne studies can provide serious support for any such old-world view. The limitations of the Hawthorne studies clearly render them incapable of yielding serious support for any sort of generalization whatever."

He bases his conclusions on the following evidence:

"(i) Apart from a doubtful 4-5 percent increase following the introduction of a preferred incentive system, there was no increase in weekly output during the first nine months in the test room, despite a great deal of preoccupation on the part of the supervisors with friendliness towards the workers, with consultation, and the provision of a variety of privileges not enjoyed on the factory floor.

⁴F. Roethlisberger and Dickson, 19 p.

(ii) From the beginning of what Roethlisberger and Dickson describe as the "experiment proper," that is, after the period in which the new incentive system was introduced, there was no increase in weekly output during the next six months. When it became apparent that free and friendly supervision was not getting results, discipline was tightened, culminating in the dismissal of two of the five girls.

(iii) The dismissed girls were replaced by two girls of a special motivation and character who immediately led the rest in a sustained acceleration of output. One of these girls who had a special need for extra money rapidly adopted and maintained a strong disciplinary role with respect to the rest of the group. The two new girls led the way in increased output from their arrival till the end of the study.

(iv) Total output per week showed a significant and sustained increase only after the two girls who had the lowest output were dismissed and replaced by selected output leaders who account for the major part of the groups' increase, both in output rate and in total output, over the next seventeen months of the study.

(v) After the arrival of the new girls and the associated increase in output, official supervision became friendly and relaxed once more. The investigators, however, provide no evidence that output increased because supervision became more friendly rather than vice versa. In any case, friendly supervision took a very tangible turn by paying the girls for time not worked the piece-rate was in effect increased."

Finally, he added: "If the assessment of the Hawthorne studies offered here is cogent, it raises some questions of importance for university teachers, especially for teachers concerned with courses on industrial organization and management. How is it that nearly all authors of textbooks who have drawn material from the Hawthorne studies have failed to recognize the vast discrepancy between evidence and conclusions in those studies, have frequently misdescribed the actual observations and occurrences in a way that brings the evidence into line with the conclusions, and have done this even when such authors based their whole outlook and orientation on the conclusions reached by the Hawthorne investigators? Exploration of these questions would provide salutary insight into aspects of the sociology of social studies."

Myth 2: Satisfaction Causes Productivity

Since the Hawthorne studies, a number of other studies have investigated relationships between satisfaction and productivity, using better controlled methods. Some of these have found positive relationships, some have found negative relationships, and some have found no relationship whatsoever. The type of work being performed seems to be a key factor. On jobs where the individual has considerable control over his own output the relationship tends to be stronger and more positive. For example, in my own work I have found consistent

positive relationships between the performance of scientists and engineers and how involved they say they are in their work.

The idea that satisfaction causes productivity -- the human relations approach -- is now being replaced in the thinking of many behavioral scientists by what Miles (1965) has called the human resources approach. Whereas the human relations approach assumes that

Participation → Satisfaction → Productivity

the Human Resources approach assumes that

Participation → Productivity → Satisfaction.

The implications of the human resources approach are that the manager is successful when he does things to involve the human resources of his organization in achieving its goals not simply by making them feel happy or satisfied.

Schein (1965) argues in a similar manner that our most appropriate view of man is not the old rational-economic man, social man, or even self-actualizing man, but rather complex man.

Man can respond to many different kinds of managerial strategies, depending on his own motives and abilities and the nature of the task; in

other words, there is no one correct managerial strategy that will work for all men at all times.⁵

Myth 3: One Leadership Style is Always Best

This leads us to a third old myth -- the idea that one type of leadership style is best for all people in all situations. Leadership is an area which has received steady attention from behavioral scientists, especially since World War II. After hundreds of studies of leaders in situations ranging from the League of Woman Voters to the Military, the leader who does best is most often -- but not always -- the person who is skilled in both the task and human relations areas. He is high in both consideration and initiating structure, to use the Ohio State terms; high in concern for production and concern for people, to use Michigan terms; or (9,9) to use the terminology of Blake and his colleagues in Texas.

This type of leader usually comes out best, but not always. For example, in a laboratory study of group problem solving, I recently found significantly more innovative solutions in groups where the leader was rated as less sensitive to the feelings of his workers, more punitive and critical, more pressure-oriented, and having less trust and confidence in his men (Farris, 1968). My interpretation of this finding is that such leaders created conflict

⁵E. Schein, 1965, p. 60.

in the group, and the conflict was very healthy in this case. The leader argued for his preferred solution, and the workers argued long and hard, in return, for theirs. A stalemate was reached when neither solution was acceptable, and this led to the seeking of new alternatives, and hence to the innovative solution.

In another study published last fall, Frank Andrews and I studied leadership characteristics of section heads in a NASA research center, and related these to innovation by the scientists in their group. (Andrews and Farris, 1967). We were, somewhat like the drunkard, surprised by our findings. Leaders of innovative groups were high in technical skill, moderate in human relations skills, and low in administrative skill. Technical skills of the section head related positively to group innovation, human relations skills showed little relationship, and administrative skills showed a negative relationship. Freedom provided by the leader to his group was unrelated to innovation for leaders high in technical, human relations, or administrative skills. But for leaders low in these skills, freedom was positively related to innovation. Moral: if you lack the skills, don't meddle!

Thus, from the old myths about leadership, we are beginning to gain a better understanding of situations and kinds of people for which different leadership styles are most effective. One useful way of conceptualizing this is Floyd Mann's (1965) skill mix of technical, human relations, and administrative skills. Mann argues, on the basis of considerable empirical evidence, that the skills

appropriate to a task vary with one's level in the organization. At low organizational levels, for example, our NASA Section Heads, technical skills are most important, administrative skills are of little importance, and human relations skills are of moderate importance. At middle organizational levels, all three skills are of moderate importance. At upper levels, administrative skills are most important; technical skills, least; and human relations still moderate.

Myth 4: Correlation Indicates Causality

The last myth I would like to dispose of is the idea that a correlation indicates causality. If we find, for example, that effective managers provide general supervision, what can we say about causality? Does general supervision lead to high performance, or does high performance lead to general supervision? Or, take salary. Is high performance followed by high salary? Is high salary followed by high performance?

This question of causality is absolutely critical for managers, for it tells them which variables should be changed to affect others. If general supervision is simply the result of high performance, then why train supervisors to supervise more generally? It is important, moreover, because so many research studies on which training programs are based were done using correlations.

Myth 4A: Leadership Causes Performance.

We are just beginning to look systematically at the problem of causality, so the findings are not permanently conclusive. But let us consider current findings regarding two areas. First, let us

look at leadership. Day and Hamblin (1964) found that leadership does affect performance. By instructing leaders in a laboratory group to supervise closely or generally, they found effects on performance. Francis Lim and I recently completed a study which showed that the opposite causal direction can hold as well. (Farris and Lim, 1968). Leaders told they had high producing groups supervised more generally and were seen as more supportive than supervisors told that they had low producing groups. Thus, leaders are both proactive and reactive. They affect performance, and they are affected by it.

Myth 4B: Salary causes Performance

Regarding salary, I have some results which are not so encouraging, so let's keep them within our small group. (Farris, in press). In a study of 150 engineers in three development laboratories of a large electronics company, I found a very strong correlation between salary and several measures of previous scientific performance -- patents, reports, and ratings on contribution and usefulness. However, I found absolutely no significant relationships between salary and subsequent performance in these same areas. Does this mean that salary does not motivate performance? Perhaps, but like the social scientist and the results of the Hawthorne studies, I am not willing to say "No" as yet. What these results do mean, however, is that correlations between salary and performance may well be caused more by the company reacting to performance than by the individual reacting to salary. Perhaps Mr. Weed's findings at Texas Instruments will shed some light on the motivating nature of pay.

As an aside, I should add that the question of salary is of immediate importance to me, since I just became an employer this Monday. I hired a maid to clean my apartment once a week for three hours for \$6. Monday was her first day, and I didn't have change, so I gave her \$10 with the understanding that I would pay her only \$2 next Monday. Thus, she'd earn \$12 for two weeks. When I arrived home Monday afternoon, I received the following note:

Mr. F,

I did Best I could, & indeed I earn my 10
Dollars. I never seen such a Dirty apt. & stove.

I Broke my Back. I hope looks better to you . . .

What would you do in this situation? I'll be glad to hear your wisdom, or perhaps the commentators would like to discuss it. I'm inclined to let her keep the \$10 to reward her extraordinarily good performance. My reasoning is simply Thorndike's old law of effect: Behavior which is rewarded will be repeated. Or, if what Francis Bacon said about science applies to cleaning ladies, I should let her keep the \$10, too:

It is enough to check the growth of science that efforts
and labours in this field go unrewarded . . . ⁶

Myth 5: Short Term Productivity is the Only Benefit of Applying Behavioral Science to Management.

For a long time behavioral scientists have been asked to justify their work in organizations on the grounds that it contributes to short

⁶F. Bacon, Novum Organum.

term productivity -- that it has some immediate payoff for the organization. Myths 1 - 4 indicated that this is not always the case. The human relations approach, satisfaction, particular leadership styles, or particular compensation plans do not invariably lead to increased short-term productivity. Yet it is that short term criterion by which we have been judging these myths.

It is my strong belief that behavioral science can and does contribute to management. Sometimes it does contribute to short term productivity, but its most significant contributions, I believe, are in other areas. The human resources approach illustrates this point nicely. An organization will be effective to the extent that it utilizes its human resources. Behavioral science contributes to the effectiveness of an organization by suggesting situations in which human resources can be more fully developed and utilized. The payoff for the organization is, however, long run, not short run.

SOME CURRENT DIRECTIONS

Direction 1: Better Research Methods

Now let us turn to some current directions in the drunkard's search of the behavioral scientist in applying his knowledge to management. First, in terms of methods, he is now and will more in the future, rely increasingly upon experimental studies rather than correlational. He will use correlations to see what goes with what, a very necessary first step, and then he will do an experiment if at all possible to determine which factor causes which. Experiments are

difficult to do in the real world. Not only can they be disruptive to the organization, but they can also cause problems in the human relations area. Chris Argyris relates the problem of trying to convince a company to do an experiment. "I have this wonderful group training technique which I'm convinced will make your organization more healthy. Half your managers will be in the experimental group and get this marvelous training, and I am sure, become more effective. Half of your managers will be in the control group and continue as they are with no training."

Another promising method, but still not completely tested is that of "cross-lagged correlations" -- doing correlations over time between factors. This can tell you what is followed by what, and perhaps what causes what. It is much less disruptive to the ongoing organization than an experiment, and it tells you much more about causality than a correlational study. It is not surprising that longitudinal studies -- studies across time -- are becoming more and more common in behavioral science. For example, Rensis Likert at the Institute for Social Research of the University of Michigan is doing a longitudinal study of organizational factors in performance in more than a dozen companies. In this study he is surveying each company four times a year, giving feedback on the results of the survey, and conducting other activities to help improve the organization.

I am dwelling on methods of research with you practitioners because I am aware that your practice is becoming increasingly research based. You should be aware of the quality of research on which you

base your operating decisions, since sometimes a little research can be worse for an operating decision than none at all. On the other hand, the best way to get sure answers is with good research, and you can do this or have it done in your organizations without great cost and with potentially high payoff. You can study effective leadership or salary policy for the particular people and job situations in your organizations. Herb Myer and Earl Weed will give you examples of what they were able to do in theirs.

Direction 2: Interdisciplinary Collaboration

Another trend in method is interdisciplinary -- to work in teams including both behavioral scientists and people from other disciplines relevant to management. For example, I am currently helping to design and implement a new production, distribution, and centralized information system in a company, but I know very little about these areas. My partners in the project, however, are specialists in production, distribution, and information systems and want to be aware of human problems in implementation.

In another project, I am working with the government of Brazil to establish a national system of regional economic development banks. I know very little about banks, but my partners are specialists in finance and financial control systems. I would not be surprised if the same kind of interdisciplinary collaboration would be fruitful in your organization. Professor William Gruber of M.I.T., for example, has suggested a merging of the personnel and operations-research-oriented systems analysis functions in an organization.

Direction 3: International Studies

As the behavioral sciences mature and move past the sacred cow stage, they are beginning to move into other important, but relatively virgin territory. Many of us are involved in international studies, with either American or foreign companies. David Sirota of IBM World Trade is completing a survey of over 30,000 IBM employees from around the world, and Hollis Peter is engaged in similar activity with part of the Shell Oil Company. Many of us are involved in social change activities in other cultures, and our findings in this work in turn helps us to work on problems of social change with companies in the United States.

Direction 4: More work at Higher Organizational Levels. Study of the Manager's Problems.

Moreover, there is an increasing trend to study the managerial and professional employee, rather than just the factory worker. We have earned access to that level, and we are finding it necessary to refine some of our cherished concepts to make them applicable at higher levels, and even to develop new concepts. Such areas as organizational development, conflict resolution, career reward systems for the professional, and group processes in management decision making are receiving increasing attention from the behavioral scientist. Moreover, this work at higher levels is causing us to focus on problems as faced and defined by the manager himself.

Direction 5: Open Systems Theory

Finally, this newer wider scope of the behavioral scientist is leading him to revise his theories as well. We are trying hard to

Stop concentrating on the individual or group at the expense of the department or organization. One of the most important theoretical works of the 1960s is Katz and Kahn's The Social Psychology of Organizations, in which they advocate an open systems approach to studying human behavior in organizations. They justly criticize past approaches to studying and changing organizations on the basis of two kinds of errors: the sociological and the psychological. The former refers to working with the organization and forgetting the people -- e.g., changing policies without considering those affected. The psychological error refers to concentrating on individuals or groups and forgetting the total organizational context into which they fit. This error has led to the failure of numerous organizational change efforts. Everything looks good, but the next level up kills it. Their approach appears very promising.

Professor Mason Haire of M.I.T. has used such an approach to develop a model of the flow of personnel through an organization. He is considering both the organization's manpower needs and the individual's motivation and career development in his model. The final product may be especially interesting to those of you involved in that part of the personnel function.

One study which is very representative of the 1960's approach in applying behavioral science to management is that by Marrow, Bowers, and Seashore, called Management by Participation. It tells of the purchase of one company by another and the ways in which the acquisition was changed from a very poor operation to a viable one in two years.

The approach used was an open systems one, combining improved production techniques with a behavioral-science-based approach to structuring the organization and relations within it and to implementing change.

The approach was eclectic, and it worked. After two years of management development activities, return on investment increased from minus 15% to 17%. Production efficiency increased from minus 11% to 14%. Turnover decreased from 10% per month to 3% per month.

Although the acquisition of Weldon seemed logical on paper, Harwood soon found that they had purchased a poorly functioning organization. Harwood then engaged in several activities designed to maintain the personnel, modernize the plant and work methods, and introduce a new pattern of management -- with emphasis on participation. They initiated several activities designed to improve the organization including, on the social systems side, consultants in participative leadership, interpersonal training for managers and supervisors, problem solving activities by many groups in the organization, and a general effort to push the locus of influence in the organization downward. As a result of their work, the authors conclude that:

(1) Acquisitions must consider human resources; (2) Organizational change can be fast given a coherent philosophy of change, ample resources, and coordination between the technical and social systems; (3) The philosophy of management by participation is a good one; (4) It is important to coordinate the management-related sciences and technology.

CONCLUSIONS

Let me recapitulate briefly. I have attempted to dispel some old

myths regarding the application of behavioral science to management. These are that the Hawthorne Studies proved the validity of the human relations approach, satisfaction causes productivity, one leadership style is always best, correlation indicates causality, leadership causes performance, salary causes performance, and finally that short term productivity is the only benefit of applying behavioral science to management. I have listed some current directions in behavioral science. These are better research methods, interdisciplinary collaboration, international studies, more work at higher organizational levels, and open systems theory. Finally, I have described one effort which illustrates most of these new directions. This involved the dramatically improved performance of an acquisition through an interdisciplinary, strongly behavioral science oriented effort.

I hope that this gives you some idea of my impressions of some places where the drunkard's search has been and where we are finding it lighter these days. I had to be selective in what I covered, but I hope that this may provide a helpful context for the reports of work in their companies by Dr. Meyer and Mr. Weed. They are both searching where it appears lighter to them, and their work is part of the excitement of the behavioral sciences in the 1960s -- which has gone a long way since the Hawthorne studies in probing the darkness for the drunkard's key to the effective application of the behavioral sciences to management.

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