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# The Functions of a Manager

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by H. P. Minsky

(The following notes are offered as a basis for discussion at the next meeting of the Management Panel.)

does not include entrepreneurial fns of management

Stripped of all extraneous and secondary considerations a manager (or management team) has two static functions. These are to control the operations and to decide upon the policies and programs of the organization. Both the control and the decision making functions of a manager are susceptible at least in part to formal analysis.

It is important to note that what follows is not a description of what a manager does: it is a part of a theory of management. Below we speak of a model relating variables to policy parameters in a formal sense fully recognizing that the actual manager will have only an intuitive idea of the relation between what he does and what he wants to happen.

### Control Functions of Management

Each management has to set up the operations of his organization so that the policies and programs which he has decided upon are carried out by the elements of his organization. The control problem from the point of view of the manager has five separable aspects:

Note that this applies to every level of manager.

(1) the specification of the mission of each controlled unit; Consistency

(2) the setting of a standard by which the performance of a controlled unit can be evaluated;

(3) the organization of a flow of information to the manager as to the performance of the controlled unit;

(4) the specification of a technique by which deviations of performance from standards can be imputed to the operations of particular elements of the organization;

expanded in is 6 and difficult

(5) the operations by which insufficiencies, if any, can be corrected.

The managerial decision as to the policy and program of the organization defines, directly or indirectly, the mission of each controlled unit. The technical characteristics of the specification of the mission will define the standards by which the performance of a controlled unit will be evaluated. The evaluation of the performance of a controlled unit may depend entirely upon data internal to the firm or it may depend in part upon data external to the firm. The manager must see to it that the flow of information, from both internal and external sources, to management is sufficient to determine whether or not performance is consistent with the standards set. These three aspects of managerial control functions may be difficult in detail but they are not difficult conceptually.

The fourth and fifth control functions of management partake of the attributes of "decision making" and they may be considered as the everyday, or routine decisions of management. The problem is essentially: what does a manager do about an organization which has not successfully accomplished its mission? The obvious intermediate relation is that the manager must have an idea of the relations between the things he can manipulate and the operation of the organization so that by proper manipulation of the things under his control he can bring performance into closer alignment with specifications.

The "idea of the relations between the things he can manipulate and the operations of the organization" will be called the managerial model of his organization, or the model in short. The elements under his control will be called the ~~policy~~ "control" parameters. The conditioning variables, which determine the result of the operations but are independent of managerial control, will be called the external variables or alternatively, the environment. The elements by which the performance of the controlled units will be evaluated are the variables of the problems. The specification of the mission of the organization means that target values are assigned to the variables. The model of the organization consists of a set of relations among the variables, the external variables and the policy parameters. By means of the model the manager is in a position to predict the results of a change in a policy parameter upon a variable, given the values of the other policy parameters and the external variables.

A managerial control problem arises when a variable deviates, in the unfavorable direction from its target value. The model of the organization relates the variable to external variables and the policy parameters. By manipulating some or all of the policy parameters the manager will attempt to achieve the desired result which is that the variable will be equal to or more favorable than its target value. Because each policy parameter affects in general more than one variable, a manager in manipulating a policy parameter in order to correct a given deficiency may, in a complex organization, lead to the appearance of new deficiencies. A consistent set of standards is one in which, given the values of the external variables, there exists a set of values of the policy parameters so that all of the targets can be simultaneously satisfied.

We can now say more about the setting of the standards of performance for an organization. In a complex organization the operations of particular elements are interdependent. A good managerial model will result in the setting of consistent standards for the different variables: a bad model will result in the manager setting what in fact are inconsistent standards. Continued deviations of some variables from their target values, in spite of manipulations of the policy parameters indicated as being appropriate by the model, implies that the model is not a sufficiently good representation of the operation of the organization. A managerial problem of major importance arises, if this occurs, in the need to design a better model of the organization. A successful manager will be one who, on the basis of experience, modifies his procedures to allow for such deficiencies in his own ideas: a successful manager has no vested interest in any aspect of his organization.

In order to be able to operate effectively to correct deficiencies in operations which occur (and if necessary to modify the model), the manager may need more information, from both external and internal sources than is needed to determine whether or not performance is consistent with standards. The gathering of such additional data may be expensive, especially as such data may have no function as long as the organization is doing well enough. Management therefore has to provide for such data required for decision making to be available when and if needed. A good model of the organization results in a specification of the data needed, in addition to the routine control data, for such everyday decisions. If the problem is one of modifying the model of the organization, the existing model cannot indicate what data is needed to properly decide whether an alternative model is "better" than the original model.

## The Decision Making Function of Management

The decision making functions of management has been touched upon by the discussion of the manipulational aspects of control. The big difference between the decision making function as a part of the control mechanism and the decision making function in the abstract is in what is taken as given. When dealing with problems of control the mission of each echelon of an organization is specified. The managerial model of the particular organization yields the actions which the manager can take in order to bring performance into line with specifications. The decision making process in the abstract deals with the setting of the missions of the organization as a whole.

In the decision making process the central element is again a model, this time of the organization as a whole and its relation to elements outside the organization. In addition the manager has to take into account both internal and external constraints upon his actions. He then has to choose a goal, which in fact may be an average of a number of specific goals. Given the model, constraints and goals, the manager has a series of operations which he can perform -- in the terminology adopted earlier there are a number of values that he can assign to policy parameters -- and each operation implies some prediction as to the measure of achievement of the goal. The choice the manager makes is actually to choose the best results from a number of alternative results. He chooses the best result not directly but by engaging in one of a number of operations. Given the model and his operations, the manager predicts an outcome: a value of the goal that should result. If his model of his organization and its environment is a good one, the actual result will be consistent with the prediction; if his model is a bad one then the deviation between the prediction and the actual result will be harmful. In choosing among alternative goals a manager has to weight the possible outcomes from his actions. Different managers may weight possible outcomes differently, hence in similar situations, they will choose different courses.

A subtopic under his attitude toward decisions is the manager as an entrepreneur.

In outline form, an abstract discussion of decisions follows:

A decision is a choice among alternative lines of action.

Can actually define innovation as a basically new model e.g. the innovation = to a fundamentally new theory.

The object of a decision maker is to choose the best from the set of alternative actions.

In order to be able to choose the best action, the decision maker must predict the outcome of the action. The ability to impute an outcome to an action implies that there exists a model of the operations of the organization under control and of the environment within which the organization functions so that it can be asserted that: for each alternative action, given the values assigned to the environment, a particular outcome will follow.

(The result may be certain or it may be a number of different "outcomes" with a probability attached to each outcome.)

In order to be able to say that one outcome is preferable to another, the decision maker must be able to place a value on each alternative outcome.

Hence, a rational decision maker must have

(1) a technique by which he can evaluate the result of alternative actions;

(2) a model of the operations of his organization;

(3) a method of estimating the behavior of the environment within which his organization functions.

Each decision therefore really involves a prediction as to the outcome. After the decision, a particular result actually occurs. The difference between the predicted and the realized value of the outcome may be significant or insignificant. (The standard of significance is inherently intuitive, a rule of thumb.) If the deviation is insignificant then the decision maker is in general satisfied with his model of his organization and his method of predicting the operations of the environment. If the deviation is significant then either

(1) the model of the organization is incorrect;

(2) the prediction as to the behavior of the environment was wrong.

It would in general be known if the predictions as to the behavior of the non-controlled (environmental) variable were wrong. In this case the decision maker has to devise a better method of predicting the behavior of the environment. If the prediction of the operations of the environment was correct, and the result nevertheless is unsatisfactory then "the model is wrong". The decision maker has to develop a better model of his organization.

The description of decision making, both in the control and the abstract sense is an adaptation to decision problems -- and specifically to management problems -- of the process of scientific experimentation and theorizing. The function of an experiment in science is to <u>test</u> a model. The model predicts the result of an experiment: the consistency of the actual outcome with the prediction is the evidence upon which the theory is accepted or rejected.

In business, or in general, in the analysis of social phenomena, the problem is complicated by the lack of ability to control the behavior of the environment. Hence the need for the additional portion of the analysis which centers around the prediction by the decision maker of the behavior of the environment. In business decisions there are two sources of error to which the deviation between a prediction and an actual result can be imputed:

(1) a bad model of the organization;

(2) the environment did not behave as assumed.

In the physical sciences, dealing with controlled experiments the only source of deviation between predictions and observations is a "bad model". (This ignores, of course, errors of observations.)