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PROBLEM SOLVING AND DECISION MAKING

The discussion of problem solving which follows is not intended to be the way of doing it, rather, it provides a basis for discussion of some of the critical components that must exist in any effective process of problem solving and decision making.

1. KEY PARTS OF THE PROCESS

For our purpose, we can divide it into four parts:

- (a) relating problems to objectives - this refers to the determination of purpose and direction or, more accurately, the statement of conditions or states of being that one wishes to have exist in the future. Problems can really only be defined within the context of objectives.
- (b) Problem solving - is that sequence of events or activities in which one begins specifying obstacles to achievement of objectives and begins collecting or organising data, identifying, ordering and weighing alternatives.
- (c) Decision Making - occurs when particular alternatives or strategies are chosen from among those identified.
- (d) Programming - is the working through of the plan, alternative or strategy which has been selected. As such, it involves the systematic development and specification of action steps, checkpoints, measurements, standards and review procedures.

2. OBJECTIVES AND PROBLEMS

(a) Need to distinguish between Objectives and Problems

The effectiveness of managerial decision making and programming is often limited by the way in which one has dealt with the earlier steps of stating objectives and defining problems. Therefore, recognising the

difference between statements of objectives and statements of problems is crucial. Many management decisions are ineffectual because the process starts with "a problem" which, when ultimately solved, does not contribute to the achievement of the objective.

(b) Definition of Objectives

An objective, in management terms, can be described as a broad statement of purpose, which reflects where one wants to be at some time in the future. Statements such as "we want to have the best information available regarding the economy", are statements of objectives, because that is where this individual, company or organisation would like to be at some future time. The statement "we would like to be the biggest organisation in this field" is similarly a statement of objective.

As one moves downwards in an organisation hierarchy, "more limited" statements of objectives are often heard. For example, "I would like to have the most efficient department in this ministry" is also an objective - a statement of where one would like to be. Even the statement, at a much lower level of the organisation, "I would like to employ Mr. X" is a statement of objective. Clearly, then, objectives can be set at almost any level of the organisation. The fact is that for almost any objective that one can conceive, there exists a higher order objective, similarly, for every objective stated, there is a lower order statement which sheds light on how that objective might be achieved.

(c) Definition of Problems

Problems can be defined as obstacles, conditions and phenomena which stand in the way of achieving the objective. In simple terms, problems represent those conditions which discriminate between where one is and where one wants to be.

3. PROBLEM SOLVING AND DECISION MAKING

We are aware of the importance of having some kind of system or routine for dealing with specific tasks. Whether we are issuing driving licences or certificates of Title to Land we all have a system for getting the job done. Similarly, we must have a system for tackling problems.

The "model" outline below is presented in a "step" fashion or sequence, i.e., various components of problem solving and decision making are, ordered or arranged along a time continuum. However, it should be noted that at any point on this time continuum it may be necessary to "go back" on an earlier step. For example, after a manager has stated the problem and moved on to gathering data, he may uncover some information or facts which require him to restate or redefine the problem.

(a) Basic steps or stages in Problem Solving and Decision Making

(i) Pressure on an individual, and Analysis of Symptoms:

The problem solving process begins when an individual (or group) feels the need to "do something" because some aspect of the situation in which it should be or as he wants it to be. For example, when a manager notices that a number of things are going wrong in his office, what he observes are the symptoms of a problem(s) not the cause. We would all willingly concede that the doctor who would immediately diagnose lung cancer when you complained of a cough would be less than reliable. Just as a doctor examines the symptoms and arrives at the cause, so too the effective manager will analyse the symptoms to determine the exact cause and nature of the problem. The

effective manager knows only too well that similar symptoms often have dissimilar causes. The reason why - subordinate displays an apparent lack of interest in his job may be because the job is inherently dull or because the supervisor is unsympathetic towards him or, finally, because the subordinate is lazy. The manager must never jump from symptoms to solutions.

(ii) Statement of Problem (Or Problem Identification):

Once the individual manager or organisation feels the pressure, senses that something is not as it should be, the next stage is the determination of what is wrong; the attempt to identify the problem or obstacle. The search for and identification of obstacles or problems may be considered as part of the process by which the manager develops a statement of the problem. One of the interesting points here is that the pressure as originally sensed or felt may not lead directly to an appropriate statement of the problem. For example, a manager may feel that too much money is being spent by his organisation and thus may be tempted to state the problem in terms of reducing costs. As he begins to move in on the problem solving process, however, he may begin to see and, hence, state the problem quite differently, e.g., how to reduce waste or how to increase output per hour, or efficiency. This change in focus is often the result of distinguishing between symptoms and problems and the underlying problems themselves.

This stage may be summarised thus -

- distinguish problems from symptoms;
- separate the various problems that are mixed together; and
- write a concise statement of the problem you want to solve.

(iii) Collecting and Organising Data: Having identified and stated the problem, consideration must then be given to collecting and organising data relevant to that problem. Facts and information must be obtained and organised in some fashion. Here the manager must take into account a series of issues:

- Within the limits of available resources (time, money, manpower), what amount of data must he have to make a discussion? Since the data which can be collected are almost endless, how does he determine when he has enough and if he has reached the point of diminishing returns?
- Similarly, since the facts or data gathered should be those which will be most useful in solving the problem, how does he identify which areas to explore? That is, which facts are relevant to the problem and to overall objectives?
- How does he order the data? Every manager has faced situations in which he has been "swamped with data" and he has recognised the need to order facts so that he can begin to see relationships between cause and effect. For instance, how is reduction in crime rates related to more policing? Or, what do training costs mean in terms of meeting future manpower needs? It is only when discreet pieces of information are examined in terms of their potential connection that the manager can begin to see cause and effect relationships. Similarly, it is only when this ordering takes place and relationships are examined that new and vital data needs are uncovered.

(iv) Determining the cause of the problem:

The determination or examination of cause - effect relationships will undoubtedly lay bare the possible cause(s) of the problem. Problems are usually

created by changes or the need to create changes. So, think of recent (or potential) changes (in your organisation) which may have some connection with the problem. Check each change against your statement of the problem, to make sure that the change can explain the problem exactly. Eliminate those changes which don't do this. Settle on (and test) the change that does explain the problem. This will be its cause.

(v) (v) Determining or Generating Alternative Solutions

and Strategies: In the next stage, various alternatives for dealing with the problem (strategies for overcoming the obstacles) must be determined or identified. Another way of stating this is that a manager now searches for possible solutions. It is important to keep in mind that the question is not at this stage, "what is the best or most appropriate solution?", instead, the question is, "what are the various solutions that can be considered?". Here we need to generate a lot of possible solutions. The most important thing being the need to distinguish between opinions and facts. The selection of "the best" or "most appropriate" solution takes place after one has identified the range of possible solutions from which the selection can be made.

(vi) Selecting an Alternative: Once the various alternatives, strategies or possible solutions have been identified, the advantages and disadvantages of each must be weighed and selection made as to the one to be followed.

The question here is to decide upon the best solution or alternative. The key point here is criteria. In order to weigh relative merits of alternatives, there must be some agreed upon criteria. If, for example, an organisation wishes

to construct a new central office building and has a number of architectural design proposals submitted, it may be difficult to determine which is the best unless specific criteria have been established. For example, should they select the design which allows for the lowest construction cost per square foot? Or the proposal which offers maximum flexibility for future expansion? Or the one which is the most esthetically pleasing?

(vii) Putting the Solution or Alternative into action: The chosen alternative or solution should solve the problem. But it will cause other changes or problems, too. We must, therefore, ask:

- what might go wrong?
- what might make us regret having chosen this solution?
- How can we verify the results of applying our solution?

And our plan of action and review must include convincing answers to these questions.

4. CONCLUSION

In much of the literature regarding problem solving and decision making, the step - selecting an alternative - is often referred to as the point at which problem solving ends and decision making takes over. Thus, after data have been collected and weighed and criteria have been established, the judgemental process begins. Thenceforth, the manager is engaged in decision making.

It should, however, be clear that, in many ways, decision making goes on throughout the total process. That is, every step of the process involves small decisions, e.g., what kind of data should we select? What are our objectives? How do we define alternatives and strategies? The accumulation of these small decisions facilitates the final decision - the choice of a strategy which, in the best judgement of the decision maker, will produce optimum advantage or the best possible payout.

We could represent this pictorially as:

(a) (i) ANALYSIS OF SYMPTOMS

(ii) CAUSES

(iii) GENERAL OBJECTIVES

(iv) REDEFINE PROBLEM

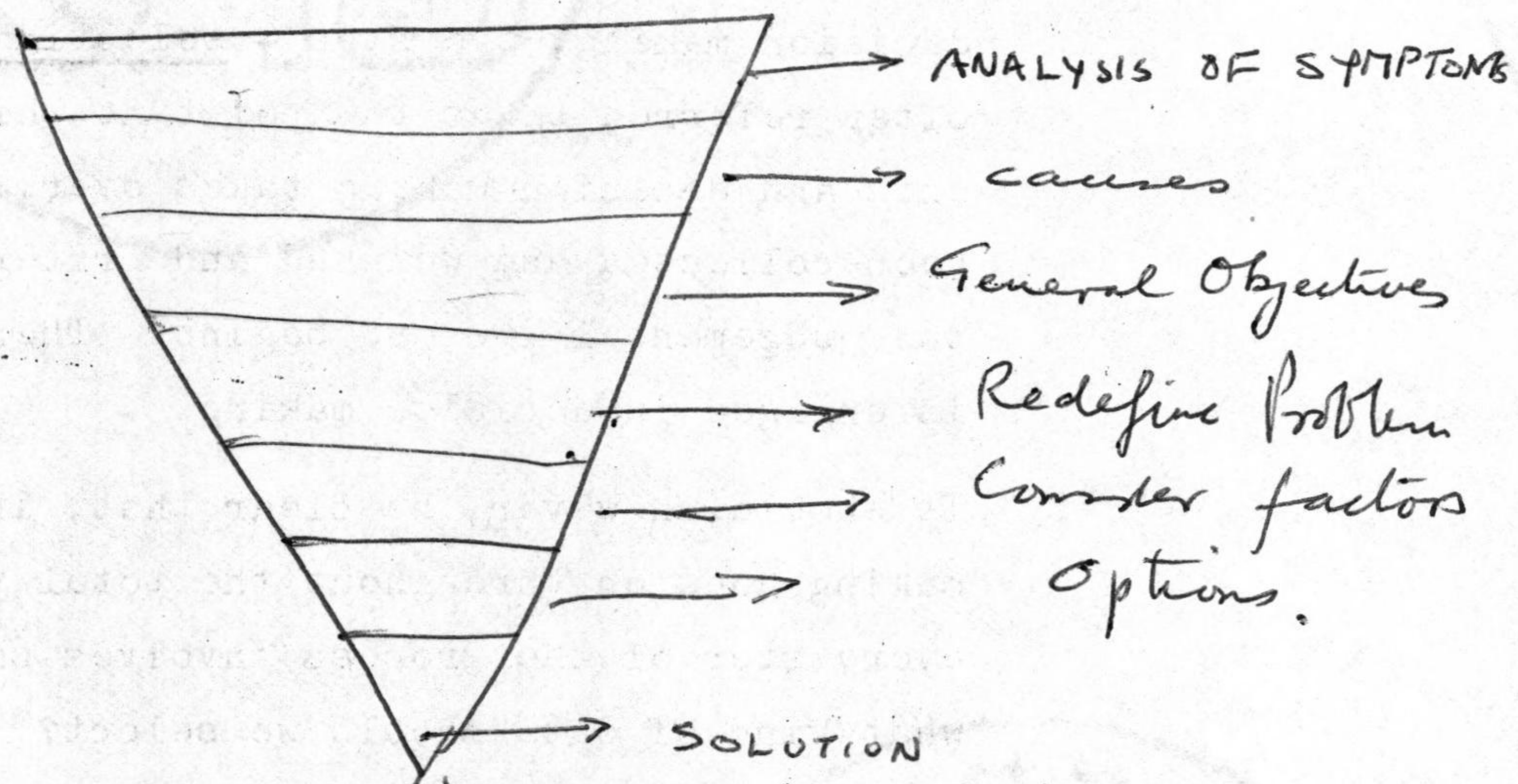
(v) CONSIDER FACTORS

(vi) DEVELOP AND ANALYSE OPTIONS

(vii) DEVELOP SOLUTION

Or:

(b) as an inverted triangle with its broadest part being the general objective which gets progressively narrower until we arrive at the solution:



Further Reading:

1. Kepner, Charles H., Tregoe, Benjamin B. The Rational Manager, MacGraw Hill Book Company.

2. Maier, Norman R.F. Problem Solving Discussions and Conferences, MacGraw Hill Book Company.
 3. Simon, Herbert A. Administrative Behaviour, McMillan and Co., 1960.
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