Chapter 1

DESIGN AND THE DESIGN METHOD

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Introduction

This book is about design and designers. It is concerned with the process of design: a process the pattern of which is the same whether it deals with the design of a new oil refinery, the construction of a cathedral, or the writing of Dante's *Divine Comedy*. Much of practical design is humdrum but the same pattern persists.

This pattern of work, whether conscious or unconscious, is the design method. The design method is a way of solving certain classes of problem: relating product with situation to give satisfaction. A study of the design method helps one to a better understanding of design and to the possibility of bringing new forces to play in dealing with design. For the man in the street a study of design method means the potentiality of better products and greater satisfaction in those products.

Although the book cannot be comprehensive there is an attempt to deal with most of the features of design which appear to have some general significance to practical designers and students of design.

Design is concerned with making things that people want: with building up patterns which have value. These things have to be thought about and made. Design involves a thinking activity and an executive activity. This is true whether settees, space satellites, or sonnets are designed.

Designers

The most common understanding of the activity of a designer seems to be that he does something with his hands such as draw on paper, or mould a lump of clay. This is a design situation in which one man may be doing everything: he thinks about the products and then forms them. Most practical design today is split into many stages. Some people think about the general scope of the product; others think about details of the product; others specify ways in which parts should be made in workshops, and so on.

The initial work is largely done in the head and for this reason remains unseen. Only the products which appear in material form come to the eyes of the man in the street. It is largely from these products or from activities associated with their use that the value of a design may be judged. People therefore tend to think of design as an operation strongly related to material things, if not actually something poured into them. Designers, according to this simple view, either make machines which execute some obvious function, or they shape things to be pleasing to the eye. The former works at a drawing board and is concerned with getting objects made out of cast iron or mild steel; the latter has long hair, a peculiar taste in clothes, and plays about with clay and colours.

It is around such common conceptions that public discussion, political action, even sectional promotion, tend to cluster. When design is scrutinized at high level by an outsider it means either mechanical design, where the term mechanical has an ill-defined meaning, or it stands for 'appearance' design, which its practitioners call industrial design. These are only certain aspects of design in...
its totality. All kinds of engineers and technologists have an involvement in design. All artists, in whatever medium they may work, are designers. This is true of architects, electrical engineers, metallurgists, poets, works managers, as well as a host of other people and professions. Fundamental to this general idea of a designer is the building up of a structure, pattern, or system within a situation.

The Idea and the Action

People such as painters appear to develop their designs as they put them on canvas. In fact there seems to be some connection between the practical development of the pattern of paint under their hands and the fact of manual work. But although it is reasonable to expect some interaction between what they are doing and have done practically and their thoughts about the next strokes, it is recognized that the painter must be building up a design in his mind's eye before committing it to colour. Many painters prepare sketches first.

The painter develops a model in his head before bringing about its realization on canvas. This is probably true even with 'action' painting. Instead of using a separate sketch some painters make running alterations to what they have already painted and these alterations constitute the transition from a sketch to the final form. According to this view the painter has two kinds of activity at least: the construction of a mental model, and the transference of this mental model by hand on to canvas. To carry these out successfully he needs skills. Comparable sets of skills must also be accorded to all artists who produce material objects with their hands: the sculptor, the creative potter, and so on.

Since time immemorial pupils have learned skills by working with a master craftsman, a combination in which the pupils begin by practising manual skills directed towards the execution of ideas developed by the master. In architecture the separation between the generation of controlling ideas and the practical execution is implicit in the very name. Engineers such as Brindley, Rennie, Telford, Whitworth, became established as craftsmen, skilled in manual operations, before proceeding to the stage of master engineers. In this latter capacity they gave instructions to workmen by drawings or other means so that their visions might be fulfilled in iron or stone. Here, if the model was communicated by drawing, this drawing was an instruction.

It is partly from such a tradition that young people who wish to become designers are steered into periods of training in workshops and then in drawing offices. Fresh thought is due about the necessary reasons for such kinds of activity.

From seeing the essential element in design skill as residing in the hands of craftsmen, people began to see the preparation of the instruction to the craftsman as containing the vital operation. In architecture and engineering emphasis began to be placed upon the drawing board.

That the drawing board is not an essential feature in design is well illustrated by the example of James Brindley, as recorded by SMILES (1874). His brother-in-law said of the great canal-builder: 'When any extraordinary difficulty occurred. . . . having little or no assistance from books or the labours of other men, his resources lay within himself. In order, therefore, to be quiet and uninterrupted whilst he was in search of the necessary expedients, he generally retired to his bed; and he has been known to be there one, two, or three days, till he had attained the object in view. He would then get up and execute his design, without any drawing or model. Indeed, it was never his custom to make either, unless he was obliged to do so to satisfy his employers.'

Within the modern engineering industry most of the work which is done on drawing boards is to provide instructions to other people about the way in which material is to be shaped, joined, or assembled. This is largely carried out by men who have had some experience of manufacturing and production.