6 The advantages of systems

In today's industry situations of a very complex character frequently arise in which a searching analysis is necessary in order to get to the root of the problem.

It becomes evident after such an analysis that in the area examined persons are found in all kinds of posts, who, within the scope of their responsibility, must take numerous decisions every day. Because the business structure is so complex and extensive, a decision taken at a certain place and at a certain time will exercise its influence in many other places in the concern. Because there are limits to what any one man can do, no one person will be in a position to weigh up the consequences of each decision, whilst the nature of man will contribute towards involuntary changes in standards. In consequence, the manner of arriving at a decision will always vary as a result of human influences, even if the decision maker is able to survey the whole situation.

Another aspect of process control is that, where similar situations recur repeatedly, a fresh decision must always be taken as to how the process is to be regulated.

Each decision can be reached after much or little thought; but with frequent repetition, an attempt will be made to avoid this effort as much as possible by, for example, utilizing experience gained previously. Unconsciously, therefore, rules are developed which simplify and accelerate the taking of decisions and which, in some cases, enable persons previously unable to control the process to do so by using these rules.

By extending these activities it then becomes possible to place the same rules at the disposal of more persons, each having his share in controlling the production process. Their actions are then carried out in a uniform manner, at the same time the knowledge and experience of someone possessing a much better insight into the situation is made use of.

By delegating to lower levels the routine part of taking decisions, the experts and policy makers are in a better position to concentrate on the formulation of rules for production control.

The possibility then presents itself of putting the existing 'rules of thumb' on a more objective cost basis. It may also be possible in the search for the 'best' decision rules to utilize the latest scientific methods whilst modern methods of
approximation enable us immediately to grapple with the most complex situations so that, in the end, the original rules of thumb can be improved both quantitatively and qualitatively.

In this connexion, techniques and methods have been conceived which are nowadays referred to under the title ‘Operational Research’. Experience in many industries has taught us that it is well worth while becoming acquainted with this new train of thought.

Fortunately, the user of these rules need not, himself, be their compiler. The object of this book is to inform the user of these rules of the results already arrived at and furthermore to furnish the would-be compiler with an insight into the background of such rules.

In a work entitled *Planning, Production, Inventories and Work Force* by Holt, Modigliani, Muth and Simon, the advantages of having systems for ordering purposes are so clearly described that the following passage is quoted in its entirety:

Many planning decisions, taken singly, are of no great importance to a company. It is unprofitable to spend much time or talent in deciding, for example, whether a ½-in. grease cap, Item No. 7842356, is to be produced this week or next. This is not a question likely to come to the attention of a responsible executive. A small warehouse may number its stock items in thousands, while a large factory warehouse may stock tens or hundreds of thousands of products. *Small decisions are necessarily made by clerks in a routine manner. However, when individually minor decisions are aggregated, the big and important decisions have largely already been made.* It is difficult for a plant manager to control in detail the production of many products about which he can have only limited knowledge. But in the aggregate these detailed decisions largely determine the overall level of production, overtime and even work force. If the manager interferes with the detailed decisions to gain control of aggregate production, he may turn loose a hornet’s nest of difficulties. From the plant or warehouse manager’s desk it is not always possible to distinguish trivial from crucial detail.

A little further on a passage reads:

It has been suggested that industrial decision-making goes through three stages as individual business firms develop, and as the art and science of industrial operations advance. In the first stage, decisions are made on an individual basis as need arises, with decisive weight given to the factors that seem important at the moment. Such decision-making can be very effective when done by skilled managers of relatively small operations. As the size and