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MANAGEMENT SCIENCE — HOW GOES ITS PHILOSOPHY ?

J. W. HOWARD

THE LEGITIMACY OF MANAGEMENT AS A SCIENCE

Should we take seriously the idea that management is, or can be a science or is the notion mostly so much impressive talk ? Or does it matter ? Apparently more and more managers think it does.

To assert that management is now a science because in organizations there is a certain realized coherence in the structural arrangement of technologies spun off from the natural and social sciences is hardly a sufficient base for the claim, although it may be an adjunctive argument. There is very much less merit in the claim to membership in the science club on the basis of comparable achievements of status value. That would hardly be a pertinent reason, no matter how bolstered.

We have a science when there is comprehension of *why* tested propositions seem to be true or false at the time and going with this an active and maintained attitude toward increasing a body of knowledge through the relational structuring of information. Science is what scientists do when they are working at it. They do a great variety of things and in ways which reflect their theoretical and methodological biases. In proportion to the effectiveness of a man's systematic approaches and the degree of convincingness of his arguments and validated findings to members of his peer group he may be accorded rank within the scientific hierarchy.

Surely much of all this goes on within management, even if a good deal of that individual managers do is loosely integrated with over-riding viewpoints and some of his tasks are carried out in a routine fashion. It is neither misleading nor egotistical to lay claim to management as a science, albeit one which presents special developmental difficulties and appears to rest on philosophical premises which are unnecessarily restricted.

SOME DIFFICULTIES FOR THE DEVELOPMENT OF MANAGEMENT AS A SCIENCE

There are three obvious, but related, areas of difficulty for management's development as a science. First, the facilities for the testing of hypotheses are, for the most part, restricted to circumstances which are tied to the on-going procedures of the organization. This makes it difficult,

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if not impossible, to control some variables in the way and to the extent considered essential for testing in most of our older sciences. Opinions keep intruding as forms of evidence, as well as theory modification, as research and experimentation on even minor aspects go on. This limits precise validation or invalidation, but it does not necessarily negate the findings. Indeed, there can often be some side advantages.

While it may sometimes be feasible to withdraw projects and subject them to experimentation in circumstances analagous to a laboratory, this approach cannot be made generally applicable to the great bulk of ideas and projected changes which appear to have merit on the basis of speculation and limited discussion. The laboratory approach, when it can be used, cuts down markedly on possible loss in both money and personal reputations. The bets are not so shattering to lose.

The second area of difficulty makes its appearance when it seems necessary, or is thought desirable, to borrow the recent findings of other sciences, or technologies developed from them, and fit them into the organizational structure in a systematic and well-integrated fashion. This impinges on various aspects of innovation, formulation and achievement of objectives and the approach to making decisions. Although very necessary to consider, the « hows » are apt to came to vastly outweight and take precedence over the « whys ». To the extent that this is allowed to happen the scientific aspect of management sinks to a lower level. At this point it is easy to move on to dictating what everyone should do on the basis of « this is the way things really are ».

The third area of difficulty has to do more directly and specifically with people. There is little that managers do which is not pertinent to the lives of others, either within or outside the organization. With the possible exception of education, there may presently be no more potent human activity than management in influencing social viewpoints. Each strives to deal with man in terms of the most widely accepted brands of psychology. These present him as a *tabula rasa* on which past stimuli and their resultant responses have left their imprints. In more engineering language his behaviour is described in terms of input, output and feedback, or in psychological terms of antecedent, consequent and intervening variables. Learning theory, often considered particularly important to management from the training standpoint, rests its case on the same kind of narrowly realistic, efficient cause description of behaviour, i.e., the antecedent-consequent construct basic to much of early natural science development. Now somewhat out of date physics made its initial progress on the kind of philosophical restrictiveness that marks the bulk of the psychology which has gained wide acceptance in both management and education.

Many terms have been adopted in the vain hopes of broadening explanation of efficient causation when applied to the affairs of people. Terms such as drives, needs, reinforcements. conditionings, motivations and rewards versus punishments all apring from this source. In manage-

ment circles they are widely believed to be well proven bits of unchanging scientific truth. Too bad they can add nothing to the growth of understanding between human beings. They do, however, lend an air of pedantic respectability to a host of dogmatisms and strengthen the presumed efficacy of managing others by manipulation rather than through extended mutual understanding. Moreover, they help to reduce to almost nil the possibility of personal choice and responsibility. They are basically downgrading and often insulting to those thus described. Beyond the joke level it is rare to find a man explaining his own actions in this fashion. The explanations seem reserved for those who are considered to need applied controls whereby someone else's decisions or aspirations may be effected.

Should one admit that individuals have freedom of choice about what to do and that they set up their own structures of interpretations and beliefs about both their personal and social worlds it becomes relatively easy to see how it happens that a man is very likely to decide to frustrate attempts to manipulate him, if not immediately then later. Of course, he may act in ways which confirm another's outlook which coincides with his own anticipations, but he does it to elaborate his own understanding of the situation, not because someone else has motivated, reinforced or rewarded him, somewhat after the manner of a puppeteer.

Management subscribing to a strongly deterministic psychology finds it difficult to see man as charting his own course or coming up with new meanings created through the power of his intellect. He is seen more as a victim of circumstances or a happy conjunction and succession of stimuli which have left their imprinted directions for his actions, directions he must necessarily follow. His behaviour at any given moment must be seen as a dependent variable, not his own way of testing out a predicted trend which looked interesting or to which he attributed importance and about which he has made choices.

How has it happened that such a narrowly based deterministic psychology has gained and maintained its ascendency ? And are there more interesting ways of looking at our fellow man, ways which hopefully could lead to increased mutual understanding and descriptions nearer to what we often know him to be ? Let us take a rather brief look at some of the influences and what we might do about them.

PHILOSOPHY'S GENERAL RELATIONSHIP TO MANAGERIAL SCIENCE

All sciences are outgrowths of philosophy. They rest at least temporarily on philosophical viewpoints which have gained some ascendency and wide acceptance over periods of time. The trends of thought from the past have set present directions. Depending on the degree of emphasis given to some specific tendencies rather than to others, unexpected limitations have arisen in some directions as well as progress and development in others.

Managers may not be very prone to extensive philosophical discussion. That they are not unaware of its importance, however, is indicated by the frequency one listens to or reads a manager's philosophical position epitomized in a quotation from one of his favourite authors or authorities. Apparently each assumes that his audience will be aware of the quotation's broader implications and their relationships to the selection of some immediately pressing problems. The stance is somewhat as follows : « Philosophy is important, but time is of the essence and more practical affairs should not have to wait for too much speculation on why we have come to look at them as we do. » That is one direction in which we may keep on facing consistently, but we would certainly broaden our horizons if we turned more frequently to a consideration of the roads by which we have arrived where we are and the choices of paths we could construct leading to where we may want to go. Much of the knowledge for this we already have at hand, much more is in the libraries for the digging out and some more we may create. It is advocated that managers make the effort and take the time to become much more explicit and expansive than they frequently are in expounding the underpinnings of their science. It could help lead to the better charting of well informed courses than does the placing of the main emphasis on minute examination of events of the immediate past and the calculation of the statistical probabilities of their reoccurrence, useful as the latter may be on occasion. To the extent that a man knows and understands the ebb and flow of past trends of thought he may be venturesome and less afraid of the rapidly appearing changes which are said to threaten so many. Indeed he may take a more active and assurred part in the making of some these changes.

SOME EARLY PHILOSOPHICAL THINKING STILL INFLUENTIAL

One of the early Greek arguments of continuing importance revolved around the nature of reality. The winners were on the side of the static view of matter. While motion was given an honoured place, especially in art, it was recognized as an epiphenomenon. It belonged to the ideal rather than the hard world of reality. We still follow this lead, which over a long period has demonstrated its usefulness through the marked developments that have taken place when forces, and later the concepts of mass, time and energy, were applied to account for the actions of otherwise static matter. However, hard as we may try it does not at all well explain the thinking and behaviour of people.

About the same time as the acceptance of matter being static, the tripartite conception of man (cognition, connation and affection or thought, action and feeling) came to the fore. It has remained with us ever since as an assorting device. To some people a very poor compartmentalization it has turned out to be. But to those who prefer to explain their neighbour in terms of a machine, a computer, a biochemical brew or a thunderstorm it comes in quite handy indeed as back-drop scenery,

the action all the while being attributed to energic properties acting on otherwise static matter.

Somewhat later the emphasis of the better known Greek philosophers shifted more to problems of the mind, the search for knowledge and truth and how they were come by. Man was seen as reasoning in two ways, demonstratively and dialectically. Under a variety of changes in terminology he is still so thought of in many quarters. Socrates and Plato were the most notable exponents of the dialectic as means of gaining knowledge and arriving at truth.

Socrates' method was to proceed by dialogue, each party taking opposite sides on the question at issue. By breaking the proposition down, using a questioning procedure to bring out items of knowledge and arriving at a synthesis they were on the way to truth. It was contended that any belief or proposition carried within it the seeds of new knowledge. Of course, each party to the dialogue must be honestly in search of knowledge. With this proper spirit new levels of understanding could be achieved through discourse. But no dogmatic or final conclusions were expected to be reached. Dialectic was an ongoing, never ending affair. It was recognized that the method could easily degenerate into a contest in sophistry with the man possessing the greater skill in the rhetoric, or an unethical purpose, appearing to win out, as he does to this day. Of course, when discourse takes this turn dialectic sinks to a low level or disappears entirely.

Plato employed the Socratic method but carried the technique to the point where it became equated with the power of reason. Truth at the highest levels could be reached by pure reason and without recourse to the senses. Moreover, by the right methods, discourse was not needed. An individual could do this entirely by himself within the cognitive sphere. This is a close relative of our modern notion of a ladder of abstraction.
It remained for Plato's pupil, Aristotle, to take some opposing viewpoints which provided the groundwork for those who ever since have felt it necessary to give the dialectic a less honoured place or even to deny it a place at all. Aristotle's claim that a man must reason syllogistically in either the demonstrative or dialectical mode was important. The difference being that in demonstration the major premise was known to be true and primary while in dialectic the major premise was opinion presumed to be true but might not be. Error might arise from several sources but was certain when reasoning began from untrue opinion. Aristotle denied that ideas could, somewhere in the mind, take off from detachment to the senses, a viewpoint which became a corner stone for some empirical developments centuries later. He did not, however, deny that dialectical reasoning is not very frequently employed nor that it may not lead to truth. He put some important finishing touches and organization into classical logic which remains, despite some psychological objections, as a model to this day. His four causes (efficient, material, formal and final) he put forward as essential to the adequate description of any event.

As a realistic scientist he assumed that meaning resided in the object under study and it was his task to decipher it at first hand, but without experimentation which might change nature. Although primarily a realist he described the object under study by the use of all four causes which led him to look for, and find, intentions and purposes in inanimate objects. Naturally this led to difficulties in later centuries for some who tried to build on this pioneer scientist's prescriptions.

Aristotle's works were unavailable for a considerable period during which the Latin Church was using those of Plato and Socrates. The arrival of translations of Aristotle, via the Arabians, heralded the advancement of and considerable changes in theological philosophy. We need not dwell on this period, although it left many important influences.

EMPIRICISM AND THE DOWN-GRADING OF THE DIALECTIC

From the sixteenth into the eighteenth centuries we had the development of the empirical approach which in many ways could be said to hinge on « prediction and control », William Gilbert and Francis Bacon were the founders of modern scientific method. They were both concerned about man's lot and realized that a more extended and effective use of resources was needed. This could come about gradually with the accumulation of knowledge of reliable predictions through which controls could be effected for practical ends. Thomas Hobbs, John Locke and David Hume were the slightly later influentical empiricists. They all upgraded the demonstrative, ruled out the dialectic and consigned the formal and final causes to use only in the discussion of ethical and aesthetic affairs. Apparently these were such doubtful and conjectural areas that they could be conveniently disregarded. Certainly they were considered as having no bearing on science.

Locke has remained the most influential of this group. His conception of the mind is one of a passive process, creating nothing, containing only what is fed into it through the senses and with no addition to or subtraction from the meanings so collected. However, simple ideas, which cannot be broken up, are capable of being combined in a numerical fashion to form complex ideas. The frequency of various complex collections considered in relation to the sum total of ideas available result in a conclusion or proposition guiding a course of behaviour. This is the probability which determines judgment. In the most complex form it is no different in either nature or convincingness than a simple demonstration. Locke could have been a pen-pal with a modern cyberneticist.

Under the circumstances of the times it was necessary for the empiricists to drop much of what they did as being too hampering impedimenta from the past. It is likely that science could not have got off to the start it did if it had had to drag along a host of conclusions which at that time were assumed to be infallible derivations from dialectical reasoning and those causal descriptions which were most often tied to the dialectical.

The most effective way of keeping them out of the way was to declare them non-existent from the standpoint of science.

Newton's remarkable work and the physics which grew out of it gave impetus to the acceptance of the empirical approach in all areas of scientific endeavour. However, since the middle of the last century it has been realized that considerable relaxation is necessary if development is to continue through the recognition and fostering of creativity and the fruitful use of metaphor, analogy, etc. Mapping reality by the exclusive use of demonstrative reasoning has come to be seen as inadequate in the natural sciences. Strangely it has been clung to in academic psychology, sometimes to the point of giving the physicists lessons in how they should proceed in the good old way. This compliment has been returned by the assurance that psychology might be more readily recognized as a full fledged science if it portrayed its models of man more idealistically. However, to do this the behaviourists would have to become more flexible at moving within some other dimensions, namely : discovery versus invention of abstractions, perspective which meets the requirements of the observer versus perspective of the source of the data, objectivity versus subjectivity. This is considerable to ask of those confirmed empiricists who are uncomfortable with the proposition that man creates the meanings he places on events and structures the relationships which link and extend those meanings. In other words that dialectic might have a place or use in science.

At this point we might consider another influence which has helped to lower the acceptability of the dialectic, especially during the last seventy odd years. Because communism's other name was dialectical materialism there has been some added resistance to granting credibility to thinking said to be tinged by dialectic.

Without going into any of the ramifications of either Hegel's or Marx's dialectics it is enough to note that Hegel arrived at the point of having mind create material, and Marx, by turning Hegel's inside out, had material creating mind. They both settled upon the way to write history before it had happened and Marx prophesized economic developments which are not happening, nor apparently about to. Both Hegel and Marx arrived at enormous dogmatisms, stated as « facts ». This was contrary to the whole spirit of the dialectic through the ages, a recognition that it is an on-going affair, never resting on the lack of further possibilities about things. Marxism falls down badly on that score. Certainly management has no need to avoid consideration of the importance of the dialectic because it has been supposed to be basic to communism. Moreover, it is exceedingly doubtful if communists do any more, or any less, dialectical reasoning than do non-communists. It should be noted that empiricism has just as strong a hold behind the iron curtain as it has here, in psychology probably a trifle more. Pavlov, one of Russia's revered scientists, was a pioneer in setting the kind of research stage on which our behavioural scientists still perform, entirely empirically.

A recent loosening up in the readiness to discuss the pros and cons of Marxism has produced in some quarters an exaggeration regarding the place of « conflict ». True, in dialectical discourse opposing opinions may be said to conflict. But the intention is to come up with something new and creative, not that the conflicts are to eventuate in a victory of one side over the other with the victory acclaimed as a synthesis, which of course it never is. Occasionally one hears of more conflict being advocated as a good thing in management. Along with this usually goes some techniques for gaining the upper hand. This is all reminiscent of the ancient Art of Controversy and has nothing to do with creating new solutions. But it can certainly help create new enemies, hardly something needed in most organizations.

MUTUAL UNDERSTANDING AND THE DIALECTIC

It may be a moot question whether the progress made in the approach to truth through dialectical reasoning ought more properly to be considered simply as an increase in mutual understanding. Certainly a synthesis arrived at through dialectical discourse implies mutual understanding that is ready to move on to further development, not the formulation of a conclusion dictated by some facts. An individual carrying out the process by himself, whether of prolonged or short duration, arrives at a point where he glimpses a new understanding. He has made further sense of the particular situation.

It ought to be obvious to management that mutual understanding, even without much mutual agreement, requires continuing cultivation in all areas where stresses may arise in interpersonal relationships. The greater the lack of personal mutual understanding the more difficult it becomes to get mutual agreement on the application of even those bits of factual information which pertain to inanimate material. When there is also wide mutual disagreement social interaction in that part of the organization becomes relatively unpredictable. The fostering of mutual understanding at all levels is a purely dialectical process and cannot be attained, or even minimally sustained, by applying bits of cure to the statistically predicted areas of difficulty, more particularly when the bits of cure are also selected from findings based on frequency probability. These are too often nothing more than « affirmations of the consequents » from which no logical developments are possible. However, this long used method has resulted in an immense accumulation of poorly related bits and pieces which are put forward as « how to do it » prescriptions in management training and so-called development. It is all a sadly one-sided approach to understanding the other fellow. Hopefully, management development may one day proceed on the assumption that understanding is a two-way street, not the enhancement of a managers facility in categorizing others and expanding redundancies spawned from a deterministic psychology, e.g., needs, drives, motivations, etc. These are excellent ways of evading or shifting many personal responsibilities, hardly a desirable improvement aim.

DECISION-MAKING AND SOME HUMAN "VALUE" CONCERNS

Management has a generally good record of progress in decision making. This is a form of non-frequency probability use, a logical reasoning form applicable in the face of unquantified, unquantifiable or partially quantified materials. In its formal sense it stems from Leibnitz and has definite dialectical aspects. A large proportion of management problems are coped with at some stage by this means, whether formally or informally applied. The immensely useful computer and the demonstrative restrictiveness of the Second Law of Thermodynamics as applied in organization theory to human activities can never match in convincingness (or in the generative function of logically weighing propositions against each other) the developed relationships which extend meaning through the process of decision making. It fits in well with man's ongoing business of elaborating the sense he makes of his world, his search for meaning through experience.

We return now to some other features of human concern which the empericists have declared irrelevant to science, per se. These have to do with such things as purposes, intentions, aspects of personal responsibility and goals. These all have a forward looking expectancy about them and are best described in final cause terms. That is, they embrace all those things « for the sake of which » men behave. Values, with their attendant ethical and aesthetic backgrounds, are over-riding here. Managers are never unaware of these things and only tend to minimize their importance under the influence of the prevalent « antecedent-consequent » over-emphasis. Despite this they remain indispensible for the creation of each man's image of himself, his contributions to innovations and planning, his setting of personal objectives, his limitations in cooperativeness and his initiative and decisiveness. They are basic to much of the progress that can be made in mutual understanding, which is surely one thing management can do with more of. Behavioural psychology has nothing to contribute here except the statistical relationships of sequential cause-effect events. It would leave man as the victim of his biography and possibly of those who may later succeed in manipulating him for a time.

CORRESPONDENCE AND COHERENCE THEORIES OF TRUTH

Is there a difference in the kind of truth men seek via the demonstrative and the dialectic? In a certain sense, yes. The correspondence theory of truth would accept as truth that which could be pointed to as having worked operationally, which has yielded correct predictions about material things. In brief, truth is what fits the facts and we come by our facts via demonstration. The coherence theory of truth places its emphasis on how an item of knowledge is consistent with and can remain united with the larger connection of existing knowledge. Truth here is what is understood, the sense which is made of an item or a proposition in terms of its relationships. This is the dialectic in action. In the strict sense of the term, facts are not arrived at via dialectic, only understanding, but

one may expound his understanding at a point as if it were factual in the correspondence theory sense. Man has always had this choice of whether to continue to extend his understanding or stop and announce his discovery of presumed truth, then may be proceed to defend it sophistically. The chances of having things turn out badly by making bad choices has always been with us and likely always will.

But are we better off by following only the straight and narrow path of empirical righteousness ? Not at all. One of the most widely overlooked items of our present viewpoint is the frequency with which facts get shot down but require time to give up the ghost. Quite contrary to popular opinion facts do not last in the consistent and permanent form in which they are so often dogmatically expressed. There is also the matter of the context in which they originated and later are otherwise placed. The realist finds it particularly difficult to accept that all facts are subject to alternative constructions.

A COUNTER-BALANCE TO UNDUE RELIANCE ON EMPIRICISM

We need in management more awareness of the use of the dialectic in order to raise understanding of, and so be able to cope with, those features which especially have to do with human problems and interrelationships. Instead of sticking so doggedly to behavioural psychology we may turn to clinical psychology, some branches of which open roads to mutual understanding of a nature which would help counterbalance the present excessive reliance upon the empirical outlook. The branch of clinical psychology which at present seems to have the balance of features which might be most helpful to management science development is Personal Construct Theory. Let us note a few of its most salient features.

Personal Construct Theory rests on the philosophical position of *constructive alternativism.* This assumes that all events are subject to a great variety of constructions, although this is not to say that any one construction is as good as another. All perceptions remain open to question. While the importance of events is stressed it is up to man to place meanings on them. These meanings are anchored in the past, are displayed mainly in the dimension of time and include anticipated outcomes. This is opposed to the implicit proposition of behaviouristic theory that meanings are rehersals of outcomes, or its ethical implication that the ends justify the means. Man invents the meanings he places on an event as well as the linkages and relationships established with the constructions of other events. Thus he is basically responsible for the way his thinking takes him. He cannot shift the responsibility for conclusions to facts said to represent circumstances. This position ties in well with the dialectic, but gives a place to demonstration on a plane raised above its usual extreme realism.

A theory of man which is supported by the philosophical point of view briefly outlined above must of necessity be an anticipatory one.

The usual reactive theory has no place for the venturesome, seeking, curious aspects of man nor the intentions which he is forever forming and sometimes carrying out. Only an anticipatory theory lets us get away from envisaging a person as a purely responding organism, which is how the reactive theories project him. Personal construct theory is not easy to grasp in all the possibilities which it has opened up, but there are enough well explicated ones to keep us busy for quite some time to come. Basically, it has been succinctly expressed as follows : « *A person lives his life by reaching out for what comes next and the only channels he has for reaching are the personal constructions he is able to place upon what may actually be happening* ». This leaves no place for those energic factors, either internal or external, which are required by reactive theories to account for man's actions in kind, magnitude and direction. The sense that a person makes of his world and of himself, what he does to extend his understanding and rectify the errors he finds he has made are all accomplished, in his own unique way, by applying those appropriate portions of his linked and related structure of constructs, which he has himself invented for the purpose. They are not given to him by events nor found lying around for the picking up. Moreover, he behaves to test out the validity of his constructions as well as to make some things happen which he has predicted. He behaves in accordance with his own choices, not because he has been prodded in certain ways or places. One should not confuse this theory with those in effect in most forms of sensitivity training.

We speak of personal constructs because the person himself invents them in his own way. A construct is a dicotomous abstraction or reference axis. It is two-ended thing, real when in use, and is a way in which an event is understood by its likenesses and relevant differences to those of other events which have been already associated and differentiated in regard to a certain aspect. Anything is understood in terms of both its similarity to some other things and its oppositeness or contrast to something else. When expressing a construct in words we most frequently leave the contrasting end to be inferred. When the listener happens to infer something different than was expected one may see why he may not fully understand what is meant. This sort of thing frequently happens.

We can act only within the pathways of the net-work or structure of constructs we ourselves have created. The structure is one of related meanings outside of which we do not have choices.

An important feature of construct theory is that at the very basis of our thinking meaning starts with both similarity and opposition at the same time. Meaning is extended through linkage and construed relationships with some other constructs within the changing structure. Thus dialectic is extended down to the process of the construction one places on a bit of reality of whatever sort.

The above is intended only to point out a few of the ways in which construct theory differs from the usual behavioristic theories applied in

the majority of organizations. Neither has any attempt been made to illustrate techniques arising from the theory. The over-riding purpose has been to indicate a feasible alternative which could help broaden the philosophical base of management science and be of some practical assistance in reducing the special developmental difficulties which it appears to labour under. Much of all this hinges on the broad problem of increasing mutual understanding, which can never be static or couched in terms of finality. And neither should management.

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