chapter
ONE

Transformation and Renewal in Higher Education

As teachers, we guide and support our students to become independent thinkers. We endeavor to teach the whole person, with an intention to go beyond the mere transfer of facts and theories. The advent of online learning and the availability of information on the Internet have made our focus on deeper and richer experiences of teaching and learning ever more important. While concentrating on these holistic goals, we also want to challenge and develop students' analytical problem-solving skills as well as provide careful explanations of complicated material. We want to create the opportunity for our students to engage with material so that they recognize and apply its relevance to their own lives, to feel deeply and experience themselves within their education. In other words, while fostering their knowledge base and analytical abilities, we want to present material in a way that supports students in having their own agency so that the material is not simply a set of intellectual hoops for them to jump through but an active opportunity for them to find meaning and develop intellectually.

This is no easy task. Focusing on our students' agency does not mean that our courses should or even could be equal collaborations. Negotiating this divide

carefully—on the one hand, wanting to engage with students rather than talk at them, while on the other, knowing that we remain their teachers (however we conceive of that)—is a difficult but worthwhile process. In traversing these two poles, we often err on the side of rigid structure, and we stress the abstract and conceptual.

But concentration on outcomes, abstraction, and narrow information handling has its costs. In her book *Mindfulness*, Ellen Langer writes that perhaps one of the reasons that we become "mindless" is the form of our early education. "From kindergarten on," she writes, "the focus of schooling is usually on goals rather than the process by which they are achieved. This single-minded pursuit of one outcome or another, from tying shoelaces to getting into college, makes it difficult to have a mindful attitude toward life. Questions of 'Can I?' or 'What if I can't do it?' are likely to predominate, creating an anxious preoccupation with success or failure rather than drawing on the child's natural, exuberant desire to explore" (Langer, 1989, pp. 33–34). Indeed, the history of educational reform is full of examples of the responses to the heavy costs of this sort of concentration. It is this sense of deep exploration and inquiry that has led us to develop a pedagogy that uses contemplative methods.

We have often stressed the highly instrumental form of learning to the exclusion of personal reflection and integration. It is understandable how this happens; developing careful discursive, analytical thought is one of the hallmarks of a good education. However, creative, synthetic thinking requires more than this; it requires a holistic engagement and attention that is especially fostered by the student finding himself or herself in the material. No matter how radically we conceive of our role in teaching, the one aspect of students' learning for which they are unambiguously sovereign is the awareness of their experience and their own thoughts, beliefs, and reactions to the material covered in the course. In addition, students need support in discerning what is most meaningful to them—both their direction overall and their moral compass. Without opportunities to inquire deeply, all they can do is proceed along paths already laid down for them.

Researchers and educators have pursued the objective of creating learning environments that are deeply focused on the relationship of students to what they are learning as well as to the rest of the world. We have found that contemplative practices respond powerfully to these challenges and can provide an environment that supports the increasing diversity of our students. While contemplative

practices vary greatly, they all have the potential to integrate students' own rich experience into their learning. When students engage in these introspective exercises, they discover their internal relationship to the material in their courses.

To be sure, others have thought about expansive and reflective approaches to teaching. For example, the famous work of John Dewey and Jean Piaget and the radical reframing of education by Paolo Freire all have experiential components at the heart of their systems (Dewey, 1986; Piaget, 1973; Freire, 1970). Dewey, in particular, has keen insights on the relationship between experience and reflection. (See, for example, Rodgers, 2002.) In fact, entire educational systems have been built around experience. For example, the experiential learning theory system of Daniel Kolb posits two sets of related inquiries: concrete experience and abstract conceptualization on the one hand and reflective observation and active experimentation on the other. Indeed, the advocates of the integrative education movement, influenced by the systems of thinkers like Ken Wilbur and Sri Aurobindo, call for the active attention on combining domains of experience and knowing into learning (see, for example, Awbrey, 2006). Thus, our focus on contemplative and introspective practices is not unknown in academia; what distinguishes the experience and integration discussed in this book is that the experience is focused on students' introspection and their cultivation of awareness of themselves and their relationship to others. The exercises are relatively simple and mainly conducted in their own minds and bodies, relating directly to their personal experience discovered through attention and awareness, yet these private investigations yield increased empathy for others and a deeper sense of connection with the world (Birnie, Speca, & Carlson, 2010).

CONTEMPLATION, INTROSPECTION, AND REFLECTION

In this book, we will be talking about contemplative practices and pedagogy, sometimes using *introspection, reflection*, or other terms interchangeably. Although the range of these practices is very broad, all of them have an introspective, internal focus. Whether they are analytical exercises asking students to examine a concept deeply or opportunities to simply attend to what is arising, the practices all have an inward or first-person focus that creates opportunities for greater connection and insight. Although students might be silent or speaking, still or in motion, the practices all focus on the present experience, either physical or

mental. The practices certainly include meditation, but not all are meditative in the traditional sense. They range from carefully beholding chemical mappings and making observations, to sitting in stillness, to imagining the impacts of distributing different proportions of goods to loved ones and to strangers. They include both simple and complex concentration practices that sometimes require periods of calm and quiet and sometimes sustained analytical thinking. The critical aspect is that students discover their own internal reactions without having to adopt any ideology or specific belief. They all place the student in the center of his or her learning so that the student can connect his or her inner world to the outer world. Through this connection, teaching and learning is transformed into something personally meaningful yet connected to the world.

We recognize that the idea of a first-person focus has complex ontological and epistemological implications. In essays like Hans-Georg Gadamer's "On the Problem of Self-Understanding" (1976) and Evan Thompson's "Empathy and Consciousness" (2001) the metacognition necessary for evaluative self-awareness is examined and evaluated. While these inquiries are fascinating and important in considering the nature of awareness, self-conception, and knowing, we will not consider them here. Here we are stimulating the inquiry.

RESPONDING TO THE CALL

By legitimizing students' experience, we change their relationship to the material being covered. In much of formal education, students are actively dissuaded from finding themselves in what they are studying; all too often, students nervously ask whether they may use "I" in their papers. A direct inquiry brought about through contemplative introspection validates and deepens their understanding of both themselves and the material covered. In this way, they not only understand the material more richly but also retain their knowledge better once they have a personal context in which to frame it. Questions about how the material fits "into the real world" or is in some way relevant to their lives don't arise. The presentation of the material is approached in a manner in which students themselves directly discover its impact on their lives. Since they are conducting the inquiry with their classmates, they also realize their connection with each other, without any forced discussion of relatedness. This process builds capacity, deepens understanding, generates compassion, and initiates an inquiry into their human nature.

Remarkably these exercises can be used effectively throughout the curriculum: in sciences like physics, chemistry, and neuroscience; in social sciences, like sociology, economics, history, and psychology; in humanities such as art history, English, and philosophy; and in professional schools, including nursing, social work, architecture, business, law, and medicine. Their exact use changes from discipline to discipline, but as we shall see, the diverse practices are deeply connected.

The form and function of education are greatly influenced by the policy goals that underlie its purpose. Most higher education institutions are nonprofit enterprises and are highly subsidized, including financial aid to students. Even students who pay the full tuition and fees are being subsidized since fees are well below per-student average costs. In fact, one of the ways of thinking about alumni gifts to the institution is a repayment of the subsidies they received as students (Winston, 1999). Since these institutions are not focused on profit, they must be able to justify the subsidies and the appeals for charitable contributions in other ways. Some schools have religious orientations, which provide their vision and purpose, but the visions and aspirations of secular schools come from a sense of the common good that they are supporting. As teachers in these institutions, we consider our intentions for each course we teach, but we rarely step back and inquire about our overall vision of the education we are providing. With the pressure of ever increasing costs, the viability of higher education depends on our ability to articulate these aspirations. Contemplative exercises provide a means to engage in this inquiry.

In recent years, a steady stream of books has been published about the crisis in higher education and how colleges and universities are failing to educate students. It is argued again and again that we have failed to provide needed skills and have lost sight of our true calling. In *Academically Adrift: Limited Learning on College Campuses* (2010), Richard Arum and Josipa Roksa claim that nearly half of college students demonstrated no significant improvement in a range of skills—critical thinking, complex reasoning, writing, and so on—after the first two years of college. While colleges and universities have been attacked on the provision of skills, they have been criticized even more harshly for not providing students with a vision of how their studies might affect society at large. In *Crisis on Campus: A Bold Plan for Reforming Our Colleges and Universities* (2010), Mark Taylor argues that "the curriculum [has] become increasingly fragmented, and the educational process loses its coherence as well as relevance for the broader

society" (p. 4). In an especially damning critique, Harry Lewis, former dean of Harvard College, writes, "Universities have forgotten their larger educational role for college students. They succeed, better than ever, as creators and repositories of knowledge. But they have forgotten that the fundamental job of undergraduate education is to . . . help [students] grow up, to learn who they are, to search for a larger purpose for their lives, and to leave college better human beings" (2006, p. xii).

We believe that it is not too late to address these problems. In fact, contemplative modes of instruction provide the opportunity for students to develop insight and creativity, hone their concentration skills, and deeply inquire about what means the most to them. These practices naturally deepen understanding while increasing connection and community within higher education. We believe that at its core, the academy must provide students with the opportunity to initiate and pursue an inquiry into their role in society, an inquiry that makes learning personal, meaningful, and relevant. Like John Dewey, social reformers and education theorists began thinking of education as the means to promote personal agency and economic opportunity. Dewey began to see that schools functioned powerfully in "prevailing structures of power." Contemplative practices place the students at the center of their own learning, shifting the balance of power in the classroom in a meaningful and engaged manner.

These practices also directly address essential learning protocols. In *How Learning Works: Seven Research-Based Principles for Smart Teaching*, Susan A. Ambrose, Michael Bridges, Michele DiPietro, Marsha Lovett, and Marie Norman (2010) evaluate the latest research on effective teaching. Many of the key findings relate directly to contemplative practices. Among their many strategies to improve teaching and learning, they advocate the importance of holistic student development and emotional regulation, the advantages of self-awareness and self-monitoring, and the central role of metacognition (personal reflective activity). Not only is emotional and social learning fundamental to student productivity, this type of learning during the college years is actually considerably greater than intellectual gains. As we shall see in the next chapter, contemplative practices support and sustain emotional regulation by allowing students to recognize triggers and be less reactive. This increases learning outcomes in the short run and produces better-balanced citizens in the long run. Contemplative practices are self-reflective practices; they support and sustain the types of self-monitoring

activities that research has found crucial for student development and learning. Studies have shown that students who monitor their progress and explain to themselves what they are learning have greater learning gains and were better problem solvers than those who do not (Ambrose et al., 2010). In addition, without practice, we have a tendency to overestimate our abilities, making it less likely that students needing remedial attention will seek it. Finally, both learning and teaching requires sitting back and surveying the big picture, making sure that our strategies are achieving course-level goals and providing students broad gains for their development within and beyond the course (Ambrose et al., 2010).

Beyond these gains, contemplative practices can be designed to focus on various types of learning. For example, the practices can be visual, auditory, cognitive, or physical. While it is true that students might favor one mode over another (say, visual explanations rather than verbal ones), the evidence seems mixed about how much benefit is attained from presentations solely geared to styles associated with certain students. Researchers led by Rita Dunn and Kenneth Dunn at St. Joseph's University reported significant gains from tailoring teaching to learning style preferences. This certainly has captured the imagination of teachers and schools of education and does make intuitive sense. However, Kenneth A. Kavale, Steven R. Forness, and others have shown that the results do not seem statistically robust and that whatever gains exist result simply from the extra attention placed on personal instruction—efforts that when placed elsewhere might have similar effects (Kavale & Forness, 1987).

While the overall benefits from learning style–based teaching are somewhat controversial, there is a broader consensus on adjusting presentation to the content. Certain topics lend themselves rather naturally to types of presentation: for example, visual information like form and color is probably best conveyed with visual examples, while if you were teaching about how honeybees communicate the location of nectar-filled flowers, you might incorporate movement to help students understand the "honey bee dance language" and how it differs from explanations based on odor.

INTROSPECTIVE AND CONTEMPLATIVE PRACTICES

Contemplative pedagogy uses forms of introspection and reflection that allow students to focus internally and find more of themselves in their courses. The

types of contemplation are varied, from guided introspective exercises to open-ended, multistaged contemplative reading (i.e., *lectio divina*) to simple moments of quiet, as are the ways in which the practices are integrated into classrooms. What unites them is a focus on personal awareness, leading to insight.

As an introduction, the tree of contemplative practices (figure 1.1) created by the Center for Contemplative Mind in Society illustrates the diversity of practices. This is not an exhaustive summary but does give an excellent overview of the basic categories and the practices within each.

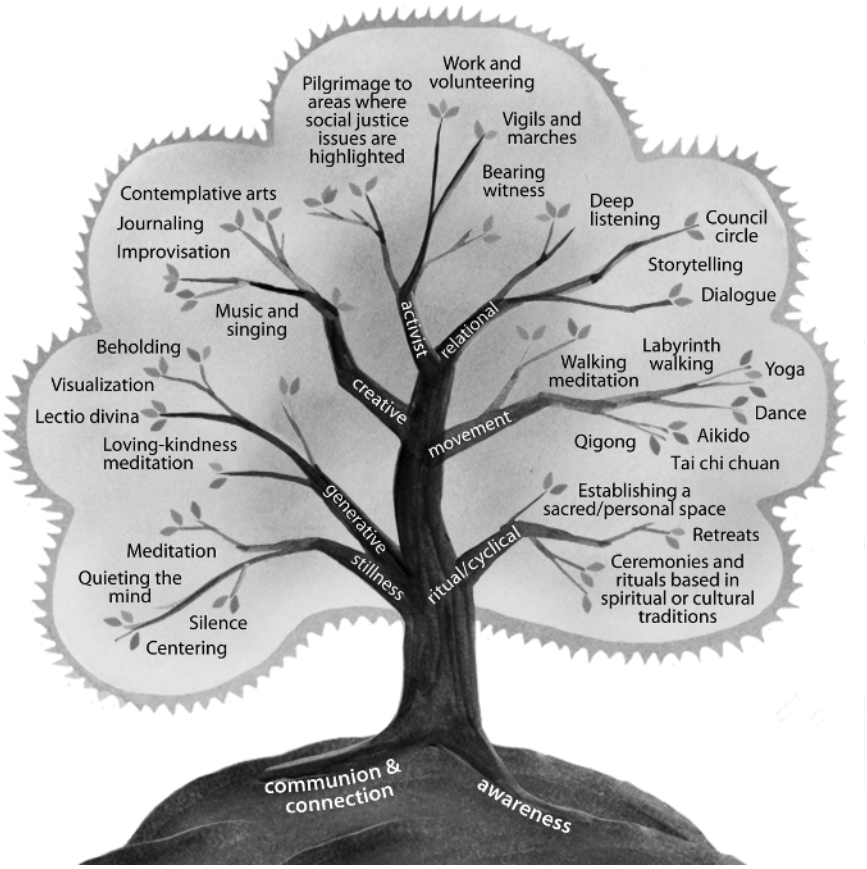

Figure 1.1 Tree of Contemplative Practices

Source: Center for Contemplative Mind in Society. Reprinted with permission.

Practices from different categories can also be combined; for example, meditation can be combined with freewriting or journaling, or a movement exercise can be combined with activist activities. The exact form of the practices depends on the context, the intent, and the skills of the facilitator.

These practices, which can take many forms, are highly adaptable to different contexts throughout the curriculum. In March 2011, Amherst College and the Center for Contemplative Mind in Society hosted a conference in which practitioners from physics, chemistry, religious studies, English, music, economics, psychology, environmental science, and law presented papers on how they had integrated contemplative practices into their teaching. These presentations (in preparation for a forthcoming collected volume to be published under the title *Cultivating Attention, Understanding, Connection and Insight: Contemplative Practices Across the Disciplines in Higher Education*) demonstrated how practices have been woven into the fabric of courses throughout the curriculum, in every kind of educational institution, and in just about every facet of higher education. From law schools to community colleges, liberal arts colleges, and large research universities, contemplative practices are being used in the classroom as well as in student and health services, counseling centers, teaching and learning centers, athletics, and administration. We hope this book will help guide you to your own effective use of these practices.

STRUCTURE AND OBJECTIVES

Broadly speaking, classroom introspective and contemplative exercises have a variety of objectives, including these:

1. Focus and attention building, mainly through focusing meditation and exercises that support mental stability
2. Contemplation and introspection into the content of the course, in which students discover the material in themselves and thus deepen their understanding of the material
3. Compassion, connection to others, and a deepening sense of the moral and spiritual aspect of education
4. Inquiry into the nature of their minds, personal meaning, creativity, and insight

Some of the practices are focused rather narrowly on only one of these objectives, and others are combinations of several. Most often they focus on one, and then naturally open into the others on reflection. A simple meditation, focusing on the breath, can lead to an inquiry into the source of intervening thoughts, an inquiry into the nature of our self-determination. It can indeed be a profound moment for students to realize they are fully in control of neither their thoughts nor their overall experience.

Attention and Analytical Problem Solving

One of the claims of higher education, and particularly of liberal arts colleges, is that we teach students how to think. What does this actually mean? Surely our students can think, so in what sense do they need to be taught to think? Maybe it means that we aid them in developing their analytical problem-solving skills and their ability to integrate different aspects of situations creatively. Certainly one of the goals of contemplative exercises is to develop these skills.

A key element in solving any problem is attention. Anyone who has attempted to solve complex problems knows the intense concentration and attention required. Contemplative exercises hone this skill. Many of them are directly aimed at cultivating concentrated attention. Of course, concentration develops by concerted effort. Musicians, dancers, and athletes, for example, all acquire high levels of concentration. However, problem solving also often requires thinking about a problem from various angles, so while attention is important, so is the ability to let go of what is not working while focusing on (but not clinging to) another. Thus, clear and flexible attention is required to solve more open-ended insight problems—those that require an "aha" moment. These problems require thinking in different ways. For example, suppose you were asked to describe how to throw a ball so that it would travel a short distance, come to a complete stop, and then reverse itself. You are not allowed to bounce it off any surface or tie anything to it. As long as you think of the ball moving horizontally, you will not be able to describe the motion. Being keenly aware of the directions, however, you note that nothing in the problem states in which direction the ball should go. Once you realize this, you can think outside the constraint of throwing a ball as you normally do. If you think about how objects suspend for a moment when thrown up, you realize that throwing the ball up in the air would cause it to rise, stop, and then reverse. Psychologists M. Aisling Murray and Ruth Byrne (2005)

argue that in order to solve these sorts of problems, people must have the capacity to hold alternative possibilities along with the ability to switch their attention between them. These abilities are especially refined and honed by contemplative practices.

Logical analytical modes of thinking are just one aspect of our broad abilities, however. For many years, it was taken for granted that each person had a given level of intelligence that determined cognitive ability, often referred to as the index "*g*." Teachers could support students in living up to the potential of their given level of intelligence, but essentially it was immutable. This view has come under serious criticism for a variety of reasons. First, the notion that a single metric could capture a meaningful notion of intelligence does not seem possible. As Howard Gardner, Robert Sternberg, David Perkins, and others have argued, humans have different kinds of intelligence, most prominently captured by Gardner's idea of multiple intelligences (Gardner, 2004). Second, whatever the intelligence might be, the notion that it is fixed within very tight bounds for all time has also shown to be incorrect. Stephen Jay Gould argues convincingly in *The Mismeasurement of Man* (1996) that such a static metric does not capture how our abilities change over time. Indeed, in their rather conservative review of this issue, even the task force designated by the American Psychological Association concluded that "a given person's intellectual performance will vary on different occasions, in different domains" (Neisser et al., 1996, p. 77).

Robert Sternberg's *Beyond IQ: A Triarchic Theory of Human Intelligence* (1985) divides intelligence into three areas: analytical, creative, and practical. Contemplative exercises support analytical intelligence through stabilization of the mind and increased ability to focus. Logical problem solving involves clear, focused linear thinking, requiring the ability to concentrate and not be distracted. Yet it also requires being open to inspiration and intuition. Creative aspects of problem solving are more synthetic, requiring an awareness of many possible solutions. Complex problems demand being able to see outside the constraints of strong initial attempts or useful heuristics that do not solve the current problem. Founder of analytical philosophy Alfred North Whitehead (1929) famously pronounced, "Fools act on imagination without knowledge; pedants act on knowledge without imagination. The task of a university is to weld together imagination and experience" (p. 93). Being aware of when to use a quick rule and when not to use such a rule is the first step in solving complex problems. Beyond that,

learning not only how to focus but on what to focus is the essence of effective problem solving.

Deeper Understanding

Beyond cognitive skills, contemplative and introspective exercises can deepen students' understanding of the material presented. A practice like *lectio divina*, for example, allows students to sink into their experience of reading, a rare opportunity given the amount of reading they are assigned daily. In chemistry courses, Michelle Francl at Bryn Mawr allows students an extended time to simply behold figures of electron wave functions before discussing them. They are given the chance to realize the impact of the words or graphs for themselves. Students report that they can see the regular, successive amplitude changes and thus have a deeper, immediate connection to the otherwise abstract Bohr correspondence principle that mathematically defines these changes. From this kind of engagement, students come to a far more direct and complete understanding of what might otherwise be an abstract and complicated set of mathematical relationships. No longer are these texts or figures something abstract or foreign to students; they are allowed the time to discern what they see in them before discussing them.

In his economics classes at Amherst College, I (D.B.) provide students with the opportunity to experience directly the assumptions of the abstract models they are studying. Rather than provide them with the only definition and explanation of the Easterlin paradox or the relative income hypothesis, I give students exercises in which they experience and reflect on their personal reactions to relative gains or losses. While the model suggests that people always compare themselves to others, many students have never considered how they actually select the persons to whom they compare themselves. As a result of this examination, they come to realize the importance of context and choice in matters of positional changes and have a deeper understanding of the theoretical literature. Carefully designed contemplative practices can locate the students directly in their own learning like no other practice can, allowing students direct access to the material and making it more meaningful and understandable.

Connection and Compassion

Contemplative exercises are particularly effective in the areas of emotional regulation and intra- and interpersonal connection. Each student brings her or his own

approach to the material, so it is often difficult to discern just how to reach students and how to treat them fairly. In *Frames of Mind* (2004), Howard Gardner goes beyond logical-mathematical and linguistic modes of knowing and discusses others, like spatial, musical, kinesthetic, and interpersonal and intrapersonal intelligences. These last two are essential forms for navigating personal meaning and connection to others. In a related vein, Daniel Goleman, Antonio Damasio, Robert Frank, and R. B. Zajonc have all shown the central aspect of emotion in the process of decision making (Goleman, 2006; Damasio, 2000; Frank, 1988; Zajonc, 1980). Regardless of the nuances among these views, an increasing amount of evidence has shown that emotional awareness and regulation are essential for well-being and positive, even strategic, decision making. A wide range of teaching and learning methods has been developed out of these ideas, designed to work with students' varying abilities. Mary Helen Immordino-Yang of the University of Southern California's Rossier School of Education has shown that contemplative exercises that focus on compassion and social connectivity are especially effective in increasing learning outcomes (Immordino-Yang & Damasio, 2008).

Practical problems and their solutions require personal involvement and what Sternberg calls "action-oriented knowledge, acquired without the direct help from others, that allows individuals to achieve goals they personally value" (Neisser et al., 1996, p. 79). In our experience, contemplative practices can be especially powerful in supporting this sort of inquiry. Students directly engage with the experience of what they are learning through the exercises and thereby gain meaning in a very practical manner. While other kinds of experiential learning have this quality, contemplative exercises have the special attribute that students do not need to leave the classroom to complete them and can replicate them easily on their own. The point here is not whether this is actually a specific form of intelligence but that broad problem solving requires this sort of thinking.

The importance of education in the cultivation of compassion is becoming clearer as we study the nature of compassion more carefully. The Dalai Lama has focused on the importance of education and training in establishing a "secular ethics" based on a foundation of compassion. In *Beyond Religion*, he states:

> It is clear that something is seriously lacking in the way we humans are going about things. . . . The fundamental problem, I believe, is that at every level we are giving too much attention to the external material aspects of life while neglecting moral ethics and inner values.

> Our inner lives are something we ignore at our own peril, and many of the greatest problems we face in today's world are the result of such neglect. (His Holiness the Dalai Lama, 2011, p. x)

Education and the intentional cultivation of personal inquiry and compassion are at the core of his conception of how this transformation takes place. We strongly believe that contemplative practices provide a powerful means to realize this vision.

Tania Singer, a neuroscientist working in Leipzig, Germany, has highlighted the importance of education in cultivating compassion. She argues that we are coded, that is, wired to have empathy. When someone is harmed, normally a person will have an empathic response, feeling the suffering of another; this is a passive response, much like the mirror neurons that fire, sympathetically, when we see another person moving (Singer, Weng, Klimecki, & Wager, 2011). However, compassion is not a passive response; it includes the desire to relieve the suffering. The rock star of compassion, Matthieu Ricard, has said that "compassion fatigue" is misnamed; it should be called "empathy fatigue," since empathy is limited and reactive, whereas compassion is cultivated and boundless. Practices that can cultivate and support compassion are extremely important, and we need to foster environments in which our students can explore and nurture it. Contemplative practices do exactly that.

Personal Meaning

While these practices can hone attention, stimulate a deeper understanding of the material, and develop social connectivity, they also allow students to explore personal meaning, perhaps the least well-defined yet most important result. As noted in a study on spirituality in higher education by Alexander and Helen Astin at the UCLA Higher Education Research Institute, students yearn for support in their search for personal meaning. More than two-thirds consider it "essential" or "very important" that their college enhance their self-understanding, and a similar proportion rate highly the role they want their college to play in developing their personal values. Nearly half also say it is "essential" or "very important" that colleges encourage their personal expression of spirituality (Astin, Astin, & Lindholm, 2010).

Although our students might call for it, we know that discussions of morality and spirituality in the classroom pose serious potential problems. While we

certainly agree that caution is appropriate, we also believe that we can support students in examining these issues for themselves. Because of the deeply personal and private nature of the exercises, they provide a framework for students to begin to open to their own sense of meaning, first to the material being taught in the class and then to a broader and deeper sense of how their learning fits into their lives. Meditation and introspection provide effective means for students to become aware of their emotions and reactions while at the same time helping them clarify what is personally most important. Both of these qualities contribute to effective decision making.

While we provide information and help students modify behavior, higher education has moved largely away from helping students discover and develop their deepest purpose. How can they decide without examining what truly matters to them? It is no wonder that students are calling out for this opportunity, and it does not require much to open this form of inquiry. For example, a simple exercise in which students are asked to focus on their breath can stimulate significant insights. When a student realizes that although *he* is committed to focusing on his breath and yet *he* somehow is also thinking about this or that, he starts to question the nature of his thinking. In what sense are these rising thoughts his? This quite naturally leads students to thinking about their wanting. If their thinking seems to come out of nowhere and does not seem to really be theirs, and desires arise in a similar fashion, are they really their desires? What sense does it make, then, to attempt to satisfy these desires since they arise like the thoughts, seemingly from nowhere? These questions provide an opportunity for students to think about the fundamental premise of economics: that consumers attempt to achieve well-being by satisfying their desires. This inquiry arises from personal insight and so has far greater valence than a prompt from without. We will see that this sort of personal insight can deepen the teaching and learning in disciplines across the curriculum and lead students to discover their values and develop their purpose.

In a course on the history of science at Amherst College, Arthur Zajonc guides his students through the process of discovery that Einstein experienced as he developed his theory of relativity. It was a process very much like the Tibetan tradition of analytical meditation followed by calm abiding that allowed Einstein to make one of the greatest breakthroughs of the twentieth century. Zajonc guides his students through the complex examination of perspective and its impact on

measurement. Students are guided to realize for themselves that they can hold contradictory positions in their minds at once:

> As I work through each step inwardly from both points of view—stationary and moving—I encounter a paradox, a contradiction. How can an object have different lengths? How can a clock (including the clock of my bodily processes) run differently when viewed from the two vantage points? How can my "now" be different than yours? All three are implied by Einstein's relativity theory. Surely one set of observations must be the True set. No, each has equal justification, no vantage point is privileged. Then I remember that I am assuming the universe looks like something without me or anyone around. I presume that it looks like something unto itself. This is not so. All of its attributes, even the most fundamental ones like extension and duration, are attributes as noted by an observer, real or imagined. We and the world are knit together by Einstein's thinking in ways that astonish me. It is so difficult not to reify the world, and instead to recognize that I am implicated everywhere and in every impression. The careful reasoning that leads us to this conclusion is Einstein's gift, the fruit of his analytic meditation. (Zajonc, 2011)

As students follow along, they rediscover the theory of relativity. As Zajonc continues the journey with his students, he recounts the dramatic insight that Einstein achieved only after he had worked through the analytics and then given up trying to control the process. It was only after he let go of the conscious striving that the insight came to him. This dramatic example of the symbiosis of analytical thought and insight can be reexperienced by the students, an amazing contemporary journey into the intellectual history of science.

CAUTIONARY TALES

While contemplative pedagogies are powerful practices, they do come with challenges. As has been widely noted, William James (1890) recognized both the appeal and problem of an integrated, contemplative pedagogy: "Whether the attention come by grace of genius or by dint of will, the longer one does attend to a topic the more mastery of it one has. And the faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character and will. No one is *compos sui* if he has it not. An education which

should improve this faculty would be the education *par excellence*" (p. 424). James focuses here on only on "attention," describing its benefits as making us perceive, conceive, distinguish, remember, and react better than we would otherwise. Because of this, James has been seen as a champion of the use of contemplative practices. However, James was always a careful thinker and cautions against excessive optimism. He continues: "But it is easier to define this ideal than to give practical directions for bring it about." He does not see introspection as a panacea, and neither do we. James continues to caution against the idea that focused awareness and introspection can cure problems in observation and insight:

> But, since the rest of this volume will be little more than a collection of illustrations of the difficulty of discovering by direct introspection exactly what our feelings and their relations are, we need not anticipate our own future details, but just state our general conclusion that *introspection is difficult and fallible; and that the difficulty is simply that of all observation of whatever kind* [italics in original]. (James, 1890, p. 424)

While contemplative exercises provide a means for students to explore within themselves and the subject matter, they are not intended to replace other effective means of learning. Rather, they are powerful complements for instruction across the curriculum.

Because of the subtle nature of these practices, teachers must have personal experience with them and with the cultivation of their own awareness. These are not modes that can be taught in a single workshop or described in a set of fixed protocols. Without a committed understanding of what it is like to engage in these exercises, teachers cannot guide students or respond meaningfully to them. The practices require a strong connection with the students; they should be thought of as structured improvisations rather than following rigid, fixed scripts.

Students come to our classrooms from many backgrounds. It is important that the practices be framed so that we foster inclusion. For example, students who have felt silenced in their lives might bristle at the instruction to close their eyes and be silent; for such students, it is important to introduce silence by explaining how the exercise helps them hear their own voices and allows more of themselves and their voices to be present in the classroom. Learning about our students' backgrounds is important as we introduce the practices; we can easily alienate students without any intention or awareness of doing so.

CONCLUSION

Contemplative and introspective modes of learning are an exciting pedagogical development. Placing students at the heart of their education fosters a rich environment for learning and provides the opportunity for students to cultivate attention, deepen their understanding of their studies, engender richer relationships with themselves and others, and stimulate profound inquiries into the nature of themselves and the world around them.