

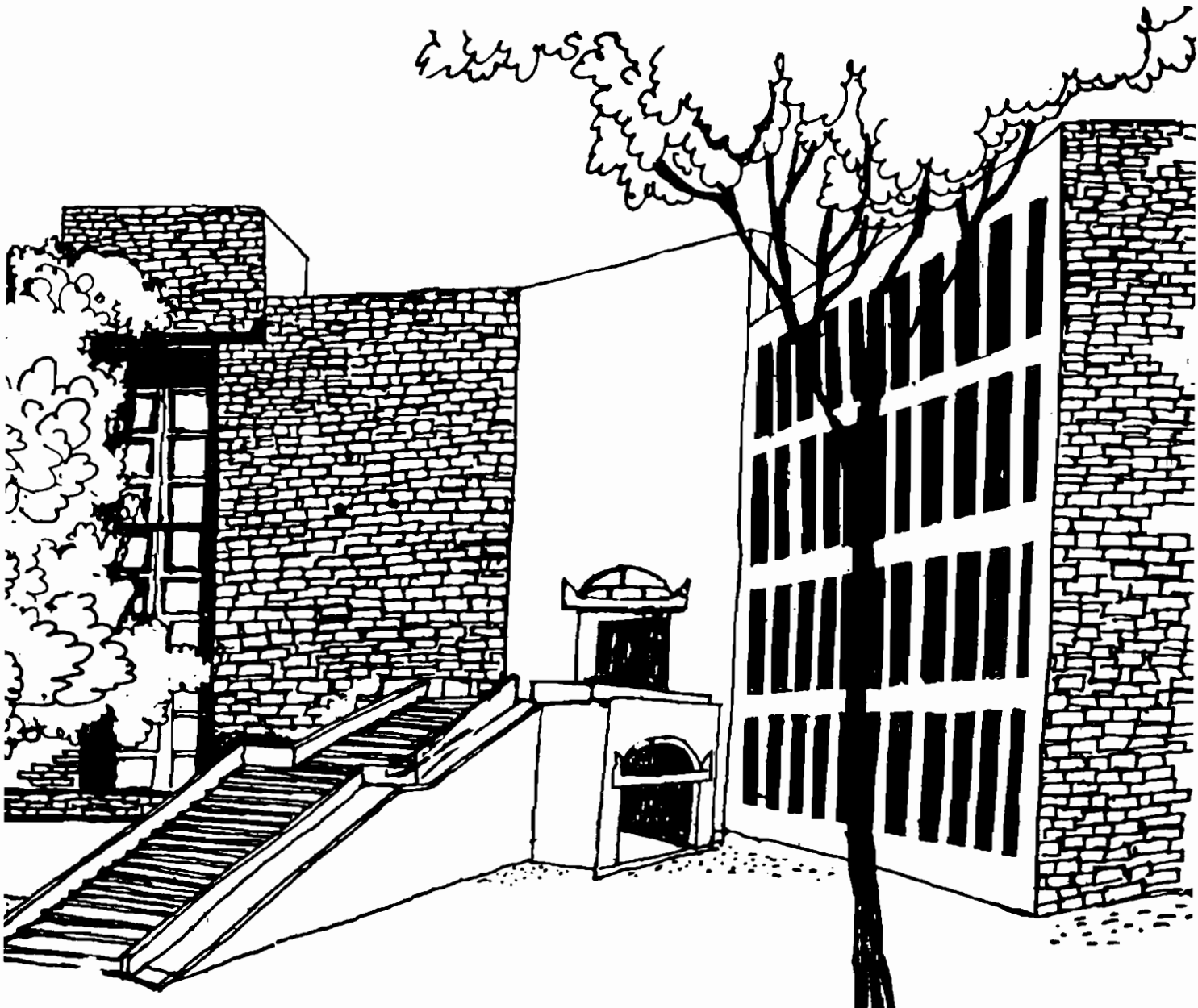


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Working Paper



**ASPECTS OF COGNITIVE COMPETENCE AND
MANAGERIAL BEHAVIOUR**

By

J.P. Das
Sasi Misra

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Abstract

We present arguments for viewing decision making by managers in the context of both cognitive psychology and neuropsychology of planning. Individual differences in managerial decision making are explained within the framework of a model of cognitive processes that has for its components planning, attention, information coding and knowledge-base. But all decision making are influenced by irrational factors contained in motivation and emotions and the failures of logic. The conditions under which these failures occur are discussed. Next we consider if strategies for good planning can be learned and recommend inductive rather than deductive rule-learning procedures. In our Concluding Remarks we discuss this further and in the Appendix we have provided a list of strategies that can be taught inductively through structuring the executive's experience.

J.P. Das is Professor of Educational Psychology at the University of Alberta, Edmonton, Canada and Sasi Misra is Professor of Organisational Behaviour at the Indian Institute of Management, Ahmedabad, India.

Aspects of Cognitive Competence and Managerial Behaviour

Time to reflect and plan is frequently scarce in the daily routine of managers. A stereotypic description of managers' activities is that he/she answers to the demands written in his/her calendar by the secretary. However, a top-level manager cannot survive if the demands of the daily calendar are met and no synthetic thinking about the direction of the company is allowed. A manager has a cognitive function. The function has been readily described as goal setting, decision making, executing the decisions, and evaluating the effect of the previous decision taken. The top manager is expected to make decisions when the situations are fluid (not crystallised) and complex. Obviously, decision making is a cognitive activity but it projects into the emotional aspects of the problem that needs to be solved and is influenced by emotional and motivational predispositions of the person who makes the decision.

As early as 1967, Simon¹ recognized the motivational and emotional controls that are influential in cognitive activities. We wish to elaborate this point later in this paper. It may be sufficient here to say that one of the principal characteristics of a manager's work is cognitive, but there is no cognitive activity related to decision making which is not controlled by emotions, motivations, and personality of the manager. These become particularly salient in problem situations that are novel, uncertain and extremely

complex. The criterion of excellence in management is a decision that not only promotes the good of the company but is in harmony with the chief executive's non-cognitive predisposition. The chief executive, having made the decision, has to live with it and facilitate its execution. A balance between personological and situational variables is a hallmark of good decision making. In the rest of this paper we elaborate on the above theme and discuss the determinants of managerial behaviour. Included among these are the generic competence in planning and decision making, as well as the reasons for failure of logical thinking.

First, we attempt to understand decision making processes from two points of view; the cognitive science and the neuropsychological views of competence in decision making. Then, we examine the sources of individual differences in the manager's ability to make decisions. Next, we consider motivation as a contributing factor for the executive's decisions and the conditions that prevail when reasoning and logic may fail. This is followed by a discussion of strategy training. Finally, we provide a list of strategies useful for vigilant managers.

Roles and Activities of Top Managers

Top level executive functions include a variety of activities described as problem solving, decision making, planning or goal setting. Retrospective accounts of run-away successes and spectacular turnarounds of mammoth corporations have been

largely attributed to the competencies of their senior personnel, particularly the 'masterminds' of the chief executive officers^{2,3}. The questions are: What characterizes outstanding managers and are there some generic or generalizable competencies that determine managerial success?

Generic competencies refer to intellectual or cognitive processes. It is argued here that these processes play a significant role in non-routine and loosely structured managerial problem-solving and decision-making situations. Such problems and situations require qualitative judgment, intuition and creativity, all of which are antithesis to quantitative, analytic and logical thinking. Yet, it is not unscientific to accept qualitative judgments.

The next question is: What would these generic processes be? More than 50 years ago, Chester Barnard⁴ referred to some unarticulated non-logical mental processes that led the decision maker to a particular judgment or action in the face of novel and unprogrammed situations. Barnard mentioned intuition and judgment, and even illogical processes that respond to emotions. Since then non-logical thinking or synthetic thinking has been recognised as a necessity for decision making in novel and complex situations. However, the problem now is that researchers and thinkers in the field of management have indeed swung the pendulum to the other extreme because of their growing disenchantment with logical and analytical thinking. For example, Harold Leavitt⁵ tried to find

solutions in Eastern mysticism, such as Zen or transcendental meditation. In fact, he is searching for a different philosophy which is an alternative to empirical analysis and logical thinking. Many management writers, notably Mintzberg⁶ have also considered physiological bases for their philosophy. They have looked for the alternative in the spectacular outcomes of the dissociation between the left and right hemispheres of the brain⁷. The research on split brain, however, is irrelevant for a new philosophy in management because it has been typically taken out of context and interpreted as supporting holistic and non-sequential thinking (right brain activity) in contrast to rational and logical routines of thought (left brain activity).

An example of this misplaced enthusiasm for cultivating nonanalytical thinking is a book by Agor⁸. He advocates the use of right brain and integrated brain thinking for managers. In contemporary perspectives of neuropsychology, such dichotomies in thinking are nearly mythical and are not supported by research. However, both analytic and synthetic approaches are characteristic of top level managers; because they are adept at making balanced decisions.

Cognitive Processes in Managerial Decision Making

A manager may make a spectacular decision and achieve significant success in advancing the aims of the organization. He/she may do this more than once. The natural tendency is to focus on the product of the decision and expect that the

decision maker's behaviour will be invariant. However, the wise thing to do is to focus on the processes that lead to the excellent managerial decision. Process analysis can proceed by using two metaphors. The first metaphor originates from cognitive science which has made great strides though the seminal work of Herbert Simon⁹. It regards the individual as a mental symbol system, or as an information processing system. The second metaphor is derived from neuropsychology which can be traced to the original work of the Russian psychologist Luria¹⁰ and significantly advanced by cumulative research of Das and his associates¹¹. It holds that mental functions of the individual are to be determined by the interaction between his neuromechanism and 'life's activities'. These two approaches, that is the information processing model of human intelligence and the neuropsychological accounts of cognitive functions are by no means unrelated to each other. The distinction merely serves to focus on the unique features of the two approaches and does not deny their commonalities.

As mentioned before, the work of Simon and his colleagues in cognitive science has been applied to managerial planning and decision making. German psychologist Dietrich Doerner¹² in course of his path breaking research on human thinking and problem solving processes when the individual is faced with complex, poorly structured and fast changing situations has developed sophisticated computer simulations which provide valuable data in regard to the course of decision making in management. Simon¹³ also reported specific studies on

managerial decision making that show how intuitive thinking can be embodied in computer programmes. The difficulty arises when we believe that intuitions and non-logical thinking must always be accessible to consciousness. Yet, the elements of mystery in non-conscious thinking can be systematically stripped by computer programme-based models of intelligent functioning. Intuitive thinking, as mentioned earlier, becomes essential when the problem situation is extremely complex and quite novel. The conditions under which intuitive, or non-conscious thinking arise are to be discussed later in this paper; but let us here identify the two essential conditions which are: (1) there are a large number of contingencies that are associated with the problem and (2) the interactions between the different facets in the problem situation are complex.

Assessment of Neuropsychological Aspects of Generic Competence in Decision Making

We discuss here the relevance of brain functions in managerial decisions, not the popular left brain/right brain thinking, but the more serious discussion of the functional organization of cognitive processes^{14,15}). Our discussion starts with the assessment of generic cognitive processing comprising planning, attention, simultaneous and successive processes evolved from two decades of research by Das and his associates referred to earlier.

Insert Figure 1 about here

The PASS (Planning, Attention, Simultaneous and Successive) model, which is schematically presented in Figure 1, is based on Luria's study on a variety of behavioural dysfunctions that are consequences of lesions in the brain. Of special importance is Planning, a broad function of the human neurosystem; it is associated with the frontal lobe (located in the front part) of the brain. Attention and arousal are broadly a function of the brain stem and the lower brain structures. Simultaneous and successive coding of information are likewise associated with the posterior part or rear of the brain. Input from the external environment reaches the central processing unit consisting of all three functions. There is a continuous interaction among planning, attention, and simultaneous-successive processes. On the one hand, the coding processes themselves provide a basis for planned action; on the other hand, plans, decisions and strategies influence the way we code information and select information for the purpose of attention. All four processes require knowledge or a data base made up of formal knowledge learned from schools and tacit knowledge comprising emotions (affect) and motivation as well as cognitive experience¹⁶.

The brief overview of the PASS processes can be easily related to management decision making. There is little difficulty in recognizing that managerial skills involve the four PASS processes. But let us consider planning which is the salient feature in managerial decision making. The process of planning comprises such activities as the generation, selection and

execution of programmes, evaluation of the results of one's own behaviour and the results of others' behaviour as well as the tendency to act on the basis of such evaluation. None of the PASS processes can operate without a knowledge base. Knowledge base has been prominently featured in distinguishing between the novice and the expert in cognitive science. We suggest, however, that experts and novices not only differ in their knowledge base, they may also differ in the way they process information. That is, the source of difference between decision makers may not be reduced to differences in knowledge base alone. Decision making differences can arise from any of the following steps: Information has to be properly coded, irrelevant information has to be selectively attended to, and then the different procedures for planning have to be applied to the information thus gathered. In fact, the intimate relationship between cognitive processing on the one hand and knowledge base on the other, might have blurred the distinction between them in treatments of decision making.

Why Individuals Differ in their Ability to Make Decisions

There are many reasons why individuals differ in their ability to make decisions, but one can divide them into two; cognitive competence and motivational orientations. First, we describe the bases of individual differences in cognitive competence in relation to the PASS model outlined above (see Figure 1).

There are three components in the model each one of which may cause better or worse performance in a manager. The first to consider is the mode of input. Some managers or executives may be so brilliant that they sit down in a meeting, hear and see the information given, and arrive at an efficient solution of the problem or take a very appropriate decision after listening to other participants. However, most individuals may gain differently from information input modalities. For instance, consider visual vs auditory presentations. Some of us gain information easily from a visual presentation whereas others may be more comfortable with auditory presentations. We suspect, of course, that most of us are in between. But there are individuals who must take notes and actively summarise while listening to a presentation in order to use that information for later decision making. Those are the people who have less facility with auditory presentations. Similarly, there may be people who are poor information gatherers when information is presented visually in graphs and charts and in flow diagrams. This may be a minor source of individual differences; but recognising what an executive's preferred mode of receiving information is, and then taking steps that will facilitate the gathering of information, should be required for every manager.

We next consider processing and knowledge base. Processing of information, that is sorting information, categorising, putting it in files of the mind which can be cross-referenced, and thus can be easily retrieved, are familiar coding

mechanisms. We have added to these two overarching processes, simultaneous processing and successive processing. Next, the gathering of information, that is, the sorting and analysis of information needs a direction, a purpose, and a goal. This makes the role of planning quite salient in coding processes. Without plans, coding of information is blind and without coded information, plans and decisions are empty. Thus, the apparent synergistic relationship between planning, attention and coding processes, creates further sources of individual differences in decision making competence.

Finally, there is the output. The manner in which a response may be required determines how competent an individual could be in that specific output mode. For example, if a manager needs to programme the steps of action which are consequent to having taken a decision, it would depend very much on the mode of output. Is it a procedure that the manager has to lay out for the action to be executed? Then the infrastructure necessary for the actual carrying out of the decision needs to be there. Effective action depends only partially on efficient decision making; the other part is concerned with the mechanics of carrying out that action. We started asking the question in regard to action - whether it is the procedure that has to be laid out as a consequence of decision, or, alternatively, the manager might be satisfied with presenting an analysis of the solution to the problem and making it available for others to execute. The latter would be an output involving declarative knowledge. Communication of the plan

then becomes the salient problem in the output mode rather than the actual carrying out of the plan. However, the ubiquitous knowledge base is constantly present and is consistently relevant to any kind of intellectual activity comprising the receiving of information, processing, and outputting.

For many managers a good knowledge base of the system in which he/she works, and a good knowledge base for processing the information that he/she has to deal with, may account for 100% of variance in competency. However, we argue that although knowledge base seems to distinguish between expert and novice managers, and to a lesser extent, between successful and unsuccessful decision makers, the managers may significantly differ from each other in their generic competencies. In other words, some may have a superior generic competence for planning; included within planning are the abilities to pose the right sort of problems, to formulate plans, and to select between the different plans. These enable the individual to execute successfully the plans that have been made. A good manager may be able to gather diagnostic information about the problem in such a way that it is both broad as well as specific for solving the problem at hand. In other words, he/she builds a broad base of knowledge, at its apex is the final decision made by him or her. Therefore, we feel that there may be as much variance contributed to successful or unsuccessful management by knowledge base as by the generic processes outlined in the PASS model.

Beyond Cognition: Motivation for Reasoning and Motivated Reasoning

Simon¹³, like several thinkers before him, from antiquity to modern age, considered motivation and emotion to be major influences on cognitive activities. Motivation and emotions work towards good and efficient cognitive processing as well as detractors of good cognitive processing. In other words, they influence the manner in which we process information and execute it. More recently Kunda¹⁷, underscored the importance of motivation for reasoning which we think, in managerial situations, can determine decisions. Reasoning, being an activity of an individual from the broadest perspective, must have a motivation and at the same time, motivated reasoning could work to improve the quality of cognitive processes, especially the decisions that we make. However, motivated reasoning could be the grime and grease that covers the mirror of clear rationality. The reasoning may be a rationalization, to quote Kunda¹⁷.... When one wants to draw a particular conclusion, one feels obligated to construct justification for that conclusion that would be plausible to a dispassionate observer." (p.493). We specify below when and why motivation such as preserving self-esteem can prevent rational decisions.

Failure of Logic in Planning and Decision Making

Recently, Doerner¹⁸ outlined an orderly sequence of planful behaviour which however, may not be followed in the practice of planning. The orderly sequence of behaviour starts with goal specifications, then seeking and attaining information,

evaluating the prognosis, or the possibility of the course of action within the plan and its outcome, planning the evaluation of action, and the consequences of these actions and finally, self-reflective analysis of the action. Doerner does not believe that action planning passes through this orderly sequence. However, he shares with many others before him (e.g., Miller, Gallanter, & Pribram)¹⁹ the following basic steps that are followed in any kind of planning including decision making in managerial situations. These are: Information seeking, forming hypotheses, and action planning. According to Doerner¹⁸, information seeking is concerned with knowing what kind and how much information should be sought. This is followed by hypothesis formation, and subsequently action planning.

All three activities that determine efficient decision making can be marred by failure of logic that is forced upon the managers because they are required to make decisions under uncertainty. Under certainty, probabilities of future events must be estimated, and there are several known fallacies that occur (see e.g., Kahneman, D., Slovic, P., & Tversky, A)²⁰. Some of these are the manager's insensitivity to the probabilities, the belief that what is valid for large samples is also valid for small samples, the simple fact of regression to the mean that should warn him/her that a spectacular performance of an executive is most unlikely to be repeated, and occurrence of 'gambler's fallacy', that is, if the choice is between hypothesising a or b, and event a has occurred four

or five times, event b is likely to occur next. The above examples of irrational decisions are so common that our faith in analytical thinking is weakened. But there is a logic as to why and when rationality fails as discussed below.

In his papers, Doerner^{12,18} discusses the anatomy of failure of logic. Managerial decisions are sometimes so far beyond logic that the only way we can describe them is irrational. However, in spite of the apparent failure of analytic thinking for solving some managerial problems, there is no mystery why managers use non-rational methods of thinking. Simon's¹³ advocacy of the use of intuition and creativity were based on some compelling reasons. These reasons, in a nutshell, consist of the indetermination of the antecedents and consequence of managerial problems as realized, and the inability of the human mind to hold together the myriads of components interacting with each other in a complex manner. The other reasons why logic fails is clearly demonstrated in computer-simulated games that Doerner^{12,18} used. He designed a game, a famine in a small country in West Africa, and a simulation called Moro which has the usual real-life complex variables. These are: population, birth and mortality rates, cattle stock, ground water level vegetation area, precipitation area, areas of farmland, the harvesting of different crops, and so on. All these variables are closely linked with each other and obviously result in a network of interdependencies. The system is also dynamic in that like real-life variables things develop and change even when there is no intervention. The

object of the game is to obtain instances of behaviour in the face of formidable conditions and inability to predict the action that may be required. Thus, following a certain decision made by the player, feedback is given which changes the decision of the players and compels them to gather relevant data and make a decision that would be compatible with the changed conditions.

In any case, Doerner observed that in solving complex problems while making a series of on-line decisions, the following detract the person from staying on course and continuing to make appropriate decisions. (1) Errors in goal formation is one of the first mistakes that is observed in a frustrated player when faced with complexity. The player decomposes the comprehensive goals of the game into partial goals and tries to achieve these partial goals. However, these partial solutions conflict with the objectives of the overarching goals such as the control of famine. So, the first error is in insufficient goal elaboration. (2) There may be errors in information-seeking in many of the players. The players dogmatically follow a particular solution using the wrong statistics while trying to reduce everything to one cause. They engage in many superstitious behaviours. (3) The third error is in planning. The players ignore the long-term effects and side effects of their action and do not work out proper procedures for goals that are set. (4) The next major error is in deciding and evaluating the effect of their actions. Once a step is taken the players assume that it should succeed. They

start doing things without planning; they act without checking the current relevance of the step they are about to take, and when a certain hypothesis does not work, they keep on adjusting the hypothesis rather than discarding it. There is a marked decrement in self-checking and in self-reflection. To add to this, there is a typically emotional reaction which Simon¹ might have anticipated: the desire to maintain high self-esteem and the feeling of confidence at any cost. This leads to a tendency for over-generalization. It can be labelled as over-inclusive thinking. This desire to maintain high self-esteem and a feeling of confidence together with the limited capacity for holding information in mind while solving a complex and dynamic problem, are perhaps the two major sources of the failure of logic. None of these, however, can be easily corrected. Human information processing capacity is limited although no one can exactly describe the limits. Similarly, a desire to maintain high self-esteem and feelings of confidence in the face of apparently hopeless situations is ingrained in human character. The question then is, must we tolerate the failures of logic and accept the consequences of faulty managerial decisions even when these have disastrous effects? Can we really teach the potential managers and the managers who are already working in the field how to reduce the major failures listed above?

Can we teach strategies?

Strategy training has become a popular past time of many pundits with plenty of books and manuals on the subject. These

are experts who advise us in improving our thinking. The pundits in managerial science, such as Leavitt⁵ and Mintzberg,⁶ as mentioned earlier in this paper, sometimes suggest the adoption of strategies that are consistent with 'right brain' thinking, that is, holistic and synthetic decision-making strategies rather than quantitative and analytic ones. Others are much more concerned with spectacular improvements in critical thinking. Consequently, managerial thinking should also improve. DeBono²¹ is one of those authors who has written copiously on promoting different kinds of thinking that are novel and depart from the beaten path. For example, building logical structures is the usual procedure for thinking of a solution to a problem, this is labelled 'vertical' thinking in contrast to 'lateral' thinking. DeBono suggests that we step aside and engage in lateral thinking, that we abandon thinking in terms of 'either or', that we give up going around the loop of considering the positive and the negative. Instead, we should think laterally in terms of aspects of a problem situation that we may not have considered before. For example, a young boy was asked to explain the meaning of the proverb, 'the early bird catches the worm'. He replied: 'I understand it may be good for the bird to catch the worm early, but what good does it do to the worm?' DeBono would perhaps label this an *interesting* aspect of the problem, an example of lateral thinking, distinctly different from the positive and the negative.

So how must we teach strategies; the positive, the negative and the interesting dimensions of the problem? How can we teach strategies for avoiding failures of logic?

Let us return to the original problem of the managers; the managers' problem is characterized by multiple contingencies and complex interactions. We suggest that teaching strategies through formal instruction will not be effective as the contingencies and the interactions that provide the specific context for the problem cannot always be anticipated. The alternative to formal instruction is teaching through experience. This would allow the individual to learn when we provide him or her with a programme of structured experiences. The structure instantiates a principle without directly teaching it. The method here is not deductive but inductive. The common principle of inductive inference is generalization based upon numerous instances of experiencing particular principles. Such generalised inferences need not be totally conscious nor does it have to be articulated clearly. In other words, inductive knowledge, in contrast to deductive knowledge, is often insidiously acquired without the conscious effort of the individual. The situation then, is very similar to the acquisition of concepts.

Concepts can be acquired in two ways: spontaneously through experience and through formal instruction. Russian psychologist²², Vygotsky makes this distinction neatly: Scientific concepts are learned through formal instruction.

However, the child does not really know the concept unless it can be internalized. The process of internalization is mediated through experience. In managerial decision making many a case is novel. The problem is therefore, indeterminate; the system that produces the problem is dynamic and continuously developing. As mentioned before, novelty and complexity are the central characteristics of the problems of the top manager. The process of internalization must take place through experience. Then alone a person who solves a problem can transfer the knowledge and the strategies to a similar but new situation. The purpose of any learning is transfer. If a learned skill is so specific that it cannot be transferred, then it is practically useless. So the question boils down to transferring strategies. How can strategies be transferred?

Dissociation

In many instances of computer simulation of problem solving that resemble everyday problems, a dissociation is noticed. The dissociation is between what an individual says and what he/she does while solving the problem.

Broadbent, Fitzgerald, and Broadbent²³, like Doerner discussed above, studied an individual's behaviour in computer-simulated problem solving. Their purpose was to delineate the conditions under which a dissociation develops between the ability of the person to carry out an apparently successful action responding to a situation, and the ability of the same person to answer

questions about the situation. In complex problem-solving situations that Broadbent and his associates presented to the problem solver, there were two common conditions. First, there were so many interrelationships among the different elements of the problem that the person could not possibly see or describe how the elements in the situation interacted with each other. As we mentioned before, these interactions were just too numerous to hold in mind at the time of questioning and answering. Secondly, there were so many conditions guiding the action that the person simply did not know which was the salient condition. Both conditions characterised managers' problem solving. So there existed two separate realities, one for verbal knowledge of what the problem solvers were doing in the complex situation, and the other the action itself. Broadbent's simulated games showed that improvement in action can occur without improvement in the database which the action shares with verbal knowledge. It is logical then to suggest that actions that lead to successful solutions of complex and dynamic problems cannot be taught verbally through formal instructions for improving strategies. The manager can make decisions on past exemplars. The present problem may have an analogue in the manager's past experience. The method that works has to be an inductive learning procedure, as Vygotsky²² would recommend. Doerner's^{12,18} recommendations for acquiring strategies also favours inductions rather than learning general rules. According to Doerner it is not a matter of learning a few readily-grasped principles, but of learning a

lot of small, 'local' rules, each of which is applicable in a limited area.

We conclude this section on strategy training, with the statement made by Broadbent et al²³. 'It would be unwise to assume that verbal knowledge is the ideal towards which the less explicit intuitive decision making is developing' (page 49).

Concluding Remarks: The Central Role of Planning

In the 1960s, a distinct shift took place within psychology, one from a behaviouristic to a cognitive view of mental events. The change was heralded by many important publications, but the major landmark was the 1960 publication of the book *Plans and Structure of Behaviour* by Miller, Galanter, and Pribram¹⁹. The behaviourist's goal was to describe and explain behaviour without reference to the mind. *Plans and Structure of Behaviour* placed cognitive planning in a unique position at the centre of human activity. Plans can be well or ill-structured but they lead the individual to a goal state that he or she may change several times during the planning process. Sometimes the goal may not be readily apparent, yet planning will continue to occur as a non-conscious cognitive process. All of these ideas are relevant to the consideration of the central theme of this paper.

Some people are good planners, whereas others are poor planners in many situations. Yet during the course of the

development of planning on a particular occasion, the process is unstable, perhaps as it should be. The interesting question, however, is: how does the individual set goals and respond to feedback while engaged in the planning process? Changing goals, making the planning process flexible, and ultimately arriving at a solution that she or he is likely to change after further review are sometimes done without conscious awareness (see Broadbent et al.²³, Doerner¹², as discussed earlier). These authors discussed the conditions in which the process of planning is not entirely conscious.

The distinction between problem solving (even of a routine kind) and planning may lie in one important component -- the anticipation of action. Anticipating or creating problems while securing a goal that is beneficial to the entire organisation thus becomes the central characteristic of a good planner. Also, a good planner selects and manipulates his or her environment in order to create the most appropriate problems that need solution.

Would it not be exciting, then, to design a situation involving anticipatory planning that would be relevant to the organisation from which selection of competent executives are made? One could thus obtain the specific criteria associated with being a good planner while the executives are engaged in solving an important problem for the organisation. We would have more than one observer or examiner recording whether or not (and to what extent) the executive anticipated future

events and was engaged in thinking of a sequence of steps that was not only consistent with that anticipation but was also flexible.

We suggest, then, that there should also be at least two distinct categories of planful behaviour, routine and novel, that could be used when observing the executives. While many of them could execute the programmes once these were clearly given or left in front of them, only a few would exhibit anticipatory programming, flexible use of information, and consistent changes in their plans as they approached a goal. The observers of these 'executives in action' are likely to discover the motivations of the executives for reasoning and anticipation, and the situations in which motivated reasoning may act as an impediment, as well as where and when reasoning and logic fail to influence the executive's decision making. We expect that from such biographical observations we will also obtain information that will help teaching strategy improvement.

Finally, if strategies can be taught through structured experiences, inductively rather than deductively, we make three sets of suggestions which will be helpful in designing the experiences (see Appendix). Our suggestions have been distilled from several sources and convergent strands of research. Set I, derived from Doerner's^{12,16} work, acknowledged and discussed earlier, lists several do's and don'ts of strategic behaviour. Set II is from Klemm and McClelland²⁴ In

this set we have included three different categories of generic competencies that are needed for senior managers. Each one of these can be incorporated in the 'Syllabus' of structuring experiences for teaching management strategies. Set III is taken from social psychologist Janis' ²⁶ research on decision making. We have constructed the brief questionnaire (Brief Evaluation Activity Form) embodying the strategies that are recommended by Janis for 'vigilant problem-solving approach to decision making'. The questionnaire can be used by supervisors both before and after strategy training for evaluating the competence of their executives. The reader will find that some questions are positive (one-indicates 'competent') and some are negative (one-indicates 'incompetent').

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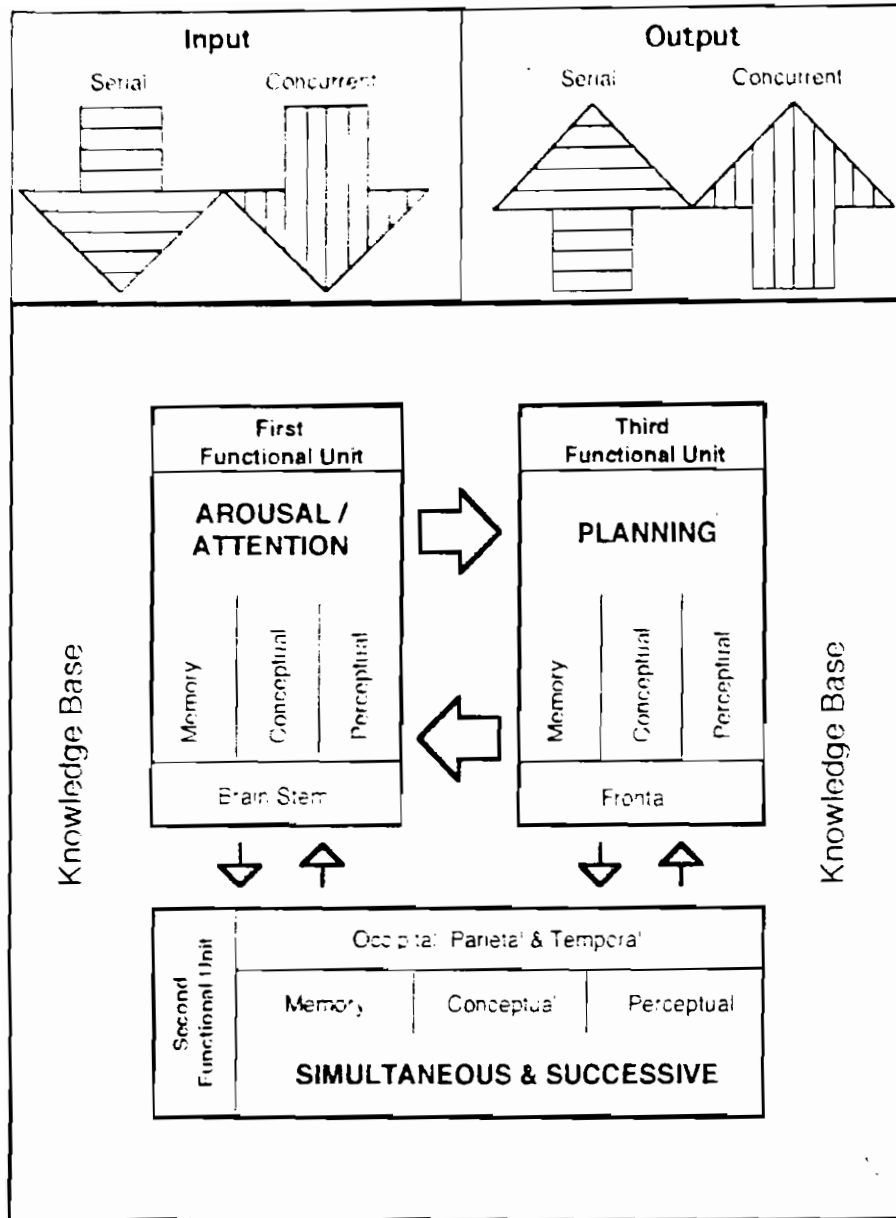


FIGURE 1 The PASS Model of Ability

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Appendix

Set I This set is derived from Doerner's work.

- * Do not lose sight of the overall goal, complex as it is, by decomposing it into partial goals.
- * Do not try to reduce everything to one cause. When facts disprove your hypothesis, abandon the hypothesis; do not merely adjust it.
- * Be less concerned about your self-esteem (losing face) when changing your hypothesis and decision.

Set II This set is from Klemp and McClelland²⁴. We have given below eight generic competencies put into three different categories such as intellectual, influence, and self-confidence that are needed for senior managers.

The Eight Senior Manager Competencies
(Adapted from Kiepp & McClelland², p.41)

Competency	Competency Indicators
<u>The intellectual Competencies</u>	
Planning/causal thinking	Sees implications, consequences, alternatives, or if-then relationships Analyses relationships Makes strategies, plans steps to reach a goal
Diagnostic information seeking	Pushes for concrete information in an ambiguous situation Seeks information from multiple sources to clarify a situation
Conceptualisation/synthetic thinking	Understands how different parts, needs, or functions of the organisation fit together Identifies patterns, interprets a series of events Identifies the most important issues in a complex situation Uses unusual analogies to understand or explain the essence of a situation
<u>The influence competencies</u>	
Concern for influence (the need for power)	States a desire to persuade people Anticipates the impact of actions on people
Directive influence (personalised power)	Confronts people directly when problems occur Tells people to do things the way he/she he-she wants them done
Collaborative influence (socialised power)	Operates effectively with groups to influence outcomes and get cooperation Builds 'ownership' of controversial decisions among key subordinates by involving them in decision making
Symbolic influence	Sets a personal example for an intended impact Uses symbols of group identity
<u>Self-confidence</u>	Sees self as prime mover, leader, or energiser of the organisation Mentions being stimulated by crises and other difficult problems Sees self as the most capable person to get the job done

Set III This set of strategies as stated before is taken from Janis (p.91). ³⁵

Brief Evaluation Activity Form (BEAF)

Instruction: When faced with many complex tasks to complete, employees can behave in various ways. This form is used to rate the individual on the following items about work performance. Please use a 3 point scale. 1 for Always; 2 for Sometimes; 3 for Seldom. Rate the individual based on how often he or she acts in the ways described.

HOW OFTEN DOES THE EMPLOYEE.....

	Always	Some- times	Seldom
1. understand what is required?.....	1	2	3
2. is unaware of what problems are to be avoided?.....	1	2	3
3. is clearly aware of what goals are to be attained?.....	1	2	3
4. knows what seems to be the best approach to take?.....	1	2	3
5. neglects asking what previous information can be retrieved?.....	1	2	3
6. knows what new information should be obtained?.....	1	2	3
7. goes beyond the minimal requirement?.....	1	2	3
8. ignores other alternatives?.....	1	2	3
9. considers what other information might aid in the solution of the problem?...	1	2	3
10. is unaware of the pros and cons for each alternative?.....	1	2	3
11. knows which alternatives appear to be the best?.....	1	2	3
12. knows how to minimise risks?.....	1	2	3
13. cannot develop alternative plans?.....	1	2	3
14. can monitor the steps taken to solve a problem?.....	1	2	3
15. thinks critically about what has been produced?.....	1	2	3
16. accepts information about the drawbacks of his/her solution?.....	1	2	3