

Some Perspectives for Industrial Psychology

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We industrial psychologists are a curiously introspective lot about our professional selves. For some reason or another we are greatly concerned about what we are doing, how we are doing it, and what we ought to be doing. In the very early days of industrial psychology, our folk heroes, people such as Viteles, Link, Bingham, Paterson, and Burt, all had their say about the role of industrial psychology and what it should be concerned with. Those of us who formed the next generation continued to insist on telling each other at great length who we are, what matters we ought to consider, and how we should do what we do; and the current generation has continued this custom of a periodic auditing of our field.

I propose now to continue this custom, and I shall discuss a rather mixed bag of matters that I believe we as industrial psychologists ought to think about. I shall consider some notions about the nature of the variables we use, the study of organizations, the role and nature of theory, the impermanence of facts, and individual differences and individuality.

The Nature of Variables

As industrial psychologists we are concerned with various aspects of workers' behavior, together with the many factors that are related to, or determine, it. We examine the sundry variables that are manifestations of workers' mental life or that bear on it, ascertaining their interrelationships and the effects of one upon another. Let us think a bit about these variables.

We become so involved with the psychological variables that we propose as pertaining to occupational behavior, that we come to think and act as though those variables have a certain truth—a

reality of the same order as that of physical variables. We fail to keep in mind that psychological variables are intellectual constructs, mere conventions. Generally, to be sure, they are useful conventions, for they provide meaningful descriptions of human behavior. Nevertheless, we must recognize the fact that the psychological traits and properties we formalize have a will-o'-the-wisp nature; perhaps they are there and perhaps they are not.

Each of us tends to see the greater importance and relevance of certain psychological variables over others, and we go to great lengths to persuade our colleagues of their significance. This is not to say that the variables each of us finds to be of compelling interest are entirely unique, for this is not the case by any means. There is a great similarity in our training, and we are all the audience of the same professional and scientific conferences and publications. Consequently, it is not surprising to find that there is some sameness among us in the particular variables we perceive as pertaining to people.

What I am saying is that when we set about examining workers' behavior, the particular variables we distinguish as being relevant emerge from our individual notions about the psychological nature of man. These notions reflect our various individual frames of reference, and since we have very similar backgrounds and operate in quite similar intellectual environments, our various frames of reference are quite similar. The extensive commerce we have with each other in the exchange of information and ideas has almost rigidly institutionalized the sorts of variables that we permit each other to use.

We psychologists are not the only people who speculate about the essence of human nature, nor are we the only ones who have insight into it. The ordinary man constantly observes the behavior of his fellows and ponders about the factors that determine it. As a result of his experiences with his fellow workers, together with the pains and joys he himself has experienced in connection with his job,

¹ This article was a Distinguished Scientific Contribution Award address presented at the annual meeting of the American Psychological Association, Montreal, Canada, August 1973.

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he develops some quite shrewd notions. The proverbial philosophizing of the taxi driver is not entirely trivial, nor are the chattering comments of the coffee shop waitress absolutely witless.

The working Jill and Joe fend for their existence in the harsh realities of the world. The fact that they survive and pursue useful careers in such a demanding social environment is testimony to the fact that they possess considerable insight into the varieties of behavior human beings manifest and into the sorts of factors that determine this behavior. The layman's ideas about man's mental machinery are by no means without substance, and by ignoring them it is quite possible that we are missing a truly rich lode.

In formal interviews and informal conversations with people about work and matters pertaining to it, my attention has been drawn to a number of variables that describe significant aspects of the behavior of workers, that I had just not thought of before, and that I found both interesting and useful. As an example, let me cite a property which might be called the *hobo syndrome*. This syndrome can be defined as the periodic itch to move from a job in one place to some other job in some other place. I have seen this syndrome in all manner of people, from those engaged in occupations that require little by way of training or skill, to those in substantial managerial positions. This urge to move seems not to result from organized or logical thought, but rather would appear more akin to raw, surging, internal impulses, perhaps not unlike those that cause birds to migrate. Floaters readily provide socially acceptable explanations for their peripatetic activity, but under careful examination these explanations turn out to be little more than rationalizations. The simple fact is that after being in one place for a matter of months, or perhaps a year or so, depending on the strength and periodicity of his itch, the individual is impelled to pack up and move to another place and another job.

Folk songs often are authentic expressions of a people's concerns, characteristics, and motives, and the variable I am trying to particularize for you is often described in them. In the ballad of the hobo, the lay of the wandering cowboy, and the song of the itinerant worker, country and western music fully attests to the genuineness of this recurrent itch to move on. Very likely, an analysis of the content of work songs would give industrial psychologists other new and interesting insights into the behavior of workers. In any event, many of the baffling cases I have come across in interviews

that I have had with workers about why they left their jobs are resolved when I consider the possibility of this hobo syndrome as a factor that determines behavior.

Organizations

I now turn to my second topic, the investigation of organizations. Today we call our field industrial and organizational psychology in order to acknowledge that we are concerned with men and women in a particular kind of social setting, the business or industrial organization. We have established new journals and have produced new and different sorts of books as outlets for our surging research and thinking about organizations. Yet I believe we have just begun to recognize a few of the many facets of the matter and to empirically explore them. To be sure, we are showing more and more breadth and sophistication in the ways in which we view our problems by considering the social setting wherein Jill and Joe labor, but I do not believe we go far enough. It seems to me that we tend to think of organizations simply as environments. Thus, we examine such matters as the effects of differences in the climates of organizations on the types of leadership that are most effective in them and the relationships between various sorts of organizational structures and the need satisfactions of the members of those organizations.

Even dealing with organizations just at this level, taking them solely as social environments, we need more innovation. For example, we ought to be giving much more attention to the sorts of sociopsychological dimensions along which organizations vary. There have been some beginnings, for some of the braver and younger among us have directed their thoughts to the kinds of dimensions that can be used to describe organizations. Nevertheless, we are still at a relatively primitive stage, largely concerning ourselves with variables that simply are descriptive of objective properties such as size and sociological variables such as shape. We need much more creative thinking and much more argument and controversy among ourselves about the pertinent sociopsychological dimensions of organizations.

As we well know, there have been numerous studies of the effects of the organization on the individual, showing various ways in which it modifies his behavior and his thinking, but we have given little or no attention to the effects the individual has on the organization. We should be ex-

ploring such important problems as the kinds of people who can make significant changes in the nature and operation of the organization and the different sorts of changes made by persons of different abilities and personality traits.

Furthermore, I believe that it is legitimate to examine the psychological nature of organizations, taking organizations as wholes. Traditionally, the study of organizations has been the province of the sociologist. Nevertheless, I believe that we, too, can consider business and industrial organizations as individuals, individuals who vary among themselves in a number of different psychological dimensions and who behave in ways that are characteristic of all kinds of individuals.

For example, we can examine how organizations learn. When a factory is charged with turning out some new product, the initial rate of production is low, and apparently as experience is gained, production increases but with diminishing returns, so that a graph of production looks exactly like the traditional learning curve of a single human being. The concurrent changes within the organization can be studied. Sometimes the workers who produce the product discover more effective ways of working. The people who are charged with procurement often find suppliers who can deliver the material more quickly and more regularly. More accurate ways of scheduling the flow of different parts of the work may be developed. Industrial engineers have given considerable attention to this matter, but industrial psychologists have almost completely ignored it. Yet, certainly there are a number of psychological problems here, and industrial psychologists should give some attention to them.

It is said that a major problem in studying organizations is the difficulty in securing more than a very few of them that can be considered to be truly comparable. As a consequence, in studies of organizations it would appear that the number of cases must necessarily be quite small. When we study people, however, we certainly do not insist that they be comparable in all manner of characteristics. Indeed, in many situations we actually seek heterogeneity in our subjects so that our findings will be more generalizable, and I see no reason why we cannot argue in just the same way when we study organizations. The use of heterogeneous samples of organizations should make empirical findings more meaningful and reliable.

Nevertheless, it is true that the empirical study of organizations will be more difficult than the empirical study of people. Under the best of cir-

cumstances, it is not easy to obtain a large number of organizations, no matter what kind they are, that can be manipulated and exposed to a variety of specified conditions as we can do with human subjects. Furthermore, social and economic changes are always occurring so that over time we may not have the constant and controlled conditions that are needed. One solution to this problem would be to use simulations of organizations, miniatures, rather than actual business and industrial organizations.

Artificial organizations might be created in the psychological laboratory, organizations that are comprised of relatively few people, perhaps just 10 or 20. For many years, of course, social psychologists have used small groups of people in the laboratory, assigning them various sorts of tasks and systematically varying the conditions under which the groups operate. Many of these studies have been quite fruitful and have provided us with knowledge we would not be able to obtain otherwise. Furthermore, such studies may clarify issues, thus enabling us to do more pertinent field studies. In a similar way, industrial psychologists could assemble groups of people in the laboratory, delegate different roles to the different individuals so that they form the memberships of organizations, assign them some task as a goal of the organizations' activities, and provide them with whatever facilities are necessary. One does occasionally find in the literature reports of research of this sort, but not often, and seldom by industrial psychologists. I believe that the use of miniature models of organizations might be very fruitful. For example, in some exploratory investigations utilizing miniature organizations, I was able to observe the sorts of structural changes that occur in organizations as they develop from infancy to maturity, and thence to senescence.

Another way of simulating organizations is by means of mathematical models. Mathematical models are, of course, common stuff in other social sciences and in other areas of psychology. In economics, for example, we find a variety of mathematical models of the firm. In the areas of psychometrics and learning, mathematical models have been developed that have proven to be quite useful. We industrial psychologists can just as well develop mathematical models of organizations, models that would be useful in showing the effects of various circumstances on specific aspects of the nature and operations of organizations. Let me give an example of the utility of this procedure. A while ago

I worked out a simple mathematical model which enabled me to ascertain the effects of such factors as size and shape of the organization on the quality of men who reach the upper levels of management as a result of regular promotion procedures. Inasmuch as they deal with careers that extend over long periods of years, it is unlikely that matters such as the foregoing can be studied in actual organizations. It is with situations of this sort that mathematical models of organizations, and perhaps even miniature organizations, provide their greatest service.

The Role and Nature of Theory

Now I would like to say a few words about theory and our use of it. I apologize if I appear to be lecturing you on such a basic topic as theory. Nevertheless, it is true that we industrial psychologists almost entirely have been empiricists, and it is only recently that we have generated any real interest in that gossamer we call theory.

We recognize, of course, the value of theory as a means for integrating the many bits and pieces of knowledge we have gained from a diversity of empirical investigations. As a consequence of this integration, theory enables us to view a wide variety of otherwise disconnected facts in a total meaningful whole, and thus it is possible to extrapolate where there are gaps in our knowledge. Furthermore, as we all recognize, theory is very useful in research, for it provides systematic guides to new directions research ought to take and indicates new ideas that should be explored.

Another valuable function that theory performs, and one that we industrial psychologists generally overlook, is as a means for evaluating the significance of empirical findings. Because empirical studies necessarily utilize samples of individuals rather than populations, the findings of a single study are seldom completely trusted, and so, commonly, some statistical test is applied in order to gauge their dependability. Our statistical testing of differences and relationships has become as stylized as the courting dance of the whooping crane and often is just about as awkward.

Inasmuch as theory provides an integration of findings from a diversity of other investigations, if the results of a single investigation are not congruent with an appropriate theory, then certainly there are good grounds for doubting their dependability. Indeed, demonstration of the statistical significance of a set of findings is not enough.

Those findings also ought to fit in with existing theory, or at the very least they should provide a basis for reasonable modifications of current theory or for new theory.

When we develop a theory, we feel committed to defend it to the very end, for we take it as representing the revealed Truth with a capital T. So we bend the large portion of our efforts to finding data that support the theory and explaining away data that are not congruent with it, and consequently we invest too much of ourselves in it.

We take theory as being an approximation of the truth. Our argument is that because our knowledge is incomplete we do not know the precise nature of a particular phenomenon, but only bits and pieces of it. We say that in order for those bits and pieces to be comprehensible we develop a theory that explains them and integrates them into a meaningful whole so that it provides at least a semblance of the truth. As we acquire more and more facts about the phenomenon, we modify our theories or develop new ones to take those facts into account, and thereby come closer and closer to the real truth.

The history of psychology teaches us that seldom are theories disproved by compelling empirical evidence. Rather, theories just fade away because they become less fruitful and less interesting, and so less popular. The work of Wertheimer and Watson did not really completely invalidate the structuralism of Wundt and Titchener. To the generation of psychologists that followed them, the ideas of Wertheimer and Watson were just more exciting, and those of Wundt and Titchener seemed sterile. Whatever happened to Spearman's G? Gone with the wind. Yet, the multiple factor analyses of Thurstone and others did not really disprove Spearman's theoretical position, rather they showed that it is more meaningful and useful to think of human traits as being multidimensional.

Psychological theories wax and wane. They wax as we attempt to overcome the deficiencies of older theory in explaining new facts and seek insights into new problems that now interest us. They wane not so much because they are found to be wrong, but because they do not pertain to the new problems that we, another generation of psychologists, consider to be significant. We ought ever to bear in mind that theories are nothing more or less than conveniences, aids to our understanding the nature of man.

What I am saying is that theories should work for us; we should not work for them. Theories

should be our servants, not our masters. Unfortunately, I fear, the opposite is too often the case.

The Impermanence of Facts

Next I would like to reflect on the survival value of the knowledge we arduously pursue in our so numerous empirical studies and report at such length in the long parade of our voluminous journals. Implicitly or explicitly, our position is that the characteristics of human nature revealed to us from our empirical investigations have the property of enduring truth. We believe that any information we obtain now about human nature was just as true in the past and will be just as true in the future. I wish to suggest to you that this is not necessarily the case. Quite the contrary, what we accept as being facts can by no means be taken to be enduring and established forevermore.

We think of significant fundamental changes in human nature as occurring only over millenia. Thus, we recognize that there are psychological as well as morphological differences between modern men and their arboreal and speluncean ancestors. Nevertheless, is it not possible that changes in the basic character of mental activity can occur over smaller spans of time? Since the turn of the century, has there not been such a variety of most significant social and physical changes in the world that have modified not only the environmental influences on man, but also his patterns of selective breeding? So, is it not possible that in this short span of time there have been significant alterations in the environmental and genetic determiners of human behavior?

Just a few decades ago the son of an immigrant from middle Europe who settled in Chicago invariably married the daughter of another middle-European immigrant, and Back Bay Boston stock maintained itself by careful intermarriage. But the upwardly mobile grandson of those middle-European immigrants attending Harvard Graduate School of Business might well meet and marry a Back Bay Boston lass. It seems highly unlikely that the factor structure of the traits and abilities of the offspring of this marriage, much less their personality dynamics and motivational complex, would be precisely the same as those of their grandparents. Could not the genetic and cultural mix produce something akin to hybrid vigor with rather different psychological laws?

In the last few years we have witnessed the quite sudden appearance of a generation of young people

whose social behavior, attitudes, and values are strikingly different from those of the immediately preceding generation of young people. The change occurred so quickly that we are only beginning to recognize its significance. Surely this surging social movement has brought about basic changes in the psychology of people. The differences between the two generations certainly are more fundamental than just differences in mean scores in hair length, attitudes, motivations, and the like. Is it not possible that culture-loaded and culture-focused instruments such as the F Scale, as well as intelligence tests, do not measure precisely the same qualities in the two generations? Indeed, might it not even be possible that with individuals such as the young people of today, eager to learn so that they can quickly effect social changes, such a basic law as the superiority of distributed over massed practice is reversed so that a quick and concentrated exposure to material results in more rapid learning than exposure to it spread out in time?

While there might be disagreement about the extent to which the fundamental psychological properties of man change over time, there is no question but that the nature of the circumstances in which people work, together with the nature of their work, often change significantly over quite short periods of time. The introduction of stapling machines produced immediate modifications in the work of carpenters and in the particular skills they utilize, and the introduction of computers required executives almost overnight to be able to interpret and utilize great masses of new sorts of information and even to think and to state their problems in different and more precise terms. Consider the great changes in the degree of aggressiveness recently being manifested by those traditionally mild individuals, school teachers, as a result of the new permissive attitude toward unionization and strikes on the part of governmental workers.

A fact about human behavior that is established in a particular situation, with the particular sorts of people who happened to be in it at the time, might well not hold at a future time if the sorts of people attracted to that situation change. There are many obvious circumstances that result in a change in the sorts of people who concentrate in, or are placed in, a particular job. War and economic crises produce such changes, and so do social movements and legislative acts. Unquestionably there are many other factors which we simply do not recognize that cause shifts in the sorts of people who apply for a given job and work at it.

We industrial psychologists have given some attention to changes in the nature of the job and organizational situation with the passage of time, and we have given some, though lesser attention, to the possibility of changes in the sorts of people found in a particular job or organizational situation. But as far as I can see, we have not even recognized the possibility that as time goes by significant modifications in the basic psychological machinery of people may occur.

Fundamental to science is the proposition that facts once established are enduring, for if all were change we would have utter anarchy. Hence, in our training as scientists we were taught to believe that unless the attributes of nature have some permanence, it will be impossible to have any understanding of it. So deeply is this belief ingrained in us that I have felt forced to make as strong a case as possible for impermanence so that you will entertain at least some small possibility that what we think of as established facts are indeed not necessarily enduring. I do not ask you to accept the proposition that all facts change, fade, and pass away as time goes by, but just to admit the possibility that some few might.

I invite you to remember that we industrial psychologists are concerned with men and women who live in a dynamic society, a society that constantly seeks to change their nature, and who are engaged in performing tasks that are always undergoing modifications. As a consequence we ought to expect that what we take to be established facts about workers' behavior are not necessarily true forever.

Individual Differences and Individuality

I come now to the last matter I should like to discuss, individual differences and individuality. A good part of the heritage of industrial psychology lies in differential psychology. The pioneers in industrial psychology, beginning with Münsterberg, all realized that it is necessary to deal with the human problems of business and industry within a framework of individual differences. Unlike some of our colleagues, we industrial psychologists have never regarded the differences among individuals as bothersome "error variance." Rather, we have always considered them as real and important.

Perhaps because industrial psychology also has a heritage in psychometrics, we have generally held that it is more fruitful to think of people as differing among themselves in quantitative rather than

in qualitative ways. For us, people are distributed along continua, not among a series of separate and distinct classes. That is, we hold that the differences among individuals are best considered as being differences in amount, frequency, or degree, and we believe that except for convenience there is nothing to be gained by attempting to separate people into kinds or sorts.

In recent years, our interest in the quantitative differences among people has led us to the examination of moderator variables and their role in contingent relationships. We have considered contingent relationships in connection with a variety of matters such as the validity of tests, leadership, and motivation.

As I am sure you know, a moderator is a variable that monitors the relationship between two other variables. If scores on a variable are related to the degree of relationship between scores on two other variables, then we say it operates as a moderator. Thus, for example, the higher and higher peoples' scores are on the moderator, the higher and higher is the relationship between their scores on two other variables. Other patterns can also occur. The important thing is that for people whose scores fall at different ranges on the moderator, the degree of relationship between their scores on the other two variables is different.

When we examine a variable to see whether or not it moderates the degree of relationship between two other variables, we are likely to analyze our data in a fairly crude fashion. Typically, we divide individuals into a high- and a low-scoring group on the basis of their scores on the presumed moderator and ascertain whether the degree of relationship between scores on the two other variables is the same or different for those two groups.

Perhaps because we have only recently begun to study contingent functions, we like to see the data relative to a moderated relationship presented in a simple manner such as I have just described. However, inasmuch as presentations of this sort are used repeatedly in study after study, I fear that we have come to think of a moderator as a property on which individuals are differentiated into separate and distinct groups, rather than as a continuum on which individuals are distributed all along its extent. Thus, we may say that the findings of a particular study indicate that in organizations that have a tall structure, supervisory success and authoritarian views about leadership are more closely related than they are in organizations that have a flat structure. The moderating variable, organiza-

tional structure, we treat as being qualitative, a variable that classifies organizations by type or kind. In our concern with convenience we overlook the fact that the moderating variable is indeed a continuous one along which organizations vary in accordance with the *degree* to which they are tall or flat.

This view about the nature of moderator variables has been reinforced as we have come to examine as moderators variables that are the classical examples we cite to students as being qualitative variables. Thus, we examine as moderators of the validity of occupational tests, variables such as sex, race, and even "kind of name."

I have no expertise that would permit me to make definitive statements about sex or race as variables. However, I gather from those who are knowledgeable about these two properties that the nature of variation in them is by no means certain, and, indeed, it may well be better to take them as quantitative rather than qualitative variables.

To illustrate the absurdity of dividing people into separate categories in terms of kind of name, currently a popular game in the Far West and Southwest, I give you the case of my youngest granddaughter, Anna Louisa Ghiselli. Just on the basis of her name alone an earnest investigator without any qualms would readily classify her as a child of Latin descent. *Chiaramente questa bambina è una vera latina*. Her ancestry, however, is about one-quarter English, one-quarter Lithuanian, one-quarter Polish, with the remaining quarter being more or less equally divided among German, Portuguese, Italian, and the three major sorts of Swiss. How representative this child of heterogeneous ancestry is of all western hemisphere people, if not indeed of all people of all hemispheres, even those who are called, or call themselves pure stock.

Unless we are concerned with matters such as certain social perceptions, biases, and the like, I can see no value at all in examining the somatic and nominal properties of people as moderators. Indeed, a case could easily be made that when we do use somatic and nominal properties in this manner it is simply because we are intellectually lazy. As psychologists and social scientists we ought to be concentrating our efforts on the examination as moderators of various psychological and social factors. We should be investigating the moderating effects of quantitative variables such as various sorts of cultural deprivations, roles accepted by the individual, the frustrations he develops which re-

sult from aggressions against him, modes of behavior thrust upon him, and the like—solid, directly measured, and significant psychological and social factors.

One of the values of the current social revolution is a reaffirmation that the classes to which people are assigned, classes differentiated on superficial bases such as somatic and nominal characteristics, should play no part whatsoever in making social judgments about people as in personnel selection and evaluation. The position is taken that the sort or kind of person that individual is said to be should be completely ignored, and any differences that are found between so-called "sorts or kinds" of people with respect to employment, job performance, or any social judgment of them should be taken as being purely incidental. If differences between classes are found, those differences are better attributed to more fundamental quantitative psychological and social variables which for one reason or another have some association with those classes.

Indeed, rather than placing importance on the uniqueness of the classes or categories of people, we ought to be focusing our attention on the uniqueness of the individual. Individuality, too, is a real property of people, and yet we have almost completely ignored it. We have not even developed a working definition of individuality, much less ways for measuring or describing it. Is the uniqueness of the person, his individuality, a matter not worth the attention of the industrial psychologist? Should we continue to devote a substantial portion of our attention to highlighting the differences among arbitrary categories of people? A few years ago we happily joined the attack on the stereotype of the organization man, but where is our interest in his opposite, the individualist?

I am certain that systematic investigations of individuality would be most fruitful and would turn up some interesting and surprising findings. For example, in the Italian civil service, an institution noted for its inflexibility and strict adherence to rules and regulation, quite unexpectedly I found that the more individualistic a manager was, the more highly was his work regarded by his superiors.

The intercorrelations among people can be computed from the scores they earn on any set of variables. Invariably these correlations will differ in magnitude so that at one extreme there are some individuals whose intercorrelations are high inasmuch as the order of their scores is very similar, and at the other extreme there are other individuals

whose intercorrelations with other people are low inasmuch as the order of their scores is quite unlike that of any other people. The remaining individuals are distributed between these two extremes. By this simple procedure individuality can be demonstrated and can be taken to be a continuous quantitative variable of exactly the sort we are all used to. There is, then, nothing odd or peculiar about the property of individuality which makes it elusive or especially difficult to deal with.

The many attributes which all men share testify to the oneness of mankind. Human beings are sufficiently similar that we have been able to make many useful and meaningful generalizations about them. However, while quite obviously it is important to study what is common to all men, we must not overlook the richness of what is unique to the individual. And surely there is much more to

be gained from studying the person in the fullness of his individuality than there is from studying what he has in common with others who are placed with him in one or another of a series of contrived categories which are presumed to make qualitative distinctions among people. The point I have been trying to make is certainly not new. It is a cry that echoes down the long halls of the history of man, a cry of the individual for a recognition of his individuality, his uniqueness, and we industrial psychologists have not heeded it. The matter was well phrased some thousands of years ago in the Talmud: "The greatness of God is infinite; for while with one die man impresses many coins and they are all alike, the King of Kings, the Holy One—blessed be He—with one die He impresses the same image on all men, yet not one of them is like his comrades."