design expertise—the expert and the master—in order to learn from them how we can more effectively deal with the open, complex, networked, and dynamic problem situations we find ourselves in today.

FIVE LESSONS FROM DESIGN

With this focus in mind, we can now move on to describe five key design practices. They are the five lessons from design practice that we must learn from if we want to deal with open, complex, dynamic, and networked problem situations. These five practices—(1) coevolution, (2) developing problem situations, (3) handling frames, (4) exploring themes, and (5) fostering a discourse—are the building blocks for the frame creation model that will be introduced in the next chapter.

1 COEVOLUTION

In expert design practice, research has shown that the design problem is not fixed before the search begins for a satisfactory solution concept. Expert design is more a matter of developing and refining both the formulation of a problem and ideas for a solution in concert, in a process called coevolution (Dorst and Cross 2001). Coevolution involves a constant iteration of analysis, synthesis, and evaluation passing back and forth between the two conceptual design "spaces"—the problem space and the solution space (Maher, Poon, and Boulanger 1996). In doing so, the designer is seeking to generate a matching problem-solution pair. Roughly speaking, what happens is that a chunk, or seed, of coherent information arises from the problem situation, and sparks the crystallization of a core solution idea (the "primary generator"). This core solution idea in turn changes the designer's view of the problem situation. Designers then redefine the problem, and check whether the new definition still suits the earlier solution idea. Unlike the popular perception, the creative event in design is not so much a creative leap from problem to solution: the great Idea, the light bulb moment. Rather, a creative event occurs when a bridge is built between the problem space and the solution space by the identification of a key concept. Empirical research confirms that expert design involves a period of exploration in which problem and solution spaces are unstable until (temporarily) fixed by an emergent bridge which identifies, or frames, a problem-solution