Formulating

1 Ways of understanding design problems
Right back at the beginning of this book we explored the idea of the design process as a sequence of activities. Logically it seemed getting a brief and analysing the problem came before the synthesis of solutions. In Chapter 3 however we saw that such a simplistic model is neither accurate nor helpful. However there can be no argument that designers must be skilled in finding and stating problems and in understanding and exploring them. This group of activities is perhaps best called 'formulating'.

2 Identifying
In the problem-solving view of design these skills include the ability to reformulate and give structure to ill-structured or wicked problems. In the conversational model of design explored in Chapter 15 we saw how designers have to identify, or as Schön would put it, 'name' elements in the design situation. It is almost as if characters are being introduced in a story and their roles and personalities are being explored in order to understand how they will react to events and behave as the story unfolds. Whether we think of it as the reformulation of problems or the identification of elements, making them explicit and developing their characteristics, it is clearly an important and central design skill.

3 Framing
This book has introduced the notion several times that problems can appear different when looked at from different points of view. Perhaps the most important contribution made by Schön and his followers to the debate about design is the idea of 'framing'. This activity involves selectively viewing the design situation in a particular way for a period or phase of activity. This selective focus enables the design to handle the massive complexity and the inevitable contradictions in design by giving structure and direction to thinking while simultaneously temporarily suspending some issues. The skill to create and manipulate frames is a central one in determining how the process will unfold.

In all the original literature by Schön himself there remains a lack of clarity about exactly what a 'frame' is and what it is not. However if we take his notion of a frame almost literally we can image this to be a selective window through which can be seen only part of a wider world beyond. In the problem-solving view of design

we might see this as a window on the problem space or a way of expressing and formulating the problem.

If we return to the literature on creative thinking reviewed in Chapter 9 we can now see that much of this deals with how such frames are established. In particular many of the more popular creativity techniques are designed to maximise the number of frames that become available. This might either be through the use of the different perspectives that naturally occur in different minds (brainstorming) or by using deliberate methods of shifting the individual mind into different positions (for example much of what might be found in the writings of Edward de Bono). All this suggests that we should see the skill of 'framing' as one of the most critical and central in the design process.

Representing

1 Ways of representing design situations
Although it is perfectly possible to imagine design taking place without any externalisation at all, in practice designers almost always externalise their thoughts prolifically. Indeed designers are often characterised by their habitual use of these activities. They draw, write, model, make and compute representations of their inchoate ideas for the design they are working towards. They also shuffle and represent to themselves information about the brief or problem.

2 Conversations with representations
As Schön has so eloquently put it designers interact with these representations in a conversational way (Schön 1983). The representations are thus far from being incidental outputs but are rather central inputs to the thought process. Clearly then the ability to execute these representations and manage them is one of the central skills in designing. A designer who cannot sketch is likely not to be able to 'converse' freely with the situation. Drawings are undoubtedly amongst the most central and important of all these forms of representation and those drawings come in several types including most crucially design drawings, diagrams and visionary drawings.

In Chapter 15 we also saw how important words and texts are in the process of thinking about designs. Although textual information is seldom recorded during designing in the way that sketches inevitably are it clearly plays its role in the design conversation.