

as 'lateral' (Goel 1995). Here we shall use the word 'interpretative' to describe this activity in the sense that the word appears in Laxton's model of design learning which appeared in Chapter 9 (Laxton 1969). Such an activity involves the transformation of an existing idea into a different one albeit carrying through some of the original characteristics.

Goel's distinction between 'lateral' and 'vertical' moves allows us to introduce our final type of move. Here the idea is developed further and given clarity, more detail or substance, or embellished. In a sense the idea is being moved nearer to a realisable and definite form. Goel calls this a vertical move, but here we shall describe it as 'development'. Edison's famous adage of genius being 'one percent inspiration and ninety-nine percent perspiration' is of relevance here. Throughout a complete design process we are likely to see more episodes of interpretation than of initiation, and more episodes of development than transformation. However it may well be that what we recognise as originality or creativity in design depends more on interpretation than development and more on initiation than on interpretation. It may also be the case that each designer has different relative levels of skill in each of these activities and that design teams depend on complementary combinations of these skills to be really effective.

## Bringing problems and solutions together

### *1 Problem and solution are inseparable*

In the conversational view of design we might be less inclined to make the distinction between problem and solution. Indeed we might see frames and primary generators as ways of negotiating between a problem and solution view of the situation in order to bring about some resolution between what is required and what can be made. In some design domains the problem may be very clearly stated and success easily measured and thus the process may be more one of moving from problem to a solution which might be almost thought of as optimal. At the other end of the spectrum of design domains the problem may emerge more from an exploration of solution possibilities. Most design domains that we have explored in this book are between these two extremes and, as a result, problem and solution are better seen as two aspects of a description of the design situation rather than separate entities.

## *2 No clear order of appearance*

One of the most persistent themes that can be found running through this book is the idea that, in design, problems do not necessarily precede solutions in the way normally expected in conventional problem solving. In Chapter 3 it was argued that designers are often solution focussed. We saw in Chapter 7 that design problems cannot be comprehensively stated and the information you need to tackle a design problem rather depends on your way of solving it. In Chapter 11 we have seen the idea of the primary generator as a way of getting on with solution production and through that developing more understanding of the problem. In Chapter 15 we have seen the idea of selectively framing the situation so that it is more amenable to solution. Thus we have seen a whole clutch of ways in which thinking about solutions and thinking about problems seem inextricably interwoven in the design process. Recent research has tended to strengthen and support this notion.

## *3 Briefing is a continuous process*

Contrary to the wishes of many who have tried to establish route maps of the design process, briefing appears to be a continuous process. It is certainly not something that happens exclusively at the beginning but rather represents the problem formulation aspects of designing which are often greatly influenced by the emerging potential solutions. However this may well offer us one useful way to distinguish between different design fields. Some design fields have very clearly defined problems that can be quite well described and understood at the beginning of the process or very early in it. Others may characteristically have more open-ended problems that can only be very loosely described and only vaguely understood at the outset. However it seems far better to assume that briefing can continue to take place throughout the process than to assume it is simply an early stage never to be returned to.

## *4 Parallel lines of thought*

We saw in Chapter 12 that designers appear to be able to develop parallel lines of thought about the problem–solution situation. Each line of thought seems to respond to a frame to restrict the view of the problem and to rely on a primary generator to develop ideas about the solution. It seems probable that highly creative designers may be able to sustain several of these parallel lines of thought and allow them to be incompatible or even apparently irreconcilable for periods. Judging when to drop some of them or try to resolve the conflicts between them seems to be one of