Schön begins his constructive work with the observation that despite the gap between science and practice, there are effective professionals in the world today. The world of knowledge in the model of technical rationality was built on a vision of control and a desire for efficiency in the execution of practice. Now, however, we are more aware of the importance and value of complexity, uncertainty, instability, uniqueness, and value conflicts to knowing (epistemology). These conditions that exist in the field are not to be abstracted from and dealt with in the ivy tower but are the locus of knowing, in their own context. What is central to someone in practice, says Schön, is not theory and its principles of how to solve a problem, but "reflective practice," knowing-in-action.

Now, though the old epistemology of practice, as Schön has pointed out, was shaped by a concern with problem solving, the epistemology of what he calls reflective practice is not. It is concerned with problem setting. Where technical rationality cannot tolerate uncertainty, reflective practice is secure in dealing with uncertainty, where technical rationality only operates scientifically, reflective practice performs artistically, and where technical rationality is restricted to a single discipline (i.e., is ideological), reflective practice chooses from among competing professional paradigms.

With regard to the key difference between knowing from theory and reflection-in-action—that of problem setting versus problem solving—Schön says. "In the process of problem solving . . . problems of choice or decision are solved through the selection, from available means, of the one best suited to the established ends. . . . Here we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen." But problems (the heart of knowing), says Schön, do not exist as givens.

They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain. Problem setting is not itself a technical problem when we set problems, we select what we will treat as the "things" of the situation, we set the boundaries of our attention to it, and we impose on it a coherence which
allows us to say what is wrong and in what directions the situation needs to be changed. Problem setting is a process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them.

If theory means that which I slavishly follow, then it is of no use to the educator. It has to be reconceived as a hunch or hypothesis that I employ in an experiment to deal with the problem. Then it becomes, if successful, a theory for that incident. These hunches exist in the educator's repertoire, which have certainly come from study but mostly from practice.

Education needs to move the student to see research not just as a product but as a process—something for him or her to engage in. The operative epistemology here is that knowing is in action. We have to come to see action as a phenomenon that embodies thinking. We do not ordinarily, Schön points out, have rules and plans in our minds before we act. We need to accept that we can know in action.

Schön, from his research on the way practitioners exercise their knowing in action, surfaces a discipline for this praxis. The first dimension is to treat the situation as a unique case. Listening for the particulars of the situation. The second dimension is to reframe the problem where the client got stuck (i.e., changing the question the person asks). We cannot apply standard theories for understanding a situation but must construct an understanding for a situation as we find it. The third dimension has the practitioner stepping into the situation, turning to his or her repertoire for a generative metaphor to relate to the situation. In the fourth dimension, an experiment is conducted in the reframe situation.

Beneath these dimensions of the practitioner's knowing we see that the educator starts with attempting to frame the problem. All these modes of knowing run contrary to the canons of knowing established by science in the model of technical rationality, which will not tolerate subjective framing and value judgments.

What separates the educator as practitioner from the academic is that the educator's reflection is motivated by the desire to attend to and change a particular situation, and this desire to change takes precedence over understanding. For the educator, means and ends, research and practice, knowing and doing are not separated. Dealing with problems is not a scientific technical procedure, practice is not the application of theories derived from controlled experimentation, action is not simply the implementation of a technical decision. The activity of the educator cannot be reduced to technique. Educators learn to be effective not primarily through the study of research and educational skills but through long and varied practice in the analysis of educational problems, which build up a generic, essentially unanalyzable capacity for dealing with problems.

For the educator to be a reflective practitioner, there will have to be a change in how he or she relates to the students. He or she has to become disabused of the self-image of being the expert to the layperson. If this view
of the relationship is not changed, the educator will not be free to reflect in action but will have to hide behind the "solid knowledge" that comes from the research.

The students must change as well. According to this mode of operation, they will place themselves more in a pattern of engaging with the educator over the problem, rather than having the "black box" approach. The change may be hard for the educator, since the rewards of the old order are unquestioned authority. The rewards of the new order, however, are those of discovery, where research becomes an activity of the educator.

Schön does hold a place for academic research on "reflection-in-practice", he believes the researcher has an authentic activity in the academy with regard to professional reflection, a "meta-reflection," if you like. He spells out four categories. The first is frame analysis, a study of the ways practitioners frame or structure their practice. Such analysis helps practitioners become aware of their tacit frames and leads them to experience the dilemmas inherent in professional pluralism (i.e., to avoid the pitfalls of ideology).

A second academic activity is repertoire-building research, the building up of case studies, as a reservoir of exemplars of practical knowledge. A third is research on fundamental methods of inquiry and overarching theories, what he calls the development of an "action science," which would concern itself with unique situations and situations that do not lend themselves to the rigors of science. It aims at breeding "themes" practitioners would use to develop theories and methods for themselves. Fourth, Schön mentions research on the process of reflection-in-action, where there is the academic study of how practitioners develop and shift theories in their practice of the profession. But the nature of all this academic research is not to dictate practice by elaborating theories, it is to produce thinking about how practitioners develop theories as they practice.¹

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