the system's goals and its outer environment, with only minimal assumptions about the "inner environment" (Simon 1969, 53).

In a later paper, Simon (1973) addressed some of the difficulties that might arise in applying the rational problem-solving approach to design by defining design problems as "ill-structured problems." Ill-structured problems should be tackled in an "immediate problem space"—a part of the total problem space which is deemed too large, ill-structured, and ill-defined to be described. The immediate problem space is addressed and put together by an (unspecified) "noticing and evoking mechanism." The goal of a design process is to arrive at a solution that is "good enough": "we satisfice by looking for alternatives in such a way that we can generally find an acceptable one after only moderate search" (Simon 1973). In *The Sciences of the Artificial* (1969), Simon maintains that design problems are hierarchically organized, and the way to design a complex structure is to discover viable ways of decomposing it into subproblems, solving these, and combining them to arrive at a new overall solution. In problem-solving theory, a "good" (most efficient) reasoning process is defined as the one that involves the shortest search path through the problem space.

A radically different paradigm was proposed fifteen years later by Donald Schön (1983), who describes design as an activity involving "reflective practice." This pragmatist, constructionist theory is specifically made to address some of the shortcomings Schön perceived in the rational problem-solving approach to professional practice. Schön believes that the design component of the professions is underestimated, and that the nature of human design activities is misunderstood. Schön stresses the uniqueness of every problem situation, and identifies the core skill of designers as their ability to determine how every single problem should be approached. Schön calls this the essence, or "the artistry," of design practice, and finds it unacceptable that it cannot be described in the rational problem-solving framework.

To Schön, one of the basic problems for designers is to determine how to approach each single unique task through "a kind of knowing [that] is inherent in intelligent action" (Schön 1983, 50). Although he recognizes that this implicit "knowing-in-action" is difficult to describe and convey to students, he argues that what can be taught and considered is the explicit reflection that guides the development of one's knowing-in-action habits. This he calls "reflection-in-action." In a "reflective conversation with the situation," designers work by *naming* the relevant factors in the situation, *framing* a problem, making *moves* toward a solution, and *evaluating* those moves. The frames are