Toward a More Reflective Academy

Arthur Zajonc
Physics, Amherst College
Amherst, MA 01002
March 21, 2010

Abstract: Twenty years ago the concept of contemplative pedagogy did not exist.

Today thousands of teachers at colleges, universities, and professional schools across the U.S. and Canada are using contemplative exercises with their students. During the last decade the use of contemplative practices has increasingly become a part of teaching, learning, and student life throughout North America. The place of contemplative pedagogy in an integrative education, with examples, will be discussed. I show the ways in which contemplative exercises can be thoughtfully integrated into the design of particular courses so that they directly support the learning objectives of the course, as well as support the process of discovery and creativity. Recent research into the value of contemplative pedagogy is also reported.

"There is no logical path leading to these laws [of nature],
but only intuition, supported by sympathetic
understanding of experience."

Albert Einstein

The colleges and universities of the world evidence the profound commitment we have to our future. What more can one want from an educational institution than a great faculty, terrific facilities, and a brilliant student body? Isn't this a bit of heaven? As you walk around campus, remind yourself that all these big buildings, the faculty, staff and many billions of dollars annuallyall this is directed toward something totally invisible, the minds of those student attending. The cultivation of the human being is the single *raison d'être* for this investment. So what could be the problem, why are faculty at countless schools occupied with questions of general education, pedagogy and curriculum? What could possibly be wrong in paradise?

Problems in Paradise

Are the critics of American universities right when they say, as Harvard College's former dean Harry Lewis emphatically states, "Harvard and our other great universities lost sight of the essential purpose of undergraduate education." They are neglecting the central task of helping students "learn who they are, to search for a larger purpose for their lives, and to leave college as better human beings" Echoing

Lewis's sentiments, former Yale Law School dean Anthony Kronman argues in his book *Education's End* that the true purpose of higher education has been lost, namely, a deep exploration concerning "what life is for."

A college or university is not just a place for the transmission of knowledge but a forum for the exploration of life's mystery and meaning through the careful but critical reading of the great works of literary and philosophical imagination.

Stanley Fish in his recent NY Times op ed, writes for many when he laments the monetization of higher education that measures education's "value" purely in terms of financial return on investment. And in a 2009 NY Times Op Ed the President of Harvard University, Drew Gilpin Faust, wrote about "The University's Crisis of Purpose" (Sept 1, 2009) saying,

But even as we as a nation have embraced education as critical to economic growth and opportunity, we should remember that colleges and universities are about a great deal more than measurable utility.

Unlike perhaps any other institutions in the world, they embrace the long view and nurture the kind of critical perspectives that look far beyond the present....As a nation, we need to ask more than this [utility] from our universities. Higher learning can offer individuals and societies a depth and breadth of vision absent from the inevitably myopic present. Human beings need meaning, understanding and

perspective as well as jobs. The question should not be whether we can afford to believe in such purposes in these times, but whether we can afford not to.

Each of these leaders in higher education points beyond utility and financial gain to a larger mission that higher education has and should continue to embrace. Depth, breadth, meaning, understanding, and perspective are the words used. What is the task of the university? To instruct in a discipline, surely. But beyond this, what? The author and poet (and English professor) Wendell Berry sums it up this way in his essay "The Loss of the University"

The thing being made in a university is humanity. . . . [W]hat universities . . . are *mandated* to make or to help to make is human beings in the fullest sense of those words—not just trained workers or knowledgeable citizens but responsible heirs and members of human culture. . . . Underlying the idea of a university—the bringing together, the combining into one, of all the disciplines—is the idea that good work and good citizenship are the inevitable by-products of the making of a good—that is, a fully developed—human being.

This is a formidable mandate: the making of the human being. To begin with, what is the image we have of the human being these days? Who sits before us in the classroom, or works beside us at the lab bench? What does it mean to be human? This image informs our approach to teaching and learning either consciously or

unconsciously. In my view we suffer today from a profoundly impoverished image of the human being and of our world. We have a diminished and inadequate ontology. What is needed is a truer, multidimensional understanding of the human being that will in turn lead to a comparably rich, multidimensional education. Only then can we hope that, through the collaborative effort of teachers and learners, we might, as Wendell Berry puts it, "make human beings in the fullest sense of those words." I want to explore with you some of the lost or neglected "dimensions" of ourselves and of higher education. Only when we knit together the multiple strands of learning and teaching will we have an education that addresses the depth, breath and meaning dimensions of life.

The Several Dimensions of Higher Education

Space is multi-dimensional (three-dimensional, if we leave aside relativity and string theory). Our learning too is multidimensional. Before turning to the role of contemplative pedagogy explicitly, I need to set the stage considering the importance of breadth in integrative education.

As an undergraduate, one is asked early in one's studies to declare a major area of disciplinary concentration: physics, English, neuroscience, French, . This is a first axis or straight line highway put down through the vast territory of learning.

The full mastery of a single area of human knowledge or endeavor is of signal importance. One eventually comes to stand at the shoreline that separates what is

understood and what is not. It is the province of discovery, innovation, and the new.

But is mastery of a single domain really enough?

Ever since Diderot and D'Alembert codified the map of knowledge in their 18th century *Encyclopédie*, universities around the world have adopted the divisions they made with the consequence that thousands of colleges and universities offer an essentially identical set of disciplinary concentrations. Lines are drawn by the dominant power (in this case the leaders of the French Enlightenment) and centuries later we are still living with that legacy. Did Diderot and D'Alembert get it right? Should there be any lines at all? Should the axes through the intellectual landscape be more like meandering creeks or twisted footpaths than linear highways? Are we constrained to walk one path only?

Wendell Berry remarked that the idea of the university is "the bringing together, the combining into one, of all the disciplines." Interdisciplinary teaching and research bring individuals together from diverse disciplines to tackle problems using multiple lines of inquiry and expertise. Yet simple juxtaposition of different views is no guarantee of a genuine synthesis or creative insight. For that to occur, the community of discourse must be internalized so it can live within a single person with sufficient intensity to overcome the mind's inertia, its resistance to change. The whole is then reflected in the individual, and in such measure that it can become an active force that liberates and animates.

When Albert Einstein was an obscure young clerk at the Berne patent office in Switzerland, he joined up with two new friends and together they created the tiny Akademie Olympia. Einstein had recently completed his studies in physics at the ETH (Eidgenössische Technische Hochschule) in Zurich (the MIT of Switzerland). His friends Solovine and Habicht were not scientists but students of philosophy and mathematics, respectively. Over the three years that their little academy existed, from 1902 to 1905, the group read and debated such books as Hume's *Treatise of* Human Nature, Spinoza's Ethics, Mill's A System of Logic, Mach's Analysis of Sensations, Poincaré's Science and Hypotheses, and Cervantes' Don Quixote. They hiked the magnificent Berner Oberland, in the evenings Einstein entertained them with his violin, they would eat what they could afford (i.e. not much), and they talked; above all, they talked. Einstein's breadth of thought was greatly extended by the intensive, wide-ranging, intellectual intercourse he had with Solovine and Habicht. In looking back on the *Olympia Academy*, Solovine said, "Our material situation was far from being brilliant; but, in spite of that, what enthusiasm we had, what a passion for the things that really mattered" And Einstein noted similarly, "We had a wonderful time in those days in Berne in our cheerful 'Academy,' which was less childish than those respectable ones which I later got to know only too well"

Einstein's obscurity vanished in 1905, the year the Academy ended, when he published four landmark papers in one year, including his discovery of special relativity and his equation E=mc². He would later remark on the importance of Ernst

Mach, David Hume, and Henri Poincaré and other authors read in the Academy, for his accomplishments during that astonishing year of creativity. Through his friends and their intensive conversations, he had succeeded in integrating into his own thinking the breadth of thought these giants offered, their critical stance, and divergent views, and Einstein was deeply helped thereby. Of Ernst Mach, for example, Einstein would write, "I see Mach's greatness in his incorruptible skepticism and independence..." an independence that appealed to Einstein's own personality. The Academy offered a community of ardent intellectual conversation that animated Einstein and opened him to fresh notions of what space, time, matter, energy and light really were. The consequent revolution wrought by Einstein has still not been fully appreciated.

Contrast Einstein's experience with our curricular strategies for insuring breadth of study. The juxtaposition of one course next to the other, as is common with distribution requirements, is not in my view, a satisfactory way of addressing the issue of breadth. We need models of engagement much more like the Olympia Academy than a sushi menu. Who would you invite to an incandescent conversation on science, art, philosophy, social justice, environmentalism...? With whom would you hike the Sierras, and what books would you have in your backpack Broaden yourself by engaging difference. The observations and thoughts of others are doors that open onto rooms whose existence you may never have imagined. Those others include the voices of great thinkers and artist of the past, as well as your

contemporaries. Treated in this way, we can internalize the breadth of our world and civilization, and are the richer for it.

Yet as rich as interdisciplinary study and research can be, it fails to integrate the "vertical" dimensions of human experience and inquiry, of human aspiration and action. It's as if one were content with the geometry of Flatland, blithely unaware of a missing dimension to space. Higher education should include both labors of ascent (anodos) and descent (kathodos), as well as the complementary modalities of vita contemplativa and the vita activa, which comprise the largely neglected vertical dimension to education whose absence is so lamented by Lewis and Kronman among others. What are the distinguishing features of the vertical dimension, why are they significant, and how does one integrate them into higher education? Here I believe we find a special role for contemplative pedagogy in higher education.

True insight requires the student or researcher leave the constraining cave of everyday conventional thought in order to see more clearly and by a new light. One labors not only to understand but to create, for here is the place of the new. While we cannot engineer creativity or manufacture insight, we can ask after the conditions, practices, and capacities that support innovation and insight. The conditions for creativity are several, but three of the most important are the ability to engage with paradox or contradiction, and to sustain that engagement over long periods of time, and to nurture the moment of insight so as to bring it into a lucid mathematical form. In the genesis of both the special and general theories of relativity, we witness a

classic instance of these three conditions and their relation to the contemplative and reflective dimensions of research.

Einstein tells us that the sought for "principle [of relativity] resulted from a paradox upon which I had already hit at the age of sixteen" Thus ten years before discovering the principle of relativity, he began to think about pursuing a beam of light at the speed of light. He wondered what would a light wave look like in such a situation? Could he catch up with light, rendering it stationary? But that would be in direct conflict with the recently established theory of electromagnetism by James Clerk Maxwell. This was the contradiction he contemplated for the next ten years and that led to his discovery of special relativity.

The general theory of relativity was likewise born of a paradox, what Einstein called "the happiest thought of my life." Sitting in his chair in 1907 at the Bern patent office, he suddenly wondered how he could distinguish between himself sitting in his chair in the gravitational attraction of the earth, and being accelerated up. As he pondered the two situations, it seemed like the two different situations would be indistinguishable experimentally. Billions of people sit in chairs every day without having this thought! Or, consider the opposite situation. If he, Einstein, were to fall off a tall building, gravity would literally disappear as far as all experimental effects could determine (at least until he hit the ground!). This has become enshrined as the "equivalence principle" in physics gravity and acceleration are "equivalent." But it would not be until 1916, nine years later, that he would find a way to complete

his general theory of relativity. The circumstances of his final resolution to the problem are remarkable and valuable to us in our considerations of higher education in support of the creative act.

At a 1931 dinner party in Charlie Chaplin's Beverly Hills residence, Albert Einstein's wife Elsa gave the following report on the days in 1916 prior to Albert Einstein's discovery. Elsa's story is recounted by Chaplin in his autobiography.

The Doctor cae down in his dressing gown as usual for breakfast but he hardly touched a thing. I thought something was wrong, so I asked what was troubling him. "Darling," he said, "I have a wonderful idea." And after drinking his coffee, he went to the piano and started playing. Now and again he would stop, making a few notes then repeat: "I've got a wonderful idea, a marvelous idea!" I said: "Then for goodness' sake tell me what it is, don't keep me in suspense." He said: "It's difficult, I still have to work it out."

She told me he continued playing the piano and making notes for about half an hour, then went upstairs to his study, telling her that he did not wish to be disturbed, and remained there for two weeks. "Each day I sent him up his meals," she said, "and in the evening he would walk a little for exercise, then return to his work again.

Eventually," she said, "he ca down from his study looking very pale.

'That's it,' he told me, wearily putting two sheets of paper on the table. And that was his theory of relativity."

Sustained Voluntary Attention

In these accounts of Einstein's acts of creative genius, we can discern three aspects which I would suggest we can cultivate in ourselves and in our students through contemplative exercises. The first is the capacity for *sustained voluntary attention*. That is, one strengthens the ability to direct one's attention to a topic, thought, object or question of one's choosing, and sustains that attention for long periods of time. The founder of scientific psychology William James wrote in *Principles of Psychology*,

The faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will....

An education which should improve this faculty would be *the* education *par excellence*. But it is easier to define this ideal than to give practical directions for bringing it about.

Indeed, our attention does wander over and over again. And William James was right in his assessment that "the education which should improve this faculty would be the education *par excellence*." The challenge of giving practical directions for the cultivation of attention is one that many professors have taken up in recent years. They have been making use of the contemplative exercises of mindfulness on a simple object (for example, a paper clip) or process (for example, the breath) as a

means of strengthening attention. In recent years, neuroscience research has convincingly demonstrated that contemplative practice of this kind can enhance attention. Improved attention is of obvious value in all academic contexts, and for life more generally, and so well worth including in our pedagogy starting at least in the high school years and extending on into college.²

Since 1997 the academic program of the Center for Contemplative Mind in Society (www.contemplativemind.org) has been working with many hundreds of professors and university administrators developing the field of contemplative pedagogy. Each year through conferences, summer programs, retreats, and online resources, the Center has supported faculty in making their curricul and pedagogical methods more reflective and contemplative. In collaboration with the American Council of Learned Societies, the Center has awarded 158 Contemplative Practice Fellowships to professors in every type of academic institution. Recently the Center has founded the Association for Contemplative Mind in Higher Education (www.acmhe.org). This is a professional association which allows colleagues from colleges and universities around the world to interact with each other and share their writings and ideas. The Center also commissioned a review of the research into contemplative pedagogy relevant to higher education.

-

¹ For further information see Richard Davidson's Center for Investigating Healthy Minds, http://www.investigatinghealthyminds.org/. Clifford Saron at the U. C. Davis Center for Mind and Brain, the Shamatha Project, http://mindbrain.ucdavis.edu/labs/Saron/shamatha-project, and B. Alan Wallace, Santa Barbara Institute, http://www.sbinstitute.com/research.html.

² ee The Association for Contemplative Mind in Higher Education, <u>www.acmhe.org</u>.

Nearly every area of higher and professional education is now being taught

with contemplative exercises for the training of attention from poetry to biology,

from medicine to law. There is fast growing appreciation contemplative pedagogy

that makes extensive use of secular contemplative exercises for stress reduction, for

general capacity building (such as strengthening attention or cultivating emotional

balance), as well as subject-oriented practices designed for a particular class. For

example, the contemplative art of "beholding" in art history and compassion

practices that shift game theoretical outcomes in an economics class are both being

taught at Amherst College. An interesting recent example of the uses of mindfulness

training has arisen within the context of leadership and leadership education. The VP

for Public Responsibility and Deputy General Counsel at General Mills Janice

Marturano has been offering mindfulness as part of a leadership training course for

some time.³ Following her 7-week course, Mindful Leadership@Work, (40+

respondents) she recently surveyed participants pre- and post-course asking:

• I am able to be fully attentive to a conversation.

Pre-course: 26%, Post-course: 77%

• I am able to make time on most days to prioritize my work.

Pre-course: 17%, Post-course: 54%

• I am able to notice when my attention has been pulled away and redirect it

to the present.

³ Janice Marturano, The Center for Mindful Leadership,

http://www.umassmed.edu/cfm/mindfulleadership/index.aspx

14

Pre-course: 23%, Post-course: 67%

Along this line, faculty conversations and some efforts at integration of the contemplative in leadership education have begun among a group of Boston area educators meeting at Harvard University.

Sustaining Contradictions

In addition to sustained voluntary attention, Einstein was able to productively engage paradox and contradiction. Recognizing the value of these, Niels Bohr once remarked, "How wonderful that we have met with a paradox. Now we have some hope of making progress" We normally avoid paradox, but like a Zen master working with a koan, Einstein sought out contradictions and worked with them for years until finally they resolved themselves. Importantly, the resolution was only possible at a higher level than that of the paradox itself. If we are limited, for example, to classical notions of space, time, and matter, the paradoxes that lay at the root of Einstein's theory of relativity persist. Only by fundamentally reconceiving the very nature of these fundamental aspects of reality do the paradoxes resolve, but only if we are willing and able to make profound psychological and ontology changes to our world view. To make such profound ontological shifts requires an extraordinary freedom of thought, one where the conventional patterns and habits of thinking are broken and replaced by a new and more fluid conception of reality. The contemplative traditions have long maintained that the exercises they have developed are designed for exactly this purpose, that is, to free the mind from is

habitual and mistaken conception of the world and the Self. Contemplative exercises are now being adapted and used in completely secular settings in thousands of classrooms to this end.

To be concrete, in the case of relativity, we learn for example that the lengths of moving objects are foreshortened, that moving clocks run slow, and that the notion of now, that is, simultaneity, is different for different states of motion. As a consequence, the notion of *primary qualities* such as length and mass, as properties inherent to things themselves a view which has been common view since Galileo, Descartes, Locke, and Newtonis undermined by Einstein's theory of relativity. In the language of David Bohm, objects and their interactions have been replaced by events and processes. Analytical meditation works with a sequence of thoughts that leads to an insight of the type encapsulated by Bohm. One then pauses to dwell on such insights, allowing them to sink in, to be fully appreciated. One moves in this way between what are called "analytical meditation" and "calm abiding."

Cultivating attention usually begins on a single simple object, be it a paperclip or the breath. Strengthening concentration is certainly a good thing, valuable in every subject area. However, sustaining attention in the absence of easy clarity, which is the situation of paradox or contradiction, requires another level of contemplative engagement. To these two stages is added a third, that of contemplative insight or knowing. In the account given by Einstein's wife of the discovery of general relativity, we see Einstein holding open the time of creativity by

playing the piano or, in other instances, his beloved violin, followed by an intensive period during which the elusive ideas are cast into equations and words.

The contemplative practice of open receptivity is well-know and has been the subject of research in the emerging area of contemplative neuroscience. Lutz, Slagter, Dunne, and Davidson at the University of Wisconsin in Madison have made a careful study of the contrasting contemplative states of *focused attention* and *open monitoring*. I view the capacity for open monitoring as important for the creative dimension of research and scholarship.

Conditions for Creativity and Insight

Scholars of creativity and insight distinguish four phases. The first is *mental preparation* which consists in confronting the paradox or contradiction at the root of the problem in a serious and sustained way. The second phase is *incubation* during which time one moves between active struggle with the problem and disengagement. The third phase is *illumination*, at which moment a flash of insight appears, one that must be grounded or held. In his discovery of quaternions, for example, the mathematician William Rowan Hamilton was walking across the Broom Bridge in Dublin with his wife. Suddenly a problem he had long studied was solved. Knowing how elusive such solutions can be, Hamilton carved the crucial identity into the wooden railing of the bridge with his penknife. The final fourth phase is *verification*. After all, insights can be mistaken.

In a 1904 essay, Poincaré was aware of these stages and drew special attention to the means by which we see the new. He wrote, t is by logic we prove, it is by intuition we inventIn 1908, he concluded that logic, therefore, remains barren unless fertilized by intuition. To make geometry, or to make any science, something else than pure logic is necessary. To designate the something else we have no word other than *intuition*" Albert Einstein would say it this way, There is no logical path leading to these laws [of nature], but only intuition, supported by sympathetic understanding of experience The historian of science Arthur Miller recognized that only Albert Einstein was willing to undertake the labors of ascent required to resolve the conflict between mechanics and electrodynamics. Einstein, alone, was willing to *redefine* the concept of intuition to a level of abstraction higher than in the mechanics and electrodynamics of 1905

While discovery always contained in it elements of genius and grace, higher education can nonetheless prepare the ground and provide the conditions for creativity and insight. For example, contemplative exercises come in two types. The first strengthens concentration on a single simple object or later on paradox, but a complementary exercise schools open awareness. In open awareness one releases the object of concentration from the mind and sustains a lucid yet undirected, receptive mental state. The movement between concentrated attention and open awareness is much like the required movement between the two phases of mental preparation and incubation described above. By practicing this pair of contemplative exercises,

student or researcher becomes accustomed to the inner cognitive movement or rhythm of attention required for creative insights. It is a pedagogy for creativity.

The Descent

Insights are barren unless you can make them real. It may take two weeks in isolation to find the means of expressing what you have seen intuitively in an instant, as was the case for Einstein's general theory of relativity. When Hamilton discovered quaternions he immediately realized that the next few years would be spent in working out the implications.

Parallel with his work in physics, Einstein was a lifelong advocate for peace, and viewed the cultivation of everwidening compassion as one of humanity's greatest tasks. In the language of the Stoics, Einstein was committed to expanding "his circles of affection" and so treated those around him as he would his own family and kin. Einstein also saw this as the high aspiration of humanity.

The human being is a part of a whole, called by us "the universe," a limited part in space and time. He experiences himself his thoughts feelings as something separated from the rest... a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few people

⁴ See Hierocles (100 AD), as drawn from Stobaeus (4.671,7-673,11)

[&]quot;Each of us is, as it were, entirely encompassed by many circles, some smaller, others larger, the latter enclosing the former on the basis of their different and unequal dispositions relative to each other..."

nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty. (Cited in Calaprice, 2005, p. 206)⁵

A college education is as much about embodying what we learn as it is about the learning itself. How is it we make what we know fruitful for others? Our students seek to wed knowledge with action, insight with ideals. The rise of centers for community engagement and service learning on countless campuses is testimony to students' interest and commitment to "making it real." In a recent conversation with a Gates scholar at Amherst College, I learned how each week for the last three years the student tutored those who, like him, grew up destitute and with little understanding of English. He plans on going on to become a physician; others will take up teaching, law, or business. In every vocation, moral issues will arise. How can we prepare our students for them?

In a recent gathering on leadership and the contemplative aspects of leadership education, Sandra Sucher of the Harvard Business School spoke eloquently concerning the course she teaches on Moral Leadership, a Harvard course initiated by the legendary teacher and activist Robert Coles. Through the case study method students are placed on the horns of a moral dilemma. The financial realities of the case press forcefully in one direction, while ethical and perhaps even legal considerations point in a very different direction. When presented vividly, which is

_

⁵ Letter of 1950, as quoted in *The New York Times* (29 March 1972) and *The New York Post* (28 November 1972). version in *The New Quotable Einstein* by Alice Calaprice

to say *experientially*, the struggle of students to discern the right way forward can be very real. What becomes completely clear is that leading a business, which many of Sucher's students will ultimately do, entails far more that financial analysis or people skills. If we pause to consider the deep foundations of vocation, we find that personal character and moral discernment are of enormous importance. Whatever we can do as educators to support the development of character and discernment among future business leaders will be an investment that repays society handsomely in the form of a trustworthy business community, something whose value has never been more evident than today. Is the practice of medicine, law, government service, teaching, scientific research ... any different? Do they not also rest on the same moral foundations?

The contemplative practice known as "loving kindness" is a powerful way of expanding our "circles of affection," or in Einstein's words, "widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty." In this exercise one practices sending generosity to three persons who represent a class of those we know: close mentors or friends, strangers, those with whom we have difficulty.⁶

If ethics forms the foundation for right action in one's disciplinary or vocational field, then it seems to me that the aspiration toward an ideal is the star

⁶ For instruction in this practice see: http://www.contemplativemind.org/practices/subnav/kindness.htm

high above by which students (and their teachers) seek to orient their lives. The aspiration to lead lives of meaning, purpose, and commitment is not passé. According to recent research by the Higher Education Research Institute at UCLA, half of students entering college declare that "to find my purpose in life" is a very important reason for attending college, and the percentage rises to 80% if one includes those who say it is a least a "somewhat important" reason. The same research finds that "two-thirds of new freshman say that it is either very important or essential that college helps you to develop your personal values and enhances your self-understanding." These data confirm that students arrive on campus hoping their teachers and courses will help them to find purpose, enhance self-understanding, and develop personal values. As Lewis and Kronman state, too often as faculty we avoid these issues and fail to meet students' expectations, whose hopes I think are fully legitimate.

An Integrative Education

An integrative education is, as said at the outset, multidimensional. It includes the breadth of multiple perspectives and disciplines, but in a way that is not limited to simple juxtaposition Instead, it proceeds in a manner that incorporates the varied perspectives of the literature and our colleagues into our own view. We live not only our original view, but the multiple views of others, synthesizing them. In the

geometry of integrative education, this forms the broad horizontal plane of our public inquiry and discourse. To be complete, however, we need to include in our education a crucial vertical axis, one that allows for both ascent and descent. The ascent takes place through varied forms of contemplative practice. We learn to sustain our attention even in the face of paradox and contradiction with profound equanimity, and when insight arises, we know how to draw it steadily to us, finding the language and concepts that will allow it an active life. We may make use of analytical meditation and calm abiding. The final dimension of an integrative education is that of moral or altruistic action supported by compassion practices.

Insight can remain barren or even harmful (think of Einstein's E=mc² and the atom bomb), without an adequate moral foundation or ideals by which to lead a life.

The broad horizon of knowledge available in our colleges, universities and professional schools will thus be joined to the cultivation of students' capacities for attention and emotional balance, and with a contemplative epistemology that leads to insight and a moral commitment to action guided by one's ideals. Contemplative pedagogy will become, in my view, an essential component of a truly integrative education and will lead to a more reflective academy that responds to Wendell Berry's ideal of the university as a place committed to aiding in the full development of the whole human being.