INCALCULABLE PRECISION: PSYCHOANALYSIS 
AND THE MEASURE OF EMOTION

For science educators, a solution to the riddle of emotion and the role it plays in learning is most likely to be sought behind one of two epistemological doors. Most familiar are various efforts to banish the effects of emotion on pure reason and pursuits conducted in its name. Educators, on this view, encounter emotional displays primarily as obstacles to the mastery of reason that is science: math phobia, squeamish tummies in the face of dissection, test anxiety, and so on. There are some more positive outcomes, too, found, for example, in the story of Barbara McClintock’s “feeling for the organism” that so appeals to feminist critics of the “masculinity” of reason and science. More recently it has become possible to choose a second door, represented by cognitive psychologists and neuroscientists, who insist upon the role emotion plays in protecting us from danger and directing us toward choices and actions that ensure our survival. Educators interested in this view may seek ways to educate emotion right along with cognition. In this chapter, I present a view that complicates both of these approaches.

Working with two psychoanalysts and one philosopher of science, I explore the psychoanalytic view that emotion and cognition are, from the beginning, inseparable forces that make learning both possible and difficult. I begin with Freud (1905) and three questions posed by children that constitute, propel, and confound their search for truth about life in general and their lives in particular. Here early emotional life and its difficulties cast a shadow forward upon the child’s relation to knowledge and her or his teachers. I then move to object relations theorist and paediatrician, D. W. Winnicott (1986) and his attempt to establish a congruence between the emotional development of the child and the basic structure of mathematical operations. In this example, we catch a glimpse of emotional difficulty as already residing within the curriculum and the knowledge it represents. Finally, I turn to Isabelle Stengers (1997), who considers Freud’s failure to found a science and, by extension, Winnicott’s failure to hold onto the threads of his argument, as representing the kinds of failure we can learn from. She returns the foundation laid by the child’s three questions to the qualities of scientific knowledge itself. Stengers, as we shall see, makes a distinction between the pursuits of science and the practice of psychoanalysis that echoes Freud’s views of the child as researcher and resonates with something Winnicott does not fully succeed in expressing about the work of teaching and learning.

These three examples—Freud’s failure to found a science, Winnicott’s failure to connect Mathematics with child development, and Stenger’s insistence upon the failures of scientific reason—allow us new ways of thinking about ordinary learning as a
psychical and intersubjective event and ordinary teaching as already fully immersed in such learning though not, perhaps, in charge of it. Two metaphors, one drawn from Winnicott’s understanding of the development of the baby from helplessness and dependence to relative autonomy, and one drawn from the history of science suggest that science educators need to think about their own histories of learning as they help their students make and remake their educational biographies. For Winnicott, the *incalculable precision of need* conceptualizes the end results of how teachers, students, and curriculum succeed and fail each other thus constituting teaching and learning as an open system made from surprises of revision, fantasy, and desire along with a measure of real progress and creativity. A second metaphor, *the black box*, was used by Bruno Latour (1988) to describe how one science invented its power. This metaphor views learning as a closed system yet to be perfected. Open systems carry their own risks, and closed systems are not without their appeal as science educators are well aware. If, however, as Freud concluded, Winnicott performs, and Stengers argues, learning, knowledge, and education are all made possible, ruined and repaired in relation to the very emotional unreason at the heart of reason, science education may also learn from its failures and take the risk of inventing itself as an open-system pedagogy.

**WHAT CHILDREN WANT TO KNOW**

Science as a method and epistemology and children as learners share at least one important quality: both embody an insatiable curiosity about the world, how it works, and what it means to be a part of it. Freud, who combined an interest in science with a curiosity about the formation of the human psyche, called children’s original quest for knowledge their “infantile sexual researches” (Freud, 1905, p. 194). These researches, Paul Verhaeghe (2001) reminds us, revolve around three questions. The child is preoccupied by the *difference* between girls and boys, the *origin* of babies, and, finally, the *relationship* between the mother and the father. The nouns I have set into italics may well be the kernels of our infantile research that reverberate in our more adult pursuits. Is it not the case that the grand narratives of science are all about differences between things, the origin of things, and, finally, how the relationships between and among things work? We might say that poetry, too, and certainly philosophy, are similarly preoccupied, but they are not our concern here.

The analogy between the child’s researches and the more mature work of the scientist is meant to be suggestive, not predictive or reductive. Yet it does hint at something beyond the familiar observation that traces of the child are visible in the adult. Verhaeghe describes the knowledge produced by the child as an amalgam of “primary fantasies, combining true with false and lack of knowledge into imaginary constructions” (2001, p. 36). The problem with these constructions is less that they are incorrect (they are bound to be) as that the answers they provide are never sufficient, and, so, “the questions persist” (p. 36). In the early days of his psychoanalytic explorations, Freud did believe that the cure for neuroses lay in providing accurate knowledge as a correction to faulty answers to the questions that perplex the child but may come to plague the adult. Soon, however, Freud became dissatisfied with his efforts.

Whether a patient claimed to accept or reject his interpretations, there was no reliable change in the patient in terms of a permanent alleviation of suffering. The truth-value