

Report from the Co-Directors

David Mitchell and Douglas Gerwin 3

From the Editor

Stephen Keith Sagarin 5

Sleeping on It:

The Most Important Activity of a School Day

Arthur Auer 7

Advantages and Disadvantages of Brain Research for Education

Christian Rittelmeyer 17

What Makes Waldorf, Waldorf?

Stephen Keith Sagarin 25

Love and Knowledge:

Recovering the Heart of Learning through Contemplation

Arthur Zajonc 33

Teachers' Self Development as a Mirror of Children's Incarnation:

Part I

Renate Long-Breipohl 43

Of Seeds and Continents:

Reliability, Predictability, and Scientific Knowing

Michael D'Aleo 51

Work of the Research Fellows

Honest, Complete Assessment and Social Renewal: A Revolution

—Patrice Maynard 55

Crisis in the Kindergarten:

Why Children Need to Play in School

—Joan Almon 59

Henry Barnes and Waldorf Education: A Personal Tribute
—Douglas Sloan 63

Letter to the Editor 65

Reports from Current Projects of the Research Institute

Teaching Sensible Science – Callisa O’Keefe 67

The On-Line Waldorf Library – Marianne Alsop 70

Research Institute Resources 71

Contents from Past *Research Bulletins* 73

About the Research Institute for Waldorf Education 77

Subscription 79

David Mitchell and Douglas Gerwin

Each year seems to be a bit busier than the last for the Research Institute, and the following tally of our recent, ongoing, and projected work supports this hypothesis.

Wide Reading for Work on Alternative Assessment

We have joined the debate on educational assessment and testing by presenting papers and information to the transition team of President Barack Obama. Also, the AWSNA outreach office has sent our paper, "Assessment without High-Stakes Testing: Protecting Childhood and the Purpose of School" (*Research Bulletin* Vol. XIII no. 2, Autumn/Winter 2008), to members of the congressional sub-committee on education. The paper will also be printed in the *Pacifica Journal* from Australia, New Zealand, and Hawaii. It has been translated into German for Swiss and German periodicals, and has been posted on the web pages of the European Council of Waldorf Schools and the Freunde der Erziehungskunst. It is also slated to appear in the winter edition of *Independent Education* magazine. The National Association of Independent Schools (NAIS) has placed the paper on its website, and a Russian translation will appear in the *Pedagogical Journal of Bashkortostan*. David Mitchell will travel to Moscow in late spring to speak about this research.

Teaching Sensible Science

To date, the Research Institute has co-sponsored three cycles of the acclaimed program, "Teaching Sensible Science," for class teachers in the upper elementary grades who wish to deepen their understanding and practice of phenomenological science. Two cycles have taken place on the East Coast and one on the West Coast.

We are currently surveying participants in this program to assess its lasting impact. Initial responses have been uniformly positive, with comments focusing on life-changing aspects of the course. In the words of one respondent, the course "will shake up, at least, or revolutionize, at best, your way of viewing the world."

"It inspired more than just my science teaching," another respondent reported. "I can imagine more subjects using this approach."

Asked to recall a moment in the course that had lasting influence, one East Coast respondent described "looking into the pond in the park in Saratoga Springs and seeing the watery world with fresh eyes, allowing preconceived notions to float away." Across the country, standing in another body of water, a West Coast participant recounted how, "standing ankle deep in the American River, I was able to understand how, by watching the eddies and currents, sensory-based science is the real path to knowledge."

A fourth cycle of "Teaching Sensible Science" is scheduled to begin in Saratoga Springs, NY, in 2009. Details are available from the Research Institute. Further reflections on this program by Michael D'Aleo, who, with three other Waldorf teachers, founded this course, can be found in this issue of the *Research Bulletin*.

More Research on Waldorf School Graduates

Another ongoing project of the Research Institute involves our survey that spans 60 years of Waldorf school graduates. Phase III of this survey, completed in the latter part of 2008 and available through AWSNA Publications, includes an analysis of data gathered in the previous phases, with a comparison of the North American survey and similar studies of Waldorf high school graduates conducted in Germany, Switzerland, and Sweden. A separate pamphlet, *The Results of Waldorf Education*, summarizes some of the chief statistical findings of the survey and reprints key statements from professors who have taught Waldorf school graduates. The booklet sold out its first printing and has been reprinted.

A final Phase IV of this graduate survey is planned to compare Waldorf school graduates with non-Waldorf graduates. This study will offer a first glimpse into how Waldorf school graduates compare to other populations with similar socioeconomic backgrounds, from both public and independent schools.

Sex Education for Waldorf Schools

During the 2002 Kolisko international conference of Waldorf teachers and anthroposophical health practitioners, a working group of physicians, nurses, counselors, and Waldorf teachers, including Douglas Gerwin, examined how sex education is conducted in Waldorf schools worldwide. Several participants reported on innovative approaches to this subject in schools around the world, but the overall impression remained that Waldorf schools are not doing an adequate job in this area of the curriculum. On the whole, with a few remarkable exceptions, Waldorf schools either ignore changes in this field or turn to manuals and curricula drafted outside Waldorf schools without regard to the developmental perspective that should underlie all aspects of Waldorf education.

From this conference, a group headed by the physicians Bart Maris and Michael Zech undertook a thorough review of this subject, which had resulted in a book, *Sexualkunde in der Waldorfpädagogik (Sex Education in Waldorf Schools)*. Prepared by leaders in medicine and education, this is a first sex education source book, for Waldorf school teachers. It brings together broad essays on the development of sexuality and specific practical suggestions on how the subject can be introduced in a developmentally appropriate way as early as fourth grade. Basic to this approach is the imaginative use of the arts—in particular, clay modeling—to bring students to a healthy relationship with their sexuality.

A first step in developing a comprehensive English language sex education program based on the principles of Waldorf education involves selecting and translating portions of the German book. Another step will be a survey of Waldorf schools in North America that have experimented with new and comprehensive approaches to this subject in the middle and upper grades of the elementary school and the first two years of high school. Interviews with experienced teachers about their approaches and a survey of older students will also form part of this research. This project will also collect material from non-Waldorf

sources that are consistent with the principles of Waldorf education, and gather Rudolf Steiner's indications on sexual development. Part of this research, too, will focus on the problems posed by the ever-earlier onset of physical puberty, on the one hand, and the apparent slowing of psychological maturation of young adults, on the other.

Other Projects

- Our collaboration with key individuals in Europe continues. Michael Holdrege will represent the Research Institute at a conference in Kassel, Germany, to advance phenomenological science in Waldorf schools.
- Rudolf Steiner College recently hosted a colloquium, co-sponsored by the Research Institute, that focused on Waldorf school physics curriculum; a proceedings will soon be available through AWSNA Publications.
- Anne Greer's long-awaited book, *The Power of Grammar*, arising from her stimulating colloquium for high school English teachers, is now in print and available from AWSNA Publications.
- A study on parent volunteerism in Waldorf schools, guided by Martin Novom, is still gathering data. In order to increase the range of the data additional schools have been asked to survey their parents. We hope to have a report available later this year.
- The Research Institute has been awarded a grant to produce a new collection of electronic books. This will consist of books currently out of print but of significance for teacher preparation. We are eager to hear your thoughts on this project, including titles that you recommend we consider.

Stephen Keith Sagarin

“*T*eaching is so much more complex than I thought it would be,” said a friend, a writer and journalist who had guest-taught a course at a local college. He has children in school, he is a Steiner school trustee, and he has many friends who are teachers. He knows the value of good teaching, but he had not fully appreciated the many, many executive decisions that a teacher makes each day, the organization, preparation, negotiation, and decision-making that go into teaching.

Given, then, the even more complex job of a Waldorf school teacher—continual meetings, coming to terms with anthroposophy and Waldorf education, facing a different curriculum year after year—it may be easy to get lost in the details. We may feel we are dealing well with parents, faculty meetings, study, preparation, and our students. After the mononucleosis-inducing first year, we settle down, find a rhythm, and, possibly, begin to take our lives as teachers somewhat for granted. The pace of our work and its rewards may be enough to distract us from too much reflection. But the big questions—what is education, at root, and how and why do we do it?—don’t go away, and answers that may have satisfied us in our twenties may not satisfy us any longer. As more mature persons, we may seek more deeply for what it means to teach.

This search for essentials, this wrestling with deeper questions of education, is what several of the articles in this issue of the Research Bulletin have in common.

Arthur Zajonc, for example, asks: “What should be at the center of our teaching and ... learning?” He answers, “Love.” Taking examples from history and from his own teaching as a physics professor at Amherst College, Zajonc shows the value of loving engagement with and in our studies. Without this fundamental interest of interests, he demonstrates, our disconnection from the world and from meaning threaten to cripple us.

Christian Rittelmeyer tackles the subject of brain research and its implications for education, a broad and challenging topic. From neural plasticity to environmental sensitivity, brain research is a blossoming field, which has and will have many insights relevant for education. Everyone’s brain is different and each student deserves to be treated as an individual. On the other hand, we should not mistake a brain for a human being, and the metaphors we choose to describe ourselves and our children powerfully influence how we treat each other.

Similarly, Arthur Auer examines sleep research and its implications for education. Waldorf teachers may be behind the curve and justifiably skeptical of some of the claims made for the relevance of brain research to education, but they are more likely to applaud recent advances in sleep research that demonstrate the role of sleep in learning. Many of Steiner’s claims in this area remain to be validated empirically, but, increasingly, the complexity of sleep processes and their importance for teaching and learning demonstrate the prescience of Waldorf education.

Renate Long-Breipohl examines the “essentials” of early childhood education using the first four symbols of the zodiac as a guide to powerfully understanding children’s incarnation, growth, and development. The necessary self-development of early childhood teachers, who accompany young children on this journey, mirrors beautifully the development of young children. What occurs outwardly for children occurs inwardly for teachers. The images in this article of cosmos, children, and adults as part of one whole are beautiful and moving.

For several years, I have been working toward an understanding of Waldorf education, and the third of three articles on this topic, one that examines the essentials of what Waldorf teachers do, appears here. Based on Steiner’s work and the work of other Waldorf school teachers, and on reflection on my years of teaching, it attempts to

show that the heart or core of Waldorf education, separate from more temporal techniques and practices, has to do with creativity, properly understood.

Michael D'Aleo, a founder of the "Teaching Sensible Science" seminars, reflects on the value of and necessity for a qualitative, phenomena-based approach to science, one that appreciates interactions and relationships as much as statistical significance, correlation, and mechanical cause and effect.

The work of the Research Institute brings three responses in this issue. First, the work of the Institute on testing and alternative assessment provoked a thoughtful letter from Cat Greenstreet, who urges us to see the struggle against high-stakes tests as one that requires systemic change and that encompasses all children and schools. This work also provoked an article from Patrice Maynard, who illustrates a number of ways that Waldorf education, its light well hidden under a basket for some time now, may contribute to a "constructive revolution" in our ways of teaching

and learning. Third, Calisa O'Keefe, a participant in the "Teaching Sensible Science" course, writes about her experience in the program, coming to it from a background in mainstream science. She describes the ways in which her own perception and thinking have changed, as well as the ways in which her teaching has improved.

Finally, I would like to draw your attention to Douglas Sloan's brief memorial to Henry Barnes, life-long champion of Waldorf education, who long supported research in Waldorf education and the Research Bulletin. Henry died in 2008, but we will long remember him.

I am writing this in frozen February. Blue ice, iron-hard, coats the ground, covered by sheets of gritty white snow. The sun is shining, but the wind is bitter. And I read in Steiner's *Calendar of the Soul* that, roughly translated, "There will arise out of the world's womb, [my] senses quickened, joy in becoming." Turning to the essentials in our work is like breaking the hard ground from which seeds may sprout. Any day now.



If the strengthening of Waldorf education through research is important to you and you would like to give financial support to the the Research Institute to continue and to expand this work your contribution would be gratefully received. Please contact David Mitchell or Douglas Gerwin for more information at:

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Sleeping on It: The Most Important Activity of a School Day

Arthur Auer

"Morning is wiser than evening."

— Russian proverb

Sleep is such a regular and familiar activity that we can easily overlook its powerful presence and influence. When we examine it, however, sleep strikes us as mysterious. Picture us changing into special nightclothes. It is dark outside and we lie down on specially padded platforms. Many of us face heavenward with eyelids shut. In horizontal positions such as this, we spend roughly a third of every day—more when we are young or old, perhaps less in between—unconscious. Our breathing is altered and we pass through rhythmic periods of rapid eye movement. The realm of sleep sits like an enormous, mostly unnoticed elephant in the room of our lives. It has a huge impact on everything we do in our waking hours. In Waldorf schools, which have taken sleep into account since their inception, sleep is more than just resting for the next day; it is a matrix of all learning and teaching.

Sleeping on It

At the heart of Waldorf school methods is the practice of "sleep learning," pursued by both teachers and students. In the evening, as a regular part of preparing the next day's lessons, teachers review their experiences of each of their students and how the lessons went that day. They then carry these reflections and their lesson preparation into sleep—they "sleep on them"—along with all sorts of questions and aspirations for doing well the next day.

Students also conduct reviews, but theirs occur—consciously, at least—during the day. As an integral part of every morning lesson, they

recall and review, and may even discuss the previous day's lesson before proceeding to a new topic. Their experience of new material and activity and their anticipation of the next day's subject—stimulated by some words from the teacher—then follow them into sleep that night. They "sleep on" their impressions. The cycle begins anew the next morning, as they recapitulate and reawaken various aspects in conversation and in the creative activity of their cooperative learning communities.

...[S]leep is more than just resting for the next day; it is a matrix of all learning and teaching.

A daily rhythm that includes recall, review, and discussion is not just a key feature of a Waldorf school method of teaching and learning, but is, in my mind, the most important event in a school day. Recall and review also constitute the most chal-

lenging parts of a lesson to orchestrate, sustain, and transform artistically, especially as students grow older.

Sleep Learning as a Powerful Force in Building Intelligence

Modern sleep learning research received a real impetus in the early 1950s when Eugene Aserinsky, then a graduate student in physiology, electronically monitored his sleeping eight-year-old son Armond. One night he detected percolating wave patterns, rapid eye movements (REM), and a neural state of alertness even though the boy was still sleeping. Aserinsky's subsequent findings and paper in the journal *Science* set off decades of research on what he called REM sleep (associated with Rapid Eye Movement), the arena in which dreams appear to occur. This mysterious state of "awake sleeping," with slow wave deep sleep (SWS), has been found to be a font of inspiration and inner development.

In spite of all the studies exploring how we sleep, scientists still have to admit a half century later that we do not really know why we sleep. New technologies, such as brain scans, MRIs, and EEGs, and ever more ingenious psycho-physiological experiments, nevertheless have brought this research into an exciting new phase and, perhaps, a new threshold of discovery. In the first eight years of the twenty-first century, a cascade of studies has been converging to build a remarkable picture of how sleep enhances learning. Numerous articles summarize findings with such themes as “Sleeping brain, learning brain,” “Intellect thrives on sleep,” “Practice with sleep makes perfect,” and so on.

For a long time it was thought that sleep primarily enhanced “procedural memory,” which allows us to do repetitive things like knit or play the violin or keep a check book. Recent focus on the more elusive area of “declarative” or “informational” memory of such things as facts, vocabulary, and dates, indicates that this second kind of memory is also aided by sleep and is similarly pre-processed through the part of the brain called the hippocampus. “Sleep after learning aids [declarative] memory recall,” as one study expressed it.¹ The hippocampus is the part of the brain associated with short-term memories. The neo-cortex “tunes in” to the hippocampus’s process and is associated with capacities to judge which short-term memories are useful for long-term memory, skills, capacities, and conscious thought.

Added to this growing picture of sleep-enhanced memory are studies on the highly unusual manner in which the hippocampus and neo-cortex process memories. Investigations show that these parts of the brain apparently replay memory data over and over again, recapitulating them in backward order.²

Several other studies have found that sleep enhances learning not just by providing more mental energy for memory—which makes obvious sense—but more significantly by giving the brain

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the “down time” to mysteriously sort out and consolidate the disparate memory data of a day’s impressions and even to reconfigure them into “bigger pictures.” A state of sleep seems to be particularly favorable for brain plasticity, that is, for flexible reshaping of experiences. The new mental combinations that result are then utilized not only in more effective memory, but also in achieving

s spurts and breakthroughs in learning on the day after a night’s processing—or even after naps, as well. In one study, for example, researchers posed mathematical problems in which hidden rules and shortcuts could be discovered. The research team concluded that “sleep inspires insight”:

Insight denotes a mental restructuring that leads to a sudden gain of explicit knowledge allowing qualitatively changed behavior. Anecdotal reports on scientific discovery suggest that pivotal insights can be gained through sleep. Sleep consolidates recent memories and, concomitantly, could allow insight by changing their representational structure. [In our study] we show a facilitating role of sleep in a process of insight. ...More than twice as many subjects gained insight into the hidden [mathematical] rule after sleep [than] after wakefulness, regardless of time of day. ...We conclude that sleep, by restructuring new memory representations, facilitates extraction of explicit knowledge and insightful behavior. ...Sleep more than doubled the probability of gaining insight into the hidden rule compared to wakefulness.³

Sleep thus enriches our minds and entails an activity that is creative, solves problems, and produces new mental syntheses of our inner and outer experiences.

Education as Learning to Sleep and to Breathe Properly

For more than two decades at the beginning of the twentieth century, Rudolf Steiner carried out research on many different facets of sleep and found that this mysterious feature of human behavior is a key to education. The central goal of the method he created is to help children “learn to breathe and to sleep properly.”⁴ For Steiner, sleep is also a breathing—a “breathing out” of the soul at night and a “breathing in” of the soul each morning. The right educational practice can profoundly influence how children breathe on many levels—not just physically, but, more widely, with their senses and feelings and in their interactions with other human beings. Sleep can assist students as they grow older in learning how to more effectively process their daily experiences in sleep. For Steiner, proper rhythms in sleeping and breathing, and in a child’s daily activities in general, are critical to healthy incarnation and development. Universal rhythms are nature’s way of enabling the soul and spirit to gradually and organically grow into the life of the body, take hold of and fit into it. Education, above all, needs to have rhythm at its heart.

Of fundamental significance for learning, according to Steiner, is the ego’s rhythm⁵ from one waking day to the next, with the night’s sleep in between. In this two-day rhythm he observed that what is experienced on the first day continues to “vibrate” in the soul at night. What is more, the soul goes over its experiences and “between falling asleep and waking, the human being actually experiences a kind of reversed repetition of what she or he carried out during the day.”⁶ This recapitulation, he found, has a balancing (*ausgleichend*) effect and helps in the digestion, consolidation, and remolding of experiences into essential learning. Steiner’s description of reversed recapitulation accords with recent studies of hippocampal and neocortical replay in the brain.

In addition to this reversed recollection, according to Steiner, our day’s experiences undergo other complicated transformations in sleep.⁷ The human soul, he claims, traverses “three

states” of unconsciousness⁸ in which it works at learning and at making earthly experiences its own (*aneignen*):

[Experiences] are transformed [into ability and wisdom] by being taken in their immediate form into our sleep each night. ... There the experiences ... are changed into essences. ... If one wants to master or coordinate a series of experiences in a single sphere of activity, it is necessary to transform these experiences in periods of sleep. For example, a thing is best learned by heart by learning it, sleeping on it, learning it again, sleeping on it again.⁹

What is experienced during the day is reviewed, sorted, and prioritized with the most valuable and essential elements metamorphosed into long-term capacities. Above all, through the three stages of sleep, the soul regularly replenishes its three essential forces—willing, feeling, and thinking—with a counterpart of cosmic willing, feeling, and thinking forces that can be tapped only in sleep:

Every night on going to sleep our souls take with them something from daily life. ... [T]he fruit of our experiences ... is transformed during sleep in such a way that it becomes our abilities and capacities. [For example], all our earlier efforts to shape the letters have been transformed [in sleep] into the capacity to write. ... Forces higher than those available in our conscious life become available during sleep; experiences are transformed into faculties and the soul becomes more and more mature. ... We bring out of sleep much more than we brought into it through our conscious experiences. During the day we use up forces by participating in what is going on around us. In the evening we feel fatigue because these forces are exhaust-

ed, and during sleep they are replenished. ...[Sleep] is therefore the source of innumerable forces we need for waking life. ...[T]he [universal] forces which have streamed into [the soul] the whole night long ... [are akin] to its own three inherent forces: ... Will... Feeling... Thinking.¹⁰

Sleep is the great shaper of experiences into learned capacities and the great harmonizer of thinking, feeling, and willing into a human balance. Taking this state of unconsciousness into account and working with it constitutes the heart of Steiner's method and curriculum. Children, according to Steiner, only gradually learn to bring a day's experiences effectively into sleep and then fruitfully back into waking life.

However, there is something else [besides breathing] that children cannot yet properly do, and we must address this in order to create harmony between two parts of the human being, between the temporal body and the spirit-soul. The other thing children cannot yet properly do at the beginning of their earthly existence ... is to complete the transition between sleeping and waking in a way appropriate to human beings. At a superficial level we can, of course, say that children sleep quite well. They sleep much more than older people do. They even sleep into life. However, the child is not yet capable of the inner basis of sleeping and waking. Children experience all kinds of things in the physical plane. They use their limbs, they eat, drink and breathe. However, because they experience so much in the physical plane—what they see and hear, and what they do with their arms and legs—when they go from waking to sleeping, they cannot take everything they have experienced physically into the spiritual world, process it there and then bring the results of this work back to the physical plane.

Children's sleep differs from the sleep of an adult. Normally, adults process their waking experiences during sleep. Children cannot yet carry their waking experiences into sleep. Thus, in sleep they settle into the general universal order without taking their physical experience into the universal order. Through proper education, we must bring children to the point that they can carry their experiences in the physical plane into what the soul-spirit does during sleep. As teachers, we cannot give children anything from the higher worlds. What human beings receive from the higher worlds comes to them during sleep. All we can do is use the time children spend in the physical plane to help them gradually become able to take what we do with them into the spiritual world. Then, what they carry in can flow back into the physical world as strength, strength they can bring from the spiritual world to become real human beings in physical existence.¹¹

Up to school age, children's consciousness is relatively dreamy or sleepy and is still in a paradise-like unity with the world. Waking blends into sleep in a kind of natural continuum. Around the first dentition, children generally develop a new memory capacity that generates less dreamy mental images and begins to form and differentiate a deepening inner soul space. Around the ages of 9 or 10, this growing inner world reaches a point at which children feel acutely separate from the world. They see things more graphically and critically and their mental pictures acquire sharper contours. Because they are able to experience themselves as increasingly separate from the world during the day, they are increasingly able in sleep to differentiate and sort out the more vivid aftereffects of daytime experiences. This process is intensified by the fact that their soul body—though not emancipated until around 14—is gestating and gradually forming basic powers of feeling and discernment that will ripen into the capacity for judgment in high school and adult-

hood. The incarnating soul body and ego play a growing role in sleep in sorting out, evaluating, and judging impressions of the day. This is reflected in brain development in that the hippocampus processes immediate experiences that the maturing neo-cortex then helps the soul to form into capacities of the human spirit.

When a young child sleeps, its soul and spiritual members leave the physical sheaths—just as happens to a grown-up person—and they reenter the body during the moment of waking. But in the case of the child there is as yet no great difference between the conscious experiences in the waking state and the unconscious experiences during sleep. Under normal conditions, that is, if no reminiscences of what happened during the day enter the child's world of sleep—and this hardly happens in childhood—the child's life of sleep moves about in spheres lying far beyond the earthly realm. It is from these higher worlds that the active forces are drawn which, during the waking state, work from the brain downwards into the child's entire organism. During the second dentition, certain soul and spiritual forces in the child are released from working entirely in the organic sphere. They begin to assume an independent soul and spiritual character. Between the change of teeth and puberty the child develops a freer thinking, feeling and willing than was the case previously. No longer is it only an imitator, but through its natural feeling for authority, it develops the degree of consciousness necessary for it to make contact with the world. ... As a consequence, more and more experiences from the child's waking state will enter his (or her) soul and spiritual life also during sleep. And to the same extent to which earthly experiences enter its sleeping state, replacing those of the spiritual world, is the possibility given to us teachers to reach the child

between the change of teeth and puberty through our educational endeavors.¹²

Pedagogical Advice

Steiner gives helpful advice in several lectures on how to reach children in this gradual sleep learning process as it evolves from elementary through high school. The first step for teachers is simply to imbue themselves with an ever-expanding awareness of the significance of sleep: "A true teacher is concerned not only with the waking life but also with what takes place during sleep."¹³

Further: The effectiveness of teaching comes from the thoughts the teacher has had during the entire time of his or her existence and brings into the classroom. A teacher concerned with developing human beings affects the students quite differently from a teacher who never thinks about such ... thoughts ... as the cosmic meaning of the breathing process and its transformation through education, or the cosmic meaning of the rhythm between sleeping and waking.¹⁴

Second, with the mysteries of sleep in mind, teachers can benefit from engaging in continual observation, research, and practice that take the effects of teaching and sleep into account. Above all, according to Steiner, they need to notice how what they bring to the children on one day plays into the children's consciousness and seeks expression and engagement the next day.

Let us assume ... that the children are listening to a story you tell them, or that they are looking at a picture you drew for them on the blackboard, or that they are looking at a diagram of an experiment, or that they are listening to a piece of music you play for them. ... [W]hat you are inserting into the children in a roundabout way through the physical [body]—be it through the eyes, the ears, or the comprehending intellect—everything that is thus placed into the

children very soon assumes a quite different form of life. The children go home, they go to bed, they go to sleep. . . . What you did with the children . . . continues [outside their life and physical bodies and] in the soul body and the ego [which have lifted off into] a quite different environment. They experience something that can be experienced only during sleep, and everything you taught the children participates in the experience. The effects of the lesson that remain in the soul body and ego are part of the experience during sleep. . . . The children will present to you on the following morning the results of what they experienced between falling asleep and waking.

. . . Everything that has been impressed on them continues during sleep to vibrate in them. Ego and soul body actually repeat—in the more intricate and spiritualized way peculiar to their nature—what they experienced. . . . They repeat all of it. And what they thus experience during sleep, this the children take with them to school on the following day. The children incorporate the experience into their life and physical bodies, and we have to reckon with that. Considered in totality, the human being presents an extraordinarily complicated structure for us to come to terms with in our lessons.¹⁵

Having to reckon with and accomplish a positive influence on this day-to-day process becomes a teacher's primary intuitive quest. On the one hand, how are we to engage children in wholesome activities so that these experiences "vibrate" to good effect in sleep? On the other hand, how, on subsequent days, are we to "draw out" the insight and fruits of this consolidation and transformation to the benefit of each child?

The effects of artistic activity are particularly illumined by Steiner's example of how eurythmy affects sleep:

Let us consider a child who is doing eurythmy. The physical body is in movement, and the movements of the physical are transferred to the life body. . . . [T]he activities of the physical and life bodies are impressed on [the astral body and ego]. Soul body and ego then separate during sleep and connect the impressions to spiritual forces that are quite different. On the following morning, soul body and ego return the impressions to the life and physical bodies. We can then see a remarkable harmony between that which was received from the spiritual world during sleep and what the life and physical bodies experienced during eurythmy. The effect shows itself in the way the sleep experiences adjust to what was prepared and carried out on the previous day. It is only in this complementing of the physical nature and life by the spiritual that we can see the special healing element of eurythmy. Indeed, spiritual substantiality is brought to the human being upon awakening in the morning after a day including eurythmy.¹⁶

Steiner similarly describes the effects of geometry and form drawing:

Geometry [including form drawing] . . . harmonizes with every part of the human being. . . . By virtue of its own inherent vibrational forces [our body of formative life forces] . . . has ever the tendency to bring to perfection and elaborate what has been brought to it. . . . During sleep [it] continues supersensibly to [vibrate and] calculate, continues all that it has received from arithmetic [geometry and form drawing]. . . . For example, we draw some figure on the blackboard . . . and indicate the beginning of a symmetrical line. Then we try to make the child realize that the figure is not complete and by every possible means to get the child to complete it out

of himself. In this way we activate an inner active urge. ...The child will wake in a life body—and a physical body also—inwardly and organically stirred into activity. He will be full of life and vitality. A true teacher is concerned not only with the waking life but also with what takes place during sleep. In this connection it is important to understand certain things that happen to us all now and again. For instance, we may have pondered over some problem in the evening without finding a solution. In the morning we have solved the problem. Why? Because the life body, the body of formative forces, has continued its independent activity during the night. In many respects waking life is not a perfecting, but a “disturbing” process. ...What is to be striven for ... is to assist the continued activity of the etheric body during sleep.¹⁷

Through form drawing, a child performs a process that her life body then continues to perform to greater perfection in sleep. Her life forces are challenged and healthily invigorated in a creative fashion.

Here is another example from singing and making music:

When we let a child sing, the essential activity is that of the life body. The astral body must strongly adapt to this activity and [then take] it into the spiritual world. The soul body returns, and what it brings back again expresses itself in effective healing forces. We may say that in eurythmy we have a force that mainly affects the health of the child's physical body, while in singing a force expresses itself that mainly affects the child's mechanism of movement and, through movements, then again the health of the physical body. ...[The children] take [the singing experience] into the spiritual world during sleep. On the

following day we let them listen to music—we let them listen to rather than make music. What was done on the previous day is then consolidated in the listening to music—an extraordinary healing process. You can see that under ideal conditions—that is, a curriculum structured to adapt to the conditions of life—we can affect the children's health in an extraordinary way.¹⁸

Here, Steiner gives specific pedagogical advice on how to add a daytime counterpart to carry further sleep's consolidation of the experience of singing and music. He recommends that making music on one day be complemented by listening to music on the next. Performance experience comes first and then sensory discernment and reflection come next. This principle of reversal or inversion of outer action to inner experience can be applied to other activities as well.

Steiner gives further indications on how to reckon with the transformative effects of sleep on other subjects. In physics, for example, he advises that a teacher sequence two days of lessons so that a teenager's life processes are taken into account. He recommends that the teacher first make an experiment so engaging that:

The whole of the human being is occupied [and] is asked to make an effort. ...I then draw the children's attention away from the instruments I experimented with and repeat the various stages. Here I am appealing to their memory of the direct experience. During such a review or recapitulation—without the presence of the apparatus, purely in the mind—the rhythmic system is especially enlivened. After having engrossed the whole of the human being, I now appeal to the rhythmic system, and to the head system, because the head naturally participates during recapitulation. The lesson can then be concluded. ... I dismiss the children. They go to bed and sleep. What I activated in the whole of their being,

then in their rhythmic system, now during sleep continues to live in their limbs when soul body and ego are outside the physical body. Let us now regard what remains lying on the bed, what allows the content of the lesson to keep on working. Everything that has developed in the rhythmic system and the whole of the human being now streams upward into the head. Pictures of these experiences now form themselves in the head. And it is these pictures that the children find on waking up and going to school. ...When the children arrive at school on the following morning they have, without knowing it, pictures of the previous day's experiments in their heads, as well as pictures of what—in as imaginative a way as possible—I repeated, recapitulated after the experiment. ...And I shall now reflect on yesterday's lesson in a contemplative way. Yesterday I experimented, and in reviewing the experiment I then appealed to the children's imagination. In today's lesson I add the contemplative element. In doing so, I not only meet the pictures in the children's heads, but also help to bring the pictures into their consciousness. ...On th[is second] day, we discuss the previous experiment, contemplate it, reflect on it. The children are to learn the inherent laws. The cognitive element, thinking, is now employed. ...If I were to immediately start with a new experiment, without first nourishing them with the cognitive, contemplative element, I would again occupy the whole of their being, and the effort they would have to make would stir up these pictures; I would create chaos in their heads. No, above all, what I must do first is consolidate what wishes to be there, provide nourishment. These sequences are important; they adapt to, are in tune with, the life processes.¹⁹

By having students briefly recapitulate the experiment in their imaginations on the first day, a teacher helps students start a process of mental picturing and consolidation that will rhythmically and emotionally affect what happens in their sleep. According to Steiner, a student's experience of an experiment streams up at night from limbs and heart, from the whole body, into picture-forming in the head. The next morning, the teacher builds on the mental consolidation and metamorphoses of the night. Students bring their evolving mental pictures to consciousness in a review or discussion and take hold of them cognitively in words. New insights arise as students engage in contemplation of what they have experienced. They practice discernment in thinking and come to their own judgments and concepts. By coming back in this way to the same subject they have slept on, they anchor new knowledge and new capacities in their souls more firmly and organically. The progression here is from whole body experience and action, through rhythm and repetition, to contemplation and concept development—from limbs to heart to head.

Such a sequence during the day mirrors aspects of what transpires in sleep itself—recapitulation, memory consolidation, and insight and concept formation. It has its reflection in the organic progression in the brain of the raw memory of experience being processed first in the hippocampus and then subjected to the faculty of judgment and conscious thinking focused in the neo-cortex. This meaningful sequence is nourishing to the mind and soul and avoids “creating chaos in [students'] heads.” Before going on to a new experiment and experience, the soul wants more deeply to digest and come to terms with what it has been mulling. A rhythm of action, contemplation, and new action is in keeping with life processes, and vibrates healthily in the soul in sleep. This rhythmic learning and teaching, breathing and sleeping, is salutogenic, that is, health producing.

Steiner applied this salutogenic sequence also to history teaching:

I give the children the mere facts that occur in space and time. The[ir] whole being is again addressed just as during a [physics] experiment, because the children are called upon to make themselves a mental picture of space. We should see to it that they do this, that they see what we tell them, in their minds. They should also have a mental picture of the corresponding time. When I have brought this about, I shall try to add details about the people and events—not in a narrative way, but merely by characterization. I now describe and draw the children's attention to what they heard in the first part of the lesson. In the first part, I occupied their whole being; in the second, it is the rhythmic part of their being that must make an effort. I then dismiss them. When they return on the following day, they again have the spiritual photographs of the previous day's lesson in their heads. I connect today's lesson with them by a reflective, contemplative approach—for example, a discussion on whether Alcibiades or Mithridates was a decent or an immoral person. I shall allow the three parts of the threefold human being [willing, feeling, thinking] to interact, to harmonize.²⁰

For Steiner, taking sleep and life processes into account goes beyond good school practice. It is key to enabling what is truly human to incarnate in each child through the balancing of thinking, feeling, and will. Working with sleep is critical to the healthy birth of human beings as free, creative individuals who are capable of independent thinking, heartfelt judgment, and morally responsible action:

The examples I have given you [from physics, history, and other subjects in relation to sleep] will illustrate the path our teaching must take if it is to connect to life conditions, to life impulses, in a

healthy way. We cannot be satisfied simply with mediating facts. ... We must see the human being in his or her totality, as a being who is also extremely active during sleep. ... [I]f we ignore the fact that the content of our lessons continues into sleep, develops further during sleep, we will have the quite definite effect of making the human being into a robot, an automaton. We could, indeed, venture to say that today's education is in many respects an education not toward humanness but toward the most obvious type of human automaton—namely, the bureaucrat. Our children are trained to become bureaucrats. Such people are no longer really human. They are fixed, they have an existence, they are finished. The human being is lost, is concealed behind the label. We have an appointment with an officer, be it a clerk or barrister, and it matters little who the actual person behind the label is.²¹

Lest we be overwhelmed by all the research, Steiner pointed out that the details of the sleep process are incredibly complicated and that a teacher cannot possibly know of all that is transpiring, nor need to, in order to teach and work fruitfully with the rhythms of sleep. Discoveries in neuroscience and other fields can confirm what teachers do out of pedagogical insight and instinct, but they cannot teach us how to teach. We best do that through meditation and sleeping on how best to serve the children in our care. In addition to who we are ourselves as teachers and developing human beings, it is our deeper meditative efforts that make our method and curriculum work.

Endnotes

- 1 S. Gais and Lucas Born, *Sleep After Learning Aids Memory Recall* (2006), www.learnmem.org/cgi/reprint/13/3/259.pdf. See also: N. Axmacher and others, *The Role of Sleep in Declarative Memory Consolidation: Direct Evidence by Intracranial EEG* (2007), www.cercor.oxfordjournals.org/cgi/content/abstract/18/3/500.
- 2 See www.nytimes.com/2006/12/18/science/18memory.html. See also: "Coordinated memory replay in the visual cortex and hippocampus during sleep," D. J. & M. Wilson. *Nature Neuroscience* 10, 100–107 (2007) and www.nature.com/neuro/journal/v10/n1/supinfo/n1825_S1.html.
- 3 Wagner, Gais, Haider, Verleger and Born, *Sleep Inspires Insight* (2006), see www.nature.com/nature/journal/v427/n6972/abs/nature02223.html.
- 4 R. Steiner, *Foundations of Human Experience*, (1996), pp. 40–44.
- 5 See M. Kranich (1992, p. 23). Waldorf teachers work with four main rhythms: Waking up each day is an "ego rhythm," as is the "sun rhythm" of Waldorf school main lessons that happen day after day. The weekly rhythm of such subjects as painting and modeling can be experienced as a "soul rhythm," the monthly rhythm of block unit studies is a "life body" rhythm, and the annual rhythm of seasons and festivals is a "physical body rhythm."
- 6 R. Steiner, *Geistige Zusammenhaenge in der Gestaltung des menschlichen Organismus*, CW 218, p. 272, cited in S. Leber 1996, pp. 85–86.
- 7 Trying to gain insights into and a comprehensive overview of the sleep process was, for Steiner, "some of the hardest scientific investigations of the spirit." See *Esoterische Betrachtungen karmischer Zusammenhaenge*, CW 236, p. 258. Cited in Leber 1996, p. 87.
- 8 Stefan Leber correlates Steiner's three conditions of sleep, as well as imagination, inspiration, and intuition, with the stages of sleep investigated by researchers today (REM, SWS, etc.). See his *Der Schlaf und seine Bedeutung: Geisteswissenschaftliche Dimensionen des Un- und Ueberbewussten (Sleep and Its Meaning: Dimensions of Un- and Superconsciousness in the Light of a Science of the Spirit)*, Freies Geistesleben, 1996. This study is an excellent source of most, if not all, of Steiner's findings on sleep in the light of modern research.
- 9 Steiner, 1983, *Metamorphoses of the Soul*, p. 59.
- 10 Steiner was ahead of his time in recognizing "multiple intelligences." In addition to thinking or head intelligence, he investigated heart or emotional intelligence, and will-developed or limb-based, hands-on intelligence. The Waldorf school method strives to balance and harmonize these three intelligences.
- 11 Steiner 1996, *The Foundations of Human Experience*, pp. 41–42.
- 12 Steiner 1986, *Soul Economy and Waldorf Education*, pp. 223–24.
- 13 Steiner 1972, *A Modern Art of Education*, p. 156.
- 14 Steiner 1996, *The Foundations of Human Experience*, p. 43.
- 15 Steiner 1996, *Education for Adolescents*, pp. 46–48.
- 16 Ibid, p. 48.
- 17 Steiner 1972, *A Modern Art of Education*, pp. 154–157. In sleep the life body continues to vibrate with the experiences of a child's less-than-perfect efforts at what could be called "challenge drawings." It is stimulated to repeat, perfect, and harmonize them in a more ideal form in another dimension and thus exercise and strengthen its powers, powers that are also the basis of memory and health. Interestingly, as Robert Stickold, of

Harvard Medical School, points out, "You learn things in pieces and then sleep smoothes them out." Steiner speaks of the "evening out (*ausgleichende*)" effects of sleep. See <http://www.revolutionhealth.com/conditions/sleep/sleep-basics/sleep-health/memory>.

18 Steiner 1996, *Education for Adolescents*, pp. 48–49.

19 Ibid, pp. 50–51.

20 Ibid, pp. 52–53.

21 Ibid, pp. 57–58.

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Advantages and Disadvantages of Brain Research for Education

Christian Rittelmeyer

Brain research has brought us some useful insights and a deeper understanding of teaching and learning. Some research results, however, only confirm what we already know or believe we know about education. These results are important because they provide a necessary background for educational policy and because they deepen our knowledge. Other research opens new and sometimes surprising insights into the organic basis of human development.

One of the most important insights is discovery of the environment-dependent plasticity of the human brain. Brain structure may change continually, particularly during childhood, but also in adults, dependent on experience and the spiritual activity of the individual.¹ To some degree, human beings continue to develop new brain structures as they stimulate some areas and neglect others, depending on their activities and interests. This development relates not only to the renewal of synaptic connections between brain cells and those areas that are particularly stimulated (e.g., through skilled occupation), but, as new research suggests, to experiences that encourage a regeneration of cells, at least in some areas of the brain (this is called neurogenesis, and occurs, for example, when olfactory neurons react to a new scent).

We are thus lifelong sculptors of our brains, and we are also active co-designers of important organic conditions for our more or less complex emotional and spiritual abilities. Brain plasticity advocates, by inference, a versatile but ordered—and not too demanding—education for children; a balanced education of head, heart, and limbs. Only through such “whole” experiences can human beings, through their organic brain rudiments, react to given challenges in a flexible, socially correct, and creative way.² Ultimately,

physical activity and emotions, which, according to brain research, are decisive for learning experiences, allow learning experiences to manifest themselves organically in the brain.

In this respect, research contradicts the intellectual or cognitive interpretation given to it by demands for “brain exercise,” “Baby Einstein,” “PISA-Power training” or similarly uninspiring “neuro-didactic recommendations.” Instead, brain research shows clearly that instructional learning does not lead, in the long run, to “storage” of what has been learned. Rather, sensual experience, happiness and disappointment, and wonder and discomfort are constituent elements of learning and brain development.³ The ordered multi-

Differences in development make an important argument against any blanket or generalized statements about the learning process.

licity of experience, and association-rich artistic and creative activities, produce an association-rich brain structure, one that in itself seems to be an organic condition for creative thinking and complex emotional cultures. An educational- and socio-economic condition

that favors channeled experiences also leads to an impoverishment of the “pathways” of the neurological landscape.

Insight into the brain’s plasticity has led to an abundance of pedagogically important research. For example, media psychology and brain research have yielded interesting insights into adolescent life and its culture of screen media. It is very likely that the dominance of visual media leads to a culturally determined alteration of young brain structures, particularly if, at the same time, it is accompanied by an impoverishment of literary competence: Areas of the brain that are important for language and literary abilities are depleted while certain motor and visual areas are developed more extensively. (A much quoted example of such effects is the discovery of the enlarged thumb representation in the brain of

adolescents who send a large number of text messages.)

The consequences of such structural change to the brain—for example, for the language competence of young people referred to in the PISA studies or for the development of imaginative forces—are obvious.⁴ Language, especially, with its implicit hierarchies and syntactic figures, but also mime, gesture, movement, and social interaction; practical experiences in school; and emotional exchange with other persons are examples of important elements for competence-enhancing brain development, according to brain researcher Wolf Singer. The dominance of screen media in the life of many children and the accompanying social isolation is therefore—as psychological research shows—organically anti-educational because they limit the possibilities for adolescent development.

From a pedagogical point of view, insight into the individual brain structure of each child is also important—even with identical twins. The reason behind this is the experience dependence of individual human brain formation. No brain completely resembles another because, for one thing, there is no absolutely identical level of human experience.⁵ Different levels of development in different children at any age can be explained, in part, by the effects on different brain structures of specific experiences. These differences ask for a teacher's marked alertness to children at different stages of development. These differences also argue against reaching too hasty a conclusion concerning what a child should be able to do at a certain age. Differences in development make for an important argument against any blanket or generalized statements about the learning process. For this reason, pupils should not be measured with the same stick or subjected to a standardized program without also including, minimally, individual attention and encouragement.

The neuro-theoretical debate about free will and mechanical metaphors of brain research appear, in this context, to be symptoms of a much deeper cultural trend, one which numerous brain researchers and their pedagogical servants loyally applaud—instead of finding and developing other paradigms of brain research.

In Germany—and other nations—this conclusion relates to increasing early enrollment in schools. The undimmed euphoria for an alleged early advancement is accompanied by research that shows that a significant number of children enrolled later (at the age of about 6 years) shows better school results than those enrolled earlier (at the age of about 5 years) or, at least, does not display any general advantage of early enrollment.⁶ An international survey by the British Association for Early Childhood Education concludes that enrollment in such programs prior to the age of 6 years provides no advantage in language and mathematical skills.⁷

Recent brain physiology studies by Philip Shaw and colleagues show that children who develop relatively more slowly during their preschool and primary school years later often achieve a thicker layer of the brain neo-cortex and greater intellectual achievements than children whose development was subjected to a relatively intense “early promotion.”⁸ A depletion of this region of the brain, according to researchers, has consequences not only for the three brain areas

associated with the “three main competencies” (reading, writing, arithmetic), but also for the capacity to digest and integrate sense impressions. David Shore and colleagues' results are clear: Children can adequately integrate different complex sense impressions up to the age of 10 only if they are allowed sufficient space for development.⁹ Summing up empirical results on the development of perception, the authors say that children have to be able to adopt a “pace” for learning that relates to their individual ability to learn and that is not subject to curriculum guidelines or pressure.

Many research results are highly relevant to education, although they tend to portray early and suggestive indications as sound conclusions. In this category belongs, for example, the discovery that an essential part of effective long-term learning takes place during sleep—providing

there is a healthy sleep pattern—researched, among others, by Maximilian Moser from a chrono-biological perspective.¹⁰ During deep sleep, the experiences of the day, which are “deposited” in short term memory, are communicated from the hippocampus to the neo-cortex—a kind of communication takes place between the two brain organs—so that what has been absorbed during the day is incorporated into what has hitherto been experienced, and is thus associated with a new brain structure (although it is still unknown “who” causes this communication).¹¹

The calamity of these discoveries becomes evident in connection with media-psychological research, which shows that in TV addicts (those who watch television for more than 3 hours per day) sleep patterns become dysfunctional and attention deficit and hyperactivity disorder (ADHD) syndrome increases.¹² Then, to combat these attention disorders, which are partly caused by increased viewing hours and other stress factors, medications such as Ritalin are prescribed. Astonishingly, instead of remediating the environment, we medicate, adding another challenge to healthy brain development. Ritalin and other such drugs, according to the latest research, may have negative long-term effects on young brains.¹³

Basic Problems of Brain Research

However helpful the indications that educators can take from brain research, we have to take a critical view of the concomitant dangers. Brain research in general is characterized by three problems: a lack of historical reflection by its protagonists and supporters; the methodological and philosophical problems of numerous experiments; and an image of human beings that is based on brain research and, in the end, a neuro-centrally constricted viewpoint. The head and, in particular, the brain within it reside like a kind of Louis XIV above the rest of the body, the rank and file, in this anthropological panopticon.

Historical Short sightedness

The history of science shows us that the formulation of questions and the central concepts of certain disciplines often consist of thought and interpretation patterns that are characteristic, beyond science, of the culture they constitute; culture and thinking mirror each other. This pattern could be termed a “historical syntax” that leads our thinking and feeling without our consciousness of the pattern itself.¹⁴ This unconscious mirroring asks for critical verification of our historical choices in certain disciplines, insights, and percep-

tions if we wish to understand underlying social trends.

Here is not the place to look into this in more detail. I would like to mention one theory, however, because it concerns a problem of brain research that has consequences for education. If we look at the concepts favored by German language maga-

zines and journals that are meant to exemplify a “brain-accurate education,” we notice an analogy between human and machine. These magazines speak of a “computer” instead of a brain and the “wiring of nerve cells in early childhood through early intellectual development,” of “brain modules,” of the “interconnection of brain cells in babies,” of the “neurological layout” of the brain, of “updates for learning,” of “neuro-hardware,” and of the “software of learning.” They speak of the “child’s RAM,” of the “hard disc of the brain,” of the “neuron data motorway,” and of the “cabling of brain modules.”

In an increasing number of educational theories and reports, attention to the significance of aesthetics, creativity, unexpected learning results, moral abilities, and open learning processes is replaced by metaphors that equate children and machines. The “information-processing approach” to education prevails.¹⁵ According to these technocratic apologists, we carry a “learning machine” in our heads. They report that, conditioned by visual media, “the head’s neurological cables are being relocated in the PC-Generation,” and so on.

Observation of brain activity, which is really only an observation of metabolic processes in the brain—or blood circulation—suffers from the curious fact that it completely overlooks the body below the head.

This use of metaphor is not a simple concoction of the press; a considerable number of brain researchers have initiated this technical vocabulary. Blind to actual brain phenomena, they have introduced terminology regarding the “wiring” and “circuitry” of nerve cells—they have introduced “mechanical clumsiness,” as Friedrich Nietzsche called this pattern of thought and speech. Toddlers with speech defects, for example, are diagnosed with “micro-circuit-dysfunction,” and we see babies as “control groups.” “Neurons fire synonymously” instead of exchanging signals and impulses in mutual rhythm; “synaptic circuitry” takes the place of connections among nerve cells; and “modules” or “clusters” replace organic tissues.

This mechanization of world-view is typical not only of many brain researchers—it is a general cultural habit today. Susanne Wickum-Glinski has shown, for example, through the symbolism of contemporary children’s and teen literature, that the “machine metaphor” found its way into this genre in the 1980s, in non-fiction in particular.¹⁶ Nerves are called “news-nets” or “telephone cables,” the eye is a camera, the sense of touch is described as a “feeling apparatus,” the kidney is a filter or purification plant, the spleen is a dustcart, the spinal disc a bumper, the joints are joysticks, the heart is a high performance pump or engine, the liver a central laboratory, and so on.

A similar mechanization of human beings is found in movies—like “Batman” or “Star Wars”—and in toys and comics. The series “X-Men” shows a strange mix of man and machine; the toy industry offers a rich assortment of mechanical human forms or “human machines;” and last but not least, videos and cyberspace action games often make use of these mechanized, militarized figures.

At the same time, images of humankind are rapidly degraded by many television programs in which sexual relationships are reduced to “mutual benefit unions.”¹⁷ The postmodern proclamation of the “death of the subject” and the questioning of human individuality—in short, the constructivist interpretation of the world—all belong to this context.¹⁸ The neuro-theoretical debate about free will and mechanical metaphors of brain research appear, in this context, to be symptoms

of a much deeper cultural trend, one which numerous brain researchers and their pedagogical servants loyally applaud—instead of finding and developing other paradigms of brain research.

Method, Philosophy, and the Human Image

Some brain researchers’ claims that human beings have no free will, such as those of Wolf Singer and Gerhard Roth, have prompted provocative and, therefore, enticing discussions. If, for example, we give a test subject a task in which he or she must make a decision, and we observe brain activity prior to and during the experiment,

we often see, shortly before the (assumed) actual conscious decision, decision-activating impulses arise in deeper levels of the brain. This, allegedly, speaks for a non-conscious “pre-decision” of the brain.¹⁹

[W]hole body activity alone constitutes complete perception and shows that perception cannot be a process of brain alone.

From the perspective of research methods this “insight” illustrates, however, a series of problems. The test subject is observed in the restricted environment of an MRI (magnetic resonance imaging) machine or an EEG (electroencephalogram) cap, and the question remains whether or not a “free” decision is possible under such conditions—or whether the results are methodological artifacts.

Further, if we ask what critics of the idea of human freedom understand by “will,” we usually encounter an astonishing naïveté in the definition of this term, which to this day has not been clarified within the discipline of psychology (for example, in the simple and unexamined equation between “will” and “conscious decision,” or the opinion that the impetus for free deeds of will can be localized in the neo-cortex). Some researchers whose own results are interpreted in this naïve fashion warn at the same time of drawing too-hasty conclusions.²⁰

The philosophical critique of the hypothesis of the non-existence of free will has been far more comprehensive, however, than the neurological critique.²¹ This is because concepts like responsibility or guilt lose their meaning if decision-making processes are only instigated by unconscious or preconscious brain activity and not, at least partly and temporarily, by a freely deciding individ-

ual. To conclude against free will has considerable consequences for our legal system, for philosophy, and for education. To take only one instance, a leading assumption regarding modern education—that children ought to be guided to develop into autonomous, decision-making, and responsible human beings—would be exposed as an illusion. Indeed, for some educators, a “brain-correct” education already takes precedence over a “child-correct” education. For them, the brain, not the human being, is the appropriate beneficiary of educational endeavours.²²

Besides allegations that some brain researchers’ deterministic hypotheses express a materialist prejudice, observable as a common cultural phenomenon far beyond the areas of brain research, this point of view also receives a fair amount of criticism for its lack of reflection. For example, the philosopher Peter Bieri remarks: “What appears like a sound empirical refutation of free will is a bizarre piece of metaphysics.”²³ Most present discussions generally do not follow the lines of these sharp confrontations, however, but try, rather, to find a middle way. According to this more moderate view, free will or autonomous individuals have long been accepted by philosophy, and, therefore, deterministic brain researchers preach only to the already converted.²⁴

Other critiques of the deterministic hypothesis play different language games (which were basically formulated by Immanuel Kant in relation to the problem of freedom). For the natural sciences, causal and deterministic statements are necessary, except in certain areas like quantum physics. These sorts of statements, and the world-view they evidence, cannot simply be transferred to spiritual scientific questions about human freedom without committing a category error.²⁵

Further, the methodological shortcomings of many studies do not allow a focus on the subject of free will—which is reflected in the framework of historical syntax as simply another view of the world, one that is only replicated here but generated elsewhere. The philosopher Petra Gehring points to this situation by referring to the colorful

pictures of brain metabolism in the title of a critical essay: “It blinks, it thinks: The pictures and world views of neuroscience procedures.”²⁶ Brain researchers are not necessarily to blame for philosophical errors and misinterpretations of their work, in this view; they are simply operating within an accepted paradigm.

Finally, here, the alleged observation of brain activity, which is really only an observation of metabolic processes in the brain—or blood circulation—suffers from the curious fact that it completely overlooks the body below the head.²⁷ But does our thinking activity really take place only in the head? Many brain researchers make this assumption. Manfred Spitzer says succinctly: “Learning takes place in the head.”²⁸ In a lecture at the University of Göttingen in 2006, Wolf Singer emphasizes: “All knowledge resides within the functional structure of the brain.” On the other hand, the psychologist Erwin Straus entitles one of the chapters in the second edition of his study, “From the Sense of Senses” (1956): “Man thinks, not the brain.” Who is on the right track?

Neuro-centric Short sightedness

In order to answer this question I would like to present some findings of a significant research project on the effect of school architecture on adolescents.²⁹ How does perception of a school’s

The body’s peripheral senses function as a kind of response organ, comparable to the soundboard of a violin, which turns string vibrations into sound.

façade or a certain color arise and—this is particularly important for our subject—how does it lead to certain judgments about what we perceive? Is perception a process that takes place only in the brain? Our studies show that this is not the case. Every perception of

a built environment incorporates the activity of different senses; for example, it may involve collaboration among the senses of hearing, vision, and balance. Perception simultaneously connects what we may call outer senses of the body (e.g., vision and hearing) through what we may call inner senses (e.g., senses of movement and temperature).

The cognition of architecture, therefore, involves the whole human body and demands a more detailed analysis of the collaboration of different sense qualities—a synthesis—through

which we (mostly consciously) perceive architectural structures. An activated field of our senses defines the impression a building makes on us. In our research, we were, for example, able to determine that some students reacted to an environment of “warm” colors (like yellow) with a slightly increased skin temperature in the chest region and to cooler colors (like a whitish blue) with a slightly lower temperature. These warmer or cooler qualities correspond to moods that are provoked, for example, by different colors and room temperatures. It appears that registration of color in the brain leads to an impulse within the “periphery” of the chest that stimulates or inhibits blood flow. These temperature differences are transmitted by thermic receptors to the brain and there connect to the actual sense impression of the object. “Outer” (visual) and “inner” (thermic) impression are joined to form a synaesthetic impression of the quality of a building. Only this interaction between inner and outer senses leads to a positive or negative categorization of the perceived architecture (such as, “It leaves me cold”—“It gives a warm feeling”—“It depresses me”). The senses of temperature and sight collude in forming a judgment.

The senses of sight, movement, and balance work together every time we perceive a building. When we look at something, for example, we actually unconsciously take visual hold of it with jerky eye movements (saccadic movements). These eye movements, aroused by specific building forms in architecture, for example, can be demonstrated visually with the aid of instruments. Similarly, proprioceptors in our muscles and tendons “notify” the brain of specific body movements, even when we appear outwardly still. The unconscious experience of movement within our bodies then connects to the visual impression of the building. Thus, within the whole body of the observer, the impression is created of, for example, a “lively” or “boring” structure. Buildings with various contours and slopes often appear enlivening and are associated with eye movements that follow these different forms. Buildings shaped like a box, for example, tend to appear boring, rigid, or lifeless, and are associated primarily with horizontal and vertical eye movements.³⁰ Judgments such as “this building

appears dismal,” or “this room leaves me cold” are not solely produced within the brain but are based on processes within the whole body.³¹

The importance of processes within the body’s periphery for forming an opinion within the “center” is shown in numerous new studies, including some that use imaginative activities. The Italian researcher Vezio Ruggieri, for example, shows that even imagination of objects is connected to small eye movements, as is actual perception of these objects.³² Ruggieri and various

Swedish psychologists also show that, when we look at grimaces or jolly or sad faces, subtle, outwardly invisible activity takes place in

those muscles that are necessary to bring just such expressions to our own faces.³³

Similar imitation and response phenomena have also been found by others and partly ascribed to the activity of so-called mirror neurons.³⁴ We react physiognomically while observing expressions in others, although we are largely unaware of this activity. Research shows that perception and opinion or judgment formation are accompanied by physiological processes within the whole body, processes that are mirrored by the “inner” sense system in the brain and there connect with the visual or acoustic outer senses to form the experience of the phenomena of perception. This whole body activity alone constitutes complete perception and shows that perception cannot be a process of brain alone.

What is the anthropological significance of this “body response”? In a lecture in the cycle *Foundations of Human Experience* (previously translated as *Study of Man*), Rudolf Steiner points out how deductive perception arises out of the activity of different sense organs:

Someone who perceives a colored circle might say, “I see the color, and I see the roundness of the circle or the circular form.” However, here two very different things are confused. At first you see only the color through the specific activity of the eye. You see the circular form when you subconsciously use the sense of movement and unconsciously make a circular movement in the etheric or astral body,

[S]ense development is at the same time a development of our ability to form judgments.

thus raising it into cognition. When the circle you have apprehended through your sense of movement rises to cognition, it is then joined with the perceived color. You take the form out of your entire body when you appeal to the sense of movement spread out over your entire body.³⁵

The perception and impact of color exemplifies the perception response model and the participation of the whole body.³⁶ According to this model, colors (and, in the widest sense, all objects of outer perception) are registered in the central nervous system. A visual impression moves from the eye and the optic nerve to the brain. If it were registered only in the central nervous system, however, we could assume that vision would remain an activity irrespective of the act of sight—and would produce a “monotonous appearance.” According to this model, active perception, evaluation, and accentuation (for example, in line with the quality of the experience of warm or cold colors) come about only when an impulse of the central nervous system reaches the periphery, where blood circulation is stimulated and temperature is altered. Through the sense of temperature this peripheral process is “mirrored” in the relevant areas of the brain. The body’s peripheral senses function as a kind of response organ, comparable to the soundboard of a violin, which turns string vibrations into sound.

Correspondingly, perceptions are configured by the synaesthetic activation of the whole sense system into a lively interest in the world, which gives us the possibility of a discriminating, accentuated, positive or negative, warm or cool assessment of our world. Neuro-anatomically manifested, sense development is at the same time a development of our ability to form judgments. With this, the neuro-centric shortsightedness of many brain researchers becomes evident: The “firing” of so-called mirror neurons during observation of a crying human being is possibly less a mirroring of the observed phenomena than it is a miming and synaesthetic perception of our own bodies. We ourselves copy the physiognomy before us—even if we do not notice this—and only this allows us to form opinions and to look at a face not “monotonously” but in lively participation.

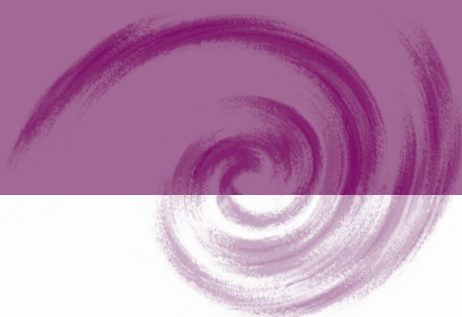
The examples here highlight how important it is to look at human beings as complete organisms in relationship with the world and not to become shortsighted by considering only brain processes or cognitive faculties. Brains are important, but we should not mistake them for human beings.

Endnotes

- 1 Brain research, in this respect, confirms Rudolf Steiner’s findings, which were published as early as 1909 in his essay, *The Education of the Child*. See also: Chr. Rittelmeyer: *Pädagogische Anthropologie des Leibes*, Biologische Voraussetzungen der Erziehung und Bildung. Weinheim, 2002, Chapter 4.
- 2 See also G. Hüther: *Die Strukturierung des Gehirns durch Erziehung und Sozialisation*. In A. Neider (Hrsg.): *Wer strukturiert das menschliche Gehirn? Fragen der Hirnforschung an das Selbstverständnis des Menschen*, Stuttgart, 2006, pp. 11–26.
- 3 See, e.g., G. Hüther: *Bedienungsanleitung für ein menschliches Gehirn*. Göttingen 2001; C. Nitsch/G. Hüther: *Kinder gezielt fördern*, München 2004; M. Spitzer: *Lernen. Gehirnforschung und die Schule des Lebens*, Darmstadt, 2002.
- 4 I have described the problem of video games and too much television in my book, *Kindheit in Bedrängnis. Zwischen Kulturindustrie und technokratischer Bildungsreform*. Stuttgart 2007. See also M. Spitzer: *Vorsicht Bildschirm*. Stuttgart, 2005.
- 5 The “experience environment,” of course, has to be seen in connection with the individual from whose perspective it gains its specific outline.
- 6 See Chr. Rittelmeyer: *Kindheit in Bedrängnis*, Stuttgart, 2007, Vorwort.
- 7 House of Commons: Education Select Committee Report: *First Report: Early Years*. London, 2000.
- 8 I would like to thank Maximilian Moser for this information. See P. Shaw a. o.: “Intellectual ability and cortical development in children and adolescents” in *Nature* 440 (2006), pp. 676–679; also the commentary by G. Miller: “The Thick and Thin of Brainpower: Developmental Timing Linked to IQ,” in *Science* 311 (2006), p. 1851; R. Passingham: “Brain Development and IQ” in *Nature* 440 (2006), p. 619.
- 9 See D. I. Shore a. o.: “The development of change detection,” in *Developmental Science* 9 (2006), pp. 490–497.
- 10 M. Moser, D. von Bonin, M. Frühwirth, J. Herfert, H. Lackner, F. Muhry, and Chr. Puelacher: “Luftkunst. Von der Fähigkeit, mit dem Atem das Herz und den Körper zum Klingen zu bringen” in *Luft. Elemente des Naturhaushalts IV. Schriftenreihe Forum Band 12. Kunst- und Ausstellungshalle der Bundesrepublik Deutschland* (Hrsg.), Köln 2003, pp. 270–283. See also M. Moser a. o.: “Endbericht schul support.” *Johanneum Research/Institut für nichtinvasive Diagnostik*. Weiz (Österreich).
- 11 See in more detail M. Spitzer: *Lernen. Gehirnforschung und die Schule des Lebens*. Darmstadt 2002, p. 121ff. and Chr. Rittelmeyer: *Kindheit in Bedrängnis. Zwischen Kulturindustrie und technokratischer Bildungsreform*, Stuttgart, 2007, Chapter 1.
- 12 Chr. Rittelmeyer: *Kindheit in Bedrängnis. Zwischen Kulturindustrie und technokratischer Bildungsreform*, Stuttgart 2007, p. 49ff.; also D. A. Christakis, F. J. Zimmermann, D. L. DiGuseppe, and C. A. McCarthy: “Early television exposure and subsequent attentional problems in children” in *Pediatrics* 113 (2004), pp. 708–713.

- 13 L. Diller: "The Rise of Ritalin. Triumph and Tragedy of the Medical Model in Children's Mental Health" in S. Olfman (Editor): *No Child Left Different*, Westport 2006, pp. 143–162; R. De Grandpre: *Ritalin Nation: Rapidfire Culture and the Transformation of Human Consciousness*, New York 1999. ADS: Eine Generation wird krankgeschrieben. Weinheim 2005; J. D. Gray a. o.: "Methylphenidate Administration to Juvenile Rats Alters Brain Areas Involved in Cognition, Motivated Behaviors, Appetite, and Stress" in *Journal of Neuroscience* 27 (4. July) 2007, pp. 7196–7207.
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- 15 S. Olfman (Editor): *All Work and No Play... How Educational Reforms Are Harming Our Preschoolers*, Westport/London 2003, Introduction. See also Chr. Rittelmeyer: *Kindheit in Bedrängnis. Zwischen Kulturindustrie und technokratischer Bildungsreform*, Stuttgart, 2007, p. 97ff.
- 16 S. Wickum-Glinski: *Die Darstellung des menschlichen Körpers im Kinder- und Jugendbuch von der Aufklärung bis zur Gegenwart*. Diss. RWTH Aachen, Herzogenrath, 1998, p. 209ff.
- 17 Diane Levin describes this trend in more detail in "So sexy, so soon: The sexualization of childhood," in S. Olfman (Editor): *Childhood Lost*, Westport/London 2005, pp. 137–154. Also of interest is the new study by the Kaiser Foundation, USA, according to which sexually implicit TV programs before 10:00 p.m. have doubled since 1998. See: The Henry J. Kaiser Family Foundation: "Sex on TV 4. Executive Summary 2005." Internet edition 2005. For results of this sexualization see the latest report by the American Psychological Association: "Report of the APA Task Force on the Sexualization of Girls, 2007." Available at: <http://www.apa.org/pi/wpo/sexualization.html>.
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- 20 Benjamin Libet in his book *Mind Time-Wie das Gehirn Bewusstsein produziert*, Frankfurt/M. 2005. For more relating to the problems of the neuro-biological concept of will see P. Gehring: "Es blinkt, es denkt. Die bildgebenden und weltbildgebenden Verfahren der Neurowissenschaft," in *Philosophische Rundschau* (51) 2004, pp. 273–293.
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- 22 See J. Giesinger: "Erziehung der Gehirne? Willensfreiheit, Hirnforschung und Pädagogik," in *Zeitschrift für Erziehungswissenschaft* 9 (2006), pp. 97–109. See also U. Herrmann (Hrsg.): *Neurodidaktik*. Weinheim, 2006.
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- 26 In *Philosophische Rundschau* (51) 2004, pp. 273–293.
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- 28 M. Spitzer: *Lernen. Gehirnforschung und die Schule des Lebens*, Darmstadt, 2002, p. xiii.
- 29 See for more detail: Chr. Rittelmeyer: "Pädagogische Anthropologie des Leibes" in *Biologische Voraussetzungen der Erziehung und Bildung*, Weinheim, 2002, Chapter 2.
- 30 See for more detail see Chr. Rittelmeyer: *Schulbauten positiv gestalten. Wie Schüler Farben und Formen erleben*, Wiesbaden, 1994.
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- 35 R. Steiner: *The Foundations of Human Experience*, CW 293. Great Barrington, MA: SteinerBooks, 1996. Accessed at http://www.steinerbooks.org/research/archive/foundations_hum_exp/foundations_hum_exp.pdf See also R. Steiner: *Zur Sinneslehre*, ed. Chr. Lindenberg. Stuttgart, 1981.
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What Makes Waldorf, Waldorf?

Stephen Keith Sagarin

What is essential to the practices and understandings of Waldorf schools and Waldorf school teachers? If Rudolf Steiner's work on teaching and learning is not to be seen partially, inaccurately, or superficially, how can it be seen?

In writing previously that "there is no such thing as Waldorf education" ("No Such Thing," *Research Bulletin*, Vol. VIII, no. 1), I was alluding to Donald Winnicott's famous statement that there is "no such thing as a baby,"¹ which has been followed through decades by other healthy attempts to overcome the fragmenting, objectifying tendencies of our modern minds. Winnicott was at pains to show, in England after World War II, that a child alone—without a mother, at least (or, to use more contemporary language, a caregiver)—cannot survive. His research into the necessary, life-giving, and life-sustaining relationship of child and parent added significantly to what we know about children and childhood. Clearly, he was not actually denying the existence of children in any but a rhetorical sense. In fact, he devoted much of his life and career to them.

I stand by my statements about Waldorf education and the context in which we necessarily understand it. To try to see Waldorf education as a thing-in-itself is necessarily to see it partially and inaccurately. To believe in things as entities separate from context and the rest of creation is to participate in exactly the fragmenting, objectifying consciousness against which Waldorf teachers wish to stand. Further, to identify Waldorf education by its trappings, practices, or functions is to see it only superficially. (See "Playing 'Steiner Says,'" *Research Bulletin*, Vol. XII, no. 2.) So, can we see Waldorf education whole, and, if so, how?

It must be possible to practice education in a fruitful and health-giving way even if our school building is a tin shack and we have no money for supplies.

The Checklist Test

We could begin by creating a checklist of all the things Steiner said about teaching and learning. I suggest this as a thought experiment only, somewhat tongue-in-cheek. I hope not to see a future publication entitled, "The Waldorf Teacher's Checklist of Everything Rudolf Steiner Had to Say about Teaching and Learning." The list would include items that deal with the mundane, the sublime, and everything in between—discipline and math teaching, destiny and temperament. If we create and examine such a list, I believe, we recognize that we are babes in the woods when it comes to actually doing Waldorf education. We are generally not seers. Our spiritual development may be strong in many ways but it is infantile in others.

It may be many years, many generations, before we can begin to approach Steiner as an equal and do more than begin to implement education the way he envisaged it. By way of analogy, consider Aristotle's work on gravity. This was accepted, unquestioned, for nearly 2000 years, until Galileo, avatar of a consciousness beyond Aristotle's, was able to meet gravity on new terms and demonstrate ways in which Aristotle's thinking was incorrect. Who today can do the same for

Steiner? More important, who today can equal or even approach Steiner in insight and understanding?

Which items on our list are essential and which may be altered or dispensed with? Our rudimentary understanding of Waldorf education may fail us. One item looks much like another. How else may we proceed?

The Tin Shack Test

Another thought experiment by which to test what is essential in Steiner's view of teaching and

learning is what I call the Tin Shack Test. Clearly, Waldorf education is compromised if it exists solely for the benefit of the few wealthy families that can afford private school tuition. It must be possible to practice education in a fruitful and health-giving way even if our school building is a tin shack and we have no money for supplies. Any quality or characteristic or practice of teaching and learning that cannot find itself in the tin shack—or the shade of a tree, for example—is probably not essential.

By “wealthy,” I should say, I mean almost all of us. Half the world lives on the equivalent of a dollar or two per day. Those of us fortunate enough to have hot and cold running water, a refrigerator, and an automobile should consider ourselves to be among the wealthiest persons ever to walk the planet—in the ancient world, the number of servants or slaves necessary to maintain us in such luxury would have been in the hundreds.

The Essence of Essence

The word that Steiner most frequently used to describe what I am talking about is the German noun *Wesen*, which translates as “being,” as in “human being.” The German is less concrete than its English counterpart, however, and may also be translated as “nature,” as in Socrates’ “medicine has to define the nature of the body.” And it may further be translated as “essence,” as in Zoolander’s “moisture is the essence of wetness.” When Steiner uses the word *Wesen*, we mistake ourselves in English if our minds leap to a concept of corporeality, too often associated in English with the word “being.” The essence of being, we may say, is of an immaterial nature.

I am aware, however, of a large literature that limns the dangers of thinking that approaches essentials, giving rise to a new form of prejudice, “essentialism.”² I take the central argument here to be that so often in history what we have believed contained some essential quality—whiteness or maleness, for example—turned out later on or on careful inspection not to. Much of the world that seems so given and so real is, in fact,

contingent, or at least created, situational, and symbolic and is likely to change from time to time and context to context. So we must approach “Waldorfness” with great care, ready to find that it’s not what we thought it was and may not be anything at all.

As Samuel Taylor Coleridge said, however, and as so many have quoted, we can distinguish in the mind what we cannot divide in the world.³ My aim here is to distinguish what for Waldorf teachers is central to their understanding of what we do, recognizing that this may change over time or with changing contexts. I am not burrowing into the center of a planet to find its core; I am examining a box of artifacts, if you will, to discover—in my estimation—those that better reveal the unique qualities of the person to whom it belongs.

Imagining the Best

What, then, is essential to teaching and learning according to Steiner’s work, according to his images of human beings and the world? One method for approaching the question of the core of what we call Waldorf education is to imagine what we could not do without, in a broad and

durable sense. Which aspects of our work, if we were forbidden to implement them, might lead us to close our doors or declare that we could no longer call ourselves Waldorf teachers or a Waldorf school?

I will posit, hesitantly, that there are five categories, each of which is taken to be essential to what we do in Waldorf schools. Readers will note that any teacher,

any school, could adopt these practices and understandings. I will let others determine at what point, level, or degree of commitment a person becomes a Waldorf teacher, a school becomes a Waldorf school. My own view is that anyone courageous enough to want to work with Steiner’s ideas on education deserves our support and admiration, regardless of setting or circumstance.

I say hesitantly because I may well have the number wrong. Biologists who count species, for example, may be termed lumpers—those who

Waldorf education does not provide beliefs, ideology, culture, or worldview, although it necessarily manifests a collection of cultures and can devolve into ideology.

overlook minor differences in favor of underlying sameness—or splitters—those who see relatively minor differences as significant. I attempt neither a lumper nor a splitter to be, but I acknowledge that I may be overlooking something important, a sixth or seventh essential, or I may be including too many, separating characteristics that would better be combined. I welcome correction.

Fortunately, these five aspects of education may be seen as facets of one encompassing whole. While the myths of Waldorf education multiply beyond counting, the essentials tend toward one. I end by considering characteristics of this whole.

Five Gifts

One way to picture the five essentials is as gifts that Waldorf school teachers give their graduates, and by this I mean primarily high school graduates. Lower school parents and graduates will recognize these gifts, but they will also recognize that none comes fully to fruition by the end of eighth grade.

1. Ideas and Ideals

The first gift is a source of ideas and ideals. Waldorf education does not provide beliefs, ideology, culture, or worldview, although it necessarily manifests a collection of cultures and can devolve into ideology. (The “Waldorf worldview,” at least in its mundane expression, is an expression of time and place, and is not essential. Countercultural or alternative education only came into being in the 1960s, for example.) Belief, knowledge, and worldview may be “about” spiritual matters, but they should not be mistaken for them. An intellectual understanding of Waldorf education does not make a teacher, and highly gifted teachers may be poor at discussing what they do and how they do it.

What teachers provide, more important than any knowledge about a way of life or a worldview, is a pathway or method for discovering these ideas and ideals, should a student wish later in life to pursue them. Choosing this path, following it, and putting into practice the results of such a journey involve human freedom, moral imagination, ethical individualism, call it what you will.

All we can give of value as teachers with regard to spiritual realities is a path that can be followed or retraced. In geometry, I can show how

the steps of a proof lead to a logical conclusion, but you must take that final intuitive leap yourself. If you do not “see” that these steps constitute a proof, all I can do as a teacher is retrace the path, perhaps using different language or different symbols in order to help you again to the brink of intuitive understanding.

Anthroposophically-gained knowledge of the world, given to us in Steiner’s books and lectures, for example, can provide stepping stones akin to the statements in a geometric proof. They attain meaning, however, only as we use them to focus our attention, to trace and retrace a path to the spirit, to meaning, and to understanding.

This first point encompasses Steiner’s work in education and also the anthroposophical method and knowledge that underlie it—understandings of destiny, reincarnation, the place of human beings in the cosmos and in evolution, and so on. To treat these understandings as part of an ideology or worldview is to belittle them, to turn them into a religion. If they are true, they are true for all people and they are facts about the world; they are evidence of a science and a scientific method.

If the freedom to teach toward this path of understanding were denied, a teacher would have to feel that she could no longer teach as a “Waldorf” teacher. In this regard, I will add for more philosophical readers that I see Steiner’s work primarily as work in method, and that considerations of epistemology or ontology arise secondarily to this focus on method.

2. Development

In the future, all instruction must be built upon psychology developed from an anthroposophical understanding of the world. (p. 49)

What lives in human beings tends toward metamorphosis. If you can bring it about that the children have concepts of respect and honoring, concepts of all that we can call, in an all-encompassing sense, a prayerful attitude, then such thoughts will be living in children permeated with a prayerful attitude, and will remain into old age. In old age, these concepts will be transformed into a capacity to bless and to give others the results of a prayerful attitude. (p. 155)

You must be a good friend of natural development. (p. 180) ⁴

Second, teachers address their students as developing human beings, beings who transform themselves unconsciously in youth and later become uniquely capable of self-transformation. In nature, metamorphoses and transformations are primarily visible. We can see a plant grow from shoot to leaves to flower, each stage presenting unforeseen changes of form. No one looking at a caterpillar for the first time would guess that it would soon be a butterfly. In human life, especially after childhood, however, transformation and development are not so readily visible.

Waldorf teachers seek patterns in human development and they also seek to be sensitive to the unique development of each student. They may fruitfully seek a common language with developmental psychologists from Jean Piaget to the present (see, for example, “The Seer and the Scientist,” *Research Bulletin*, Vol. XI, no. 1). If a teacher in a Waldorf school were prohibited from addressing his students according to a developmentally appropriate model, he might well feel he could no longer call himself a Waldorf teacher.

3. Three Kinds of Knowing

Whenever you want to suitably consider the human being from any particular standpoint, you must always return to the three parts of the human soul—that is, to cognition that occurs in thinking, to feeling, and to willing. (p. 106) ⁵

Accumulating knowledge is like building a collection, right? Each piece in the collection is much like any other. A fact about astronomy is much like a fact about history or writing technique or piano playing or wine tasting or empathetic listening. A degree of certainty or truth adheres to it or is apparent in it, and we accept it for our—growing, we hope—stockpile of things that we know. It can be digitized and stored in a computer

and shared online.

Well, no. Knowledge is not singular. Knowing the names of stars is not like knowing how to play the piano or like knowing how to offer solace to someone in pain. Like intelligence, which we used to believe was one thing—measured on an IQ test, for example, but now seen as, at least, a multi-faceted collection of human faculties—knowledge comes in different forms. We can know in different ways. Waldorf and Steiner schools emphasize in particular three ways of knowing, the conscious development of each corresponding roughly with preschool, elementary school, and high school.

Michael Polanyi called a first kind of knowing “tacit knowing,” knowing “more than we can say.”⁶ Clearly, infants—those without voices, as

the term itself suggests—know more than they can say. We can know how to cut a carrot, or the taste of the soup it makes, or how to play the viola, or how to solve a problem in geometry. We can describe these things in language, but the value, meaning, and even the truth of these activities—cutting, tasting, playing, solving—does not translate into language. These become appar-

ent only when we learn to do these things ourselves. Without the experience of doing, often knowing has little meaning.

You could write a manual describing what you do—as nurse, stockbroker, or artist—but, if you had to train someone to replace you, would you rather hand off instructions or offer an apprenticeship, some doing? Read a book on building a stone wall, and then claim that you know how to build one. Your aches and calluses will tell you another story. We learn much and know much through doing, and, often, doing precedes and informs our knowing. Hence, in Waldorf schools, the importance of “doing” in preschool, before we emphasize other forms of knowing.

A second kind of knowing is aesthetic knowing. Its value is apparent in contrast to our concept of something that is anaesthetic, or numb-

At the center of any method of teaching must reside an image of the human being who is learning and being taught, the human being becoming ever more human.

ing. Aesthetic knowing is alive, awake, and sensitive. It is knowing in heart and gut (yes, the brain plays its role, but we experience our feelings in our hearts and lungs and guts). It is intuitive (“taught from within”). It is a form of knowing especially valuable for artists, musicians, clinical psychologists, theoretical physicists, and even advertising copywriters. It is a form of knowing that connects us powerfully to the world. And it develops in children most readily when they have separated from their parents and begun to comprehend the world around them for themselves. Hence, in Waldorf schools, the importance of beauty and feeling in the elementary school.

A third kind of knowing is knowing through thinking. By thinking, however, I mean a particular kind of thinking that attempts in Henri Bortoft’s phrase to “swim upstream,” reversing fragmentation, categorization, and specialization in order to recover wholeness.⁷ Thinking logically with given postulates, thinking algorithmically, is “downstream” thinking, the outcome determined by the input. It is powerful but dead, inherited from the creative insight of others. Recognizing the validity of postulates different from convention, however, involves insight of our own. This synthetic, living thinking can encompass or embrace analysis, logic, and critical thinking. But it seeks to go beyond them to recover or reach the origin of creative thought and imagination. And it develops in students who are wrestling not so much with the world around them as with their own identities in that world. Hence, in Waldorf schools, the importance in high school of the development of thinking.

These three ways of knowing are cumulative and integrative. We do not leave one for the next, but build on what comes before. As adults, our thinking is enriched if we also know how to do and to feel. All three forms of knowing are present earlier, too—small children learning to walk and talk (two of the most important forms of doing) can also feel and think. But by emphasizing one way of knowing at the appropriate time, allowing other ways to develop simultaneously but sleepily, we work in accordance with children’s growth away from their parents and into the world and themselves. We know in our hands, in our hearts, and in our heads. We know goodness, beauty, and truth. The more ways we know, the more

value we find in life, and the more value we bring to those around us and to whatever we are called to do.

Again, this third point may belong to a subset of the first. Anyone treading a path of understanding will recognize different modes of existence and ways of knowing.

4. Social Health

Fourth, a school can provide profound examples and guidelines for a healthy life with other people. If they choose to, Waldorf school graduates know how to live with others in brotherhood and sisterhood, in solidarity. They know how to be the appropriate equal of any man or any woman. And they know where their individual freedom lies, the sort of freedom that laws and conventions cannot touch. Steiner’s description of a healthy “threefold” social organism can be seen as a common-sense description of reality—not a utopian vision that does not and will not exist—by students who have lived through years in a Waldorf school.

This point, too, derives from the first. Who, on a spiritual path, would not strive to bring into existence an ever-healthier social world?

5. Reverence and the World

Fifth, students receive a reverence for life and for the world; a concern for the environment, however defined. I mention this last and say the least about it here because as a society we have probably embraced this gift more fully in the past fifty years than we have the others. Peace education, environmental and ecological education, outdoor action programs, and other forms of holistic education may find fellow travelers in Waldorf teachers here.

Only in Waldorf?

Waldorf school curricula and methods lend themselves to an education in all of these five points. Different schools may struggle at times with one or another. Different teachers evince strengths in particular directions. Taken together, however, these cover the ground, I believe, of what is essential to Waldorf education. Any school, any teachers can give these gifts. But the sad truth is that in our world today only in Waldorf schools can you find teachers united in

common purpose to strive to give their students fully and consistently what I have outlined here.

Not Alone

I am indebted to and have previously quoted Peter Curran, history teacher at the Waldorf School of Garden City, on Waldorf education (“No Such Thing,” *Research Bulletin*, Vol. VIII, no. 1). Curran wrote in the 1980s that there are four “essentials . . . without which no school (by whatever name) is a Waldorf school and with which any school is a Waldorf school.”

I. As each child’s consciousness matures, it recapitulates the cultural epochs of all Mankind. Waldorf education agrees with Emerson when he says that all children go through a Greek period and a Roman period, etc. There is, then, a proper time and method for particular subjects to be taught.

II. Since no one destroys what one loves, reverence, awe and respect for the Earth should be fostered. An inkling of the spirituality of the Earth then comes into being.

III. The qualitative, as well as the quantitative, in all things should be *equally* developed.

IV. Above all, Man is known as a spiritual as well as a physical being.⁸

These points accord with the first four gifts I describe above, I believe, and are noteworthy in omitting consideration of social health. I believe this omission is a symptom of Curran’s generation; it is really only in the last couple of decades, in the United States, at least, that a serious conversation about the “social mission” of Waldorf education has been reinvigorated. Talk of a social mission was somewhat forgotten, we may posit, during the tension of the Cold War. Consideration of this hypothesis here, however, would take us too far afield.

The Big One

While the trappings of Waldorf education multiply beyond counting, the essentials, few in number, perhaps five, perhaps more or fewer, cohere toward one. Another approach to the

essential nature of Waldorf education deserves mention. If my first five points present a chorus of gifts, this last image is a single, sounding gong. At the center of any method of teaching must reside an image of the human being who is learning and being taught, the human being becoming ever more human.

Previously, human beings were seen as born in original sin and, therefore, to be saved (Jonathan Edwards). Or they were seen as growing healthfully in a metaphorical garden, inadvertently damaged or corrupted by the unhealthful influence of imperfect civilization (Jean Jacques Rousseau). Or as “blank slates” on which society, civilization, and teachers could write (John Locke). Or as citizens to be educated for participation in a democratic government (Thomas Jefferson), amoral immigrants to be moralized (Horace Mann), future contributing members of a community (John Dewey), or, more recently, as biological systems that support brains that need to be programmed (Seymour Papert).

A more profound image of a human being arises if we consider that we are created in a creator’s image. I take this to mean not that God has ten fingers and ten toes, or a hairy chest, but that, like our creator, we are creative. An education that places creativity at its core, and that derives its methods from this understanding of imagination not as an accessory or enhancement to an academic education but as the ground from which all knowledge springs, may be called Waldorf education.

What Is Creativity?

The meaning of creativity, however, is not clear. What does it mean to be creative? Does it mean a practice of art—and not science—without standards, objectivity, or rigor? Pursued this way, creativity is seen as a healthful hiatus from more important pursuits, a necessary venting before returning to the real business of life. Or is creativity a heaven-opening moment of insight, bestowed on some and not on others, “eurekas” and “ah-hahs” as gifts of divine grace? Pursued this way, it is, like the works that creative persons produce, unavailable for scientific study or human understanding. Such views do not hold up to scrutiny.

History is replete with descriptions of moments of insight, from Archimedes on down, but we should not forget who the persons are who receive these insights. Mathematical truths may be raining down on you and me this moment, but, without rigorous training, hard work, a developed understanding of symbolic systems, and who knows what else, we are incapable of perceiving them.

Research in creativity by such eminent psychologists as Piaget's pupil, Howard Gruber, demonstrates creativity to be something else altogether. For Gruber, whose seminal work was a study of Charles Darwin (*Darwin on Man*), creativity is a capacity of scientists as much as of artists. It results in novelty, new creations, and is the result of unique, creative human efforts. To honor the uniqueness of creative acts, Gruber questioned even such thoughtful research as the "multiple intelligence" work of Howard Gardner, and championed the case study method, the study of creativity person by person. (Gruber was not opposed to multiple intelligence theory; he just didn't think it resulted in a description of creativity.)

This is not to say, however, that creativity cannot be studied scientifically. The lives of creative persons, as Gruber showed, have many points in common.⁹

- They undergo periods of apprenticeship.
- They work hard to achieve insight, and work hard after insight, expressing and testing it, putting it in a form that others may understand.
- They live lives in a "network of enterprise," mutually supporting endeavors and experiences that contribute to creative work. Without Darwin's avocational interest in geology, for instance, it is possible that he might not have achieved his insights into the evolution of living species.

Without this ongoing and recursive process—joyfully returning to the well from which our work springs—we risk not implementing creative, innovative, living teaching, but becoming an increasingly muddy copy of a copy of a copy.

- The work and lives of creative persons evolves, as well, demonstrating a (unique) pattern that may be understood and retraced by others.
- And, in order to make sense of their work, creative persons develop and employ "images of wide scope" or "ensembles of metaphor." Darwin wrestled with the image we now know as the "tree" that showed the evolution of life, working through several branching images, including a coral.¹⁰

Gruber wondered to the end whether or not everyone is creative.¹¹ He chose to study eminent artists and scientists, and sometimes expressed the view that only a few persons are actually creative; the rest of us simply live our lives. But he also believed in the unity of human experience, and wondered what it might mean to say that everyone is creative in some way.

Certainly the elements of his studies may be applied to the review—or conduct—of any life.

Creativity, Morality, and Freedom

Gruber also recognized the connection between creativity and morality:

Our conceptions of creativity and morality are intertwined in a number of ways. ...At once we see that the indispensable middle term between creativity and morality is freedom. We can hardly speak of a moral act if the actor has no choice. Creative work also requires inner freedom. ...Creative work must be in some ways kindred to the world, if not the world as it is, then the world as it will or might be. It flows out of that world and it flows back into it. Thus the creative person, to carry out the responsibility to self, the responsibility for inner integrity, must also in some way be responsive to the world.¹²

Seen in this way, it seems clear that what Steiner called “ethical individualism”¹³ and “moral imagination” contribute to a conversation about creativity: “Freedom of action is thinkable only from the standpoint of ethical individualism.” And: “Free spirits need moral imagination to realize their ideas and make them effective. Moral imagination is the source of a free spirit’s actions. Therefore, only people who have moral imagination are really morally productive.”¹⁴

It’s Not All about Steiner

In arguing against one sort of fundamentalism—the sort that would mistake and assert superficial characteristics and techniques of Waldorf education for an essence—some readers may believe I am leaning toward another fundamentalism—if it’s not in Steiner’s work, it’s not Waldorf education. This is not the case. I am fully aware that many valuable characteristics of and practices in Waldorf schools today—including circle time, math gnomes, and walls of rainbow hue—have little relation to Steiner’s work. I believe, however, that, given our own limited insight, we must return again and again to Steiner’s work to check our progress, our understanding, and our interpretation against what he said. Without this ongoing and recursive process—joyfully returning to the well from which our work springs—we risk not implementing creative, innovative, living teaching, but becoming an increasingly muddy copy of a copy of a copy. And there’s little creative in that.

Endnotes

- 1 Winnicott, D. W., 1996.
- 2 See especially Fuchs, Stephen, 2001.
- 3 See, for example, Coleridge, Samuel Taylor. See also Barfield, Owen, 1971.
- 4 All quotations here from Steiner, Rudolf, 1996.
- 5 All quotations here from Steiner, Rudolf, 1996.
- 6 Polanyi, Michael, 1966.
- 7 Bortoft, Henri, 1996.
- 8 Personal communication.
- 9 References here to Gruber’s work are from the first two chapters of Gruber, H. and Doris Wallace, *Creative People at Work*, New York: Oxford University Press, 1989.
- 10 Gruber, Howard, 1981.
- 11 Personal communication.

12 Gruber, H. and Doris Wallace, 1989, pp. 280–281.

13 Steiner, Rudolf, 1995, p. 154.

14 Ibid, p. 182.

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Love and Knowledge: Recovering the Heart of Learning through Contemplation

Arthur Zajonc

*“Preventing conflicts is the work of politics;
establishing peace is the work of education.”*
— Maria Montessori

If I were to ask: What should be at the center of our teaching and our students’ learning, what would you respond? Of the many tasks that we as educators take up, what, in your view, is the most important task of all? What is our greatest hope for the young people we teach? In his letters to the young poet Franz Kappus, Rainer Maria Rilke answered unequivocally:

To take love seriously and to bear and to learn it like a task, this is what [young] people need. ... For one human being to love another, that is perhaps the most difficult of all our tasks, the ultimate, the last test and proof, the work for which all other work is but a preparation. For this reason young people, who are beginners in everything, cannot yet know love, they have to learn it. With their whole being, with all their forces, gathered close about their lonely, timid, upward-beating heart, they must learn to love.

Need I say it? The curricula offered by our institutions of higher education have largely neglected this central, if profoundly difficult task of learning to love, which is also the task of learning to live in true peace and harmony with others and with nature.

We are well-practiced at educating the mind for critical reasoning, critical writing, and critical speaking, as well as for scientific and quantitative analysis. But is this sufficient? In a world beset

with conflicts, internal as well as external, isn’t it of equal if not greater importance to balance the sharpening of our intellects with the systematic cultivation of our hearts? Do not the issues of social justice, the environment, and peace education all demand greater attention and a more central place in our universities and colleges?

I suggest that knowing itself remains partial and deformed if we do not develop and practice an epistemology of love instead of an epistemology of separation; hence, I will not address here the issue of balancing intellectual accomplishment with good works. Harvard’s motto is “*Veritas*” or Truth. Knowing is, in this view, the central project of higher education. I maintain, however, that truth itself—*veritas* itself—eludes us if we bring to the world and to each other an epistemology of separation only. Our conventional epistemology hands us a dangerous counterfeit in truth’s place, one that may pass for truth, but is, in fact, partial and impoverished.

Parker Palmer points out that “every way of knowing becomes a way of living, every epistemology becomes an ethic.” He argued that the current epistemology has spawned an associated ethic of violence. Surely, science has brought enormous advances, but we cannot turn away from the central fact that

the modern emphasis on objectification predisposes us to an instrumental and manipulative way of being in the world. As Palmer suggests, our way of knowing does, indeed, grow into a way of living. The implications of this position are large. While I am emphatically not calling for a roll-back of science, I am calling for resituating it within a greater vision of what knowing and living are really all about. That re-imagination of knowing will have deep consequences for educa-

**[C]ontemplative
practice can become
contemplative
inquiry, which is the
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mology of love.**

tion, consequences that give a prominent place to contemplative pedagogies. Indeed, I hope to convince you that contemplative practice can become contemplative inquiry, which is the practice of an epistemology of love. Such contemplative inquiry not only yields insight (*veritas*) but also transforms the knower through his or her intimate (one could say, loving) participation in the subject of one's contemplative attention. Contemplative education is transformative education. Although Jack Mezirow's foundational research on transformative education was concerned with critical reflection, not meditation, I see his work and that of such theorists as Robert Kegan as offering a highly appropriate academic lineage within which to understand contemplative pedagogies.

I first propose to sketch the contours of an epistemology of intimacy and participation, that is, an epistemology of love, which extends scientific and scholarly inquiry in ways that need not be viewed as problematic to academic teaching or to our research disciplines. Second, I would like to describe some of the main elements of a course I have taught with an art historian, Joel Upton, at Amherst College. Entitled "Eros and Insight," it attempts to embody something of this way of knowing, and to take up the challenge Rilke presents us all: the challenge of learning to love.

An Epistemology of Love

Ironically, I believe that we first need to recognize and accept as part of our existential reality the separation or solitude we experience. We do, indeed, feel disconnected from each other, and also from the natural world around us. The spiritual philosopher Rudolf Steiner thought *Einsamkeit* or solitude was the "main characteristic of our age." His contemporary Rilke put it more forcefully:

To speak of solitude again, it becomes always clearer that this is at bottom not something that one can take or leave. We are solitary. We may delude ourselves and act as though this were not so. That is all. But how much better it is to realize that we are so, yes, even to begin by assuming it.

I view the scientific stance as a symptom of this more general psychological and spiritual malaise. Solitude is the mirror side or inevitable correlate of an increasingly strong development of self and personal identity. As individuals identify less with gender and cultural constructs, so also do the force and comfort of the collective diminish. Our search for identity has the accompanying downside that we dis-identify with other people, groups, and nature.

While much has been gained through this process of individuation—a collection of achievements that we should not lose—it leads ultimately to a collection of selfish monads. I am convinced that the countervailing force to such fragmentation is not mutual self-interest or rational economic action that maximizes utility (as some economists would have it); rather, I believe that genuine empathetic relationships can be—and are—established between and among us. Increasingly those connections are not among tribes or ethnic and religious groups; they are between individuals. Healthy human relationships do not happen automatically; each of us must cultivate them intentionally. Nothing in this realm is given for free. The same logic holds true for our relationship to the environment. We no longer grow up grooming horses and harnessing draft animals on the farm. In New York City you can go for days without ever walking on the earth. Our relationship to nature must likewise be intentional. The practice of contemplation is an important part of the intentional stance that can lead to empathetic relationships.

Having made the intentional turn from isolation to empathetic connection, we are prepared for a contemplative way of knowing, one whose relationship to love will, I think, grow increasingly obvious. What are the features or stages of contemplative inquiry?

- Respect—When approaching the object of our contemplative attention, we do so with respect and restraint. Concerning the relationship to the beloved, Rilke maintained that "a togetherness between two people is an impossibility." Instead of an easy fusion with the beloved, Rilke recom-

mended that we “stand guard over the solitude of the other.” Likewise, I feel that the first stage of contemplative inquiry is to respect the integrity of the other, to stand guard over its nature, over “its solitude,” whether the other is a poem, a novel, a phenomenon of nature, or the person sitting before us. We need to allow it to speak its truth without our projection or correction.

- **Gentleness**—Contemplative inquiry is gentle or delicate. In his own scientific investigations, Johann Wolfgang von Goethe sought to practice what he called a “gentle empiricism (*zarte Empirie*).” If we wish to approach the object of our attention without distorting it, then we must be gentle. By contrast, the empiricism of Francis Bacon spoke of extracting nature’s secrets under extreme conditions, putting her to the rack.
- **Intimacy**—Conventional science distances itself from nature and, to use Erwin Schrödinger’s term, objectifies nature. Ideally, science disengages itself from phenomena for the sake of objectivity. Contemplative inquiry, by contrast, approaches the phenomenon, delicately and respectfully, but it does nonetheless seek to become intimate with that to which it attends. One can still retain clarity and balanced judgment close-up, if we remember to exercise restraint and gentleness.
- **Participation**—Gentle intimacy leads to participation by the contemplative inquirer in the unfolding phenomenon before one. Outer characteristics invite us to go deeper. We move and feel with the natural phenomenon, text, painting, or person before us, living out of ourselves and into the other. Respectfully and delicately, in meditation we join with the other, while maintaining full awareness and clarity of mind. In other words, contemplative inquiry is experientially centered in the other, not in ourselves. Our usual preoccupations, fears, and cravings work against authentic participation.
- **Vulnerability**—In order to move with the other, in order to be gentle in the sense meant here, in order to participate truly, we must be confident enough to be vulnerable, secure enough to resign ourselves to the course of things. A dominating arrogance will not serve. We must learn to be comfortable with not knowing, with ambiguity and uncertainty. Only from what may appear to be weakness and ignorance can the new and unknown arise.
- **Transformation**—These last two, participation and vulnerability, lead to a patterning of ourselves on the other. What was outside us is internalized. Inwardly we assume the shape, dynamic, and meaning of the contemplative object. We are, in a word, transformed by contemplative experience in accord with the object of contemplation.
- **Education as formation (*Bildung*)**—The individual develops, or, we could say, is sculpted through contemplative practice. The German language has two words for education, *Erziehung* and *Bildung*. The latter stems from the root meaning “to form.” (The former means “to draw out.”) The lineage of education as formation dates back at least as far as the Greeks. In *What Is Ancient Philosophy*, Pierre Hadot writes of the ancient philosopher, “the goal was to develop a *habitus*, or new capacity to judge or criticize, and to transform—that is, to change people’s way of living and seeing the world.” Simplicius asked, “What place shall the philosopher occupy in the city? That of a sculptor of men.” Or as Maurice Merleau-Ponty put it, we need to “relearn how to see the world.” In an essay on science, Goethe declared that “every object well-contemplated creates an organ of perception in us.” Parker Palmer’s important work also centers on education as formation.
- **Insight**—The ultimate result of contemplative engagement as outlined here is organ formation, which leads to insight

born of an intimate participation in the course of things. In the Buddhist epistemology this was called “direct perception;” among the Greeks it was called *episteme* and was contrasted to inferential reasoning or *dianoia*. Knowing of this type is experienced as a kind of seeing or direct apprehension, rather than as an intellectual reasoning to a result.

In the interest of time I must leave aside the important issue concerning the confirmation of insight by various means: experimental, logical consistency, or other methods. In philosophy of science this is sometimes termed the difference between the “context of discovery” and the “context of proof.”

Finally, contemplative inquiry is neither dispassionate analysis nor disembodied asceticism. Throughout all its stages there moves a lively, open excitement, a calm Eros that animates our interest and keeps us attentive and engaged.

To help us understand the features of contemplative inquiry, I would like to use two citations, the first from Goethe:

There is a delicate empiricism that makes itself utterly identical with the object, thereby becoming true theory. But this enhancement of our mental powers belongs to a highly cultivated age.

In this passage Goethe highlights several features of contemplative learning. First, it is experiential learning. What Goethe terms a “delicate empiricism” is also deeply participatory; it makes “itself utterly identical with the object.” Theory (from the Greek root meaning “to behold”) is not understood here as ratiocination, as deductive logic, but as a high form of seeing, what Goethe elsewhere terms “*aperçu*.” We know by virtue of connection, not disconnection, because we are identical with the object of our attention. Goethe fully recognizes that such non-dual awareness is far distant from where we begin, but education is

concerned with precisely the enhancement of our mental powers in this direction, with the journey from blindness to seeing.

The second citation comes from Emerson’s essay, “The Poet,” in which he writes:

This insight, which expresses itself by what is called Imagination, is a very high sort of seeing, which does not come by study, but by the intellect being where and what it sees, by sharing the path, or circuit of things through forms, and so making them translucent to others. The path of things is silent. Will they suffer a speaker to go with them? A spy they will not suffer; a lover, a poet, is the transcendence of their own nature—him they will suffer. The condition of true naming, on the poet’s part, is his resigning himself to the divine aura which breathes through forms, and accompanying that.

In Emerson’s universe, the poet is a lover who is capable of “resigning himself” to that which breathes through the forms of nature. He possesses what I call the capacity for vulnerability, which leads to insight as a high form of seeing called Imagination. In this way the poet distinguishes himself from the spy, and nature consequently permits the poet to give voice to her nature. This is a true naming.

Contemplative insights are as much a part of science as the arts. William Rowan Hamilton’s sudden discovery of quaternions (which are a step beyond imaginary and complex numbers) while walking across the Brougham Bridge in Dublin was the fruit of long contemplative uncertainty. The insight passed into him like an electric current, to use Hamilton’s own metaphor. It was an electrifying moment causing him to quickly turn aside and carve the key mathematical identities into the bridge railing. Likewise with the young Werner Heisenberg’s discovery of the quantum uncertainty relations in 1927 while ill in Denmark. His passionate engagement with the theme of

[L]earning to love ... is also the task of learning to “know” in its fullest sense.

complementarity intensified while visiting his spiritual father, Niels Bohr, but it finally culminated while Bohr was on a skiing vacation and Heisenberg was alone and feverish. The so-called “context of discovery” is a contemplative context full of passion and sustained uncertainty. The conditions required for intuitive insight are quite different from the subsequent dispassionate, logical testing of it. The “context of proof” does indeed require careful assessment of insights against the data of experiments and the logic of mathematics. But the new insights of science enter as the fruit of contemplative gestation, not deductive analysis. As Emerson reminds us, “All becomes poetry when we look from within ... because poetry is science, is the breath of the same spirit by which nature lives. And never did any science originate, but by a poetic perception.”

Eros and Insight

The art historian Joel Upton and I have twice taught a course at Amherst College that explicitly attempts to explore the relations among love, knowledge, and contemplation. The course is secular and has little reference to techniques of meditation that are taken from religious tradition. Two of the readings are from the western spiritual traditions—the Beguine Marguerite Porete (d. 1310) and the Trappist monk Thomas Merton—but the remainder are from scientific, philosophic, artistic, and literary sources. Last year’s group was a class of 30 first-year students from surprisingly diverse backgrounds, racially and economically.

We learned from experience to start with the knowledge pole of the course. Discussions concerning love require trust as well as sophistication, both of which take time to engender in a class. We adopted a slower, more reflective pace for the course. Readings were short and powerful; we asked students to spend time with them and appreciate their force. Papers were brief (one page, except for the final paper, which was longer), and we required students to turn in three drafts. Directly and indirectly, we asked them to live the class materials, all of it: the readings, the lectures, our many conversations, the meditations, and their writing. Step-by-step, and one-by-one, we asked them to become increasingly vul-

nerable to the content of the course and to participate fully. Parallel with the course material, we also engaged students in a series of contemplative exercises.

I should mention that students quickly realized that Eros and Insight was like no other course at Amherst. Several students told us that they had given up on education, becoming cynical about it in high school. They learned to perform whatever was asked, even if it failed to connect to their lives, their deep questions and greatest longings. Big jobs with big salaries were the material carrots for high performance, and Amherst was merely a means to that end. Set the bar anywhere, and they would jump over it, not out of sincere interest, but because they were smart and well-trained. It took time to win them over, to reawaken in them the root aspiration they all have, which is not primarily about education as an instrument for wealth acquisition. Instead, it is about transformation and development. In my 25 years of teaching, Eros and Insight was the most gratifying teaching experience I have had. I am especially grateful to the students who trusted us to lead them into new territory and experiences.

The First Class

We told them, “This is the first day of your life. You have gotten into Amherst College; you are no longer at home; what will you make of this precious life which you begin today?” Then we handed out passages from Henry David Thoreau’s *Walden* and Simone Weil’s *Gravity and Grace*.

“I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived.” The discussion was animated. What does it mean to go to the woods? Thoreau sought a place apart, in order to live mindfully and deliberately. We will do likewise, setting apart times to be mindful and deliberate, in order that we too can learn to discern the essential facts of life. In the rush of our lives we too often pass them by. As part of the class we will periodically pause, be silent, reflect, and in this patient, quiet way we will learn.

In Thoreau's description of the morning we met a second essential theme of the course: becoming awake. "The millions are awake enough for physical labor; but only one in a million is awake enough for effective intellectual exertion, only one in a hundred millions to a poetic or divine life. To be awake is to be alive. I have never yet met a man who was quite awake. How could I have looked him in the face?" They had gotten into Amherst because they proved they could handle intellectual exertion, and what more remained? By the end of the hour, many longed to waken to a poetic or divine life, and so truly to be alive.

Simone Weil writes of the ubiquitous power of gravity, which is everywhere and orders all things—except grace. Grace alone defies gravity's grasp, but it requires special conditions in order to appear. Weil says, "Grace fills empty spaces but it can enter only where there is a void to receive it." Simone Weil evokes the powerful importance of silence, emptiness, openness, the Void. Meditation helps us enter the space of silence and to foster the openness into which grace can appear.

Quite naturally our conversation with them transitioned to a final series of slides showing a Zen garden and a pond with ripples. Basho's haiku, and their first meditation exercise of five minutes of silence, ended the class.

Breaking the silence
Of an ancient pond
A frog jumped into the water—
A deep resonance.

They were to continue the exercise with silence on their own. We assigned a one-page paper of pure description on the stages and experience of meditating silence. No flights of imagination, or sophisticated scientific or philosophical analysis. Only simple, attentive, deliberate, and descriptive prose.

Sustained Attention

The second exercise was on sustained attention and the cultivation of the so-called "after-image." Any sense object will do, but we chose the sound of a bell. The meditation has three

parts that we perform, and a fourth that is given to us, grace.

- Sound the bell three times. Listen intently to its form and timbre.
- Even after the bell sound has died away to outer silence, we possess the memory of the bell sound. We can re-sound the bell inwardly. Do so. Listen to its inner reverberation, again and again.
- The third stage is that of silence. Allow the memory of the bell sound to fade, releasing all sound, and opening the attention wide. The appropriate mood for this state is wonderfully characterized in the Tao Te Ching:

The Master doesn't seek fulfillment.

Not seeking, not expecting,

She is present and can welcome all things.

- The fourth phase is not enacted by us, but may present itself in the silent space thus prepared and sustained. In Buddhaghosa's description of the so-called ten *kasinas* or devices (earth, water, air, fire, four colors...) this is called the "afterimage" phase. During it the inner aspect of the bell sound, or other sense experiences used in the same way, arise in the silence or void.

Openness

True single-pointed attention is, by definition, oblivious to everything outside the immediate field of attention. Contemplative inquiry moves out from sustained, focused attention to open attention. When we release the bell sound we are already approaching this stage of practice. It can become, however, the main feature of the exercise by using relationship as the focus of attention. Any comparison will do, but one we have used is the simplest value-scale exercise common to artistic training. Giving the students paper, brush, and black and white acrylic paints, we ask them to make a graded sequence of grey squares that step evenly from white to black.

We use this and other comparison exercises to cultivate a sense for relationship and the inner discernment of difference, which we see as the first feature of contemplative cognition. One moves

from single states of awareness to the direct perception of differences and similarities. This is a key moment. If we intend to connect contemplation to knowing, to *veritas*, then we must articulate an understanding of contemplative practice that moves from the psychological and health benefits of meditation to its cognitive dimensions.

Sustaining Contradiction

The fourth stage of contemplative inquiry proved especially challenging for our bright Amherst students. Whenever they are thrown a problem, they want to solve it. If they encounter a contradiction, they resolve it. Reality is often resistant to this approach, and for good reasons. I lectured them about wave-particle duality in physics and Joel spoke about the artistic tension produced by antagonistic elements in great works of art. We sent them to the art museum in pairs to look at particular portraits that had the strange habit of looking back. We put one student on one side of the gallery and another on the opposite. The painting looks at each; it looks in two directions simultaneously. Impossible. The 14th century bishop Nicolas of Cusa, who recommended this exercise to his monks, called this and similar phenomena a “coincidence of opposites.” Think about it, hold the contradiction and, instead of resolving it, sustain it—practice sustaining contradiction.

But the deep significance of cultivating a consciousness that can sustain contradiction was appreciated only when it came home to our students during one of our extra informal evening conversations. Several of our racially mixed and ethnically diverse students began to speak about the irreconcilable complexity in their lives that had caused them great uncertainty and personal suffering for years. Were they Chinese or American, how did the Haitian home they had just left (so full of life, French language, and deep religiosity) relate to the life of the pristine mind and raucous campus life they were pursuing here at Amherst? Were they betraying their lineage? Did they need to decide between their contradictory identities? How could they? Their very lives required them to sustain a huge contradiction. As the Lebanese-French writer Amin Maalouf has so

eloquently stated, it is precisely through the irreconcilable complexities of our lives that our identity emerges. When we deny that complexity, as a society we quickly decompose into warring ethnic and religious factions vying for dominance, with all the tragic consequences that attend on this archaic view.

Self-love

Only when we reached this turning point were we and the class ready to speak of love explicitly, because the architecture and life of love is animated by impossible contradictions. We long to be one with the beloved without in the least damaging or distorting her or ourselves. We study the troubadours and their chansons which repeatedly sing of love’s contradictory nature, as these lines from Arnaut Daniel show:

I never held but it holds me
all the time in its bail Love
and makes me glad in anger, fool in wisdom
as one that never can fight back,
because a man that loves well, cannot defend
himself.

Love is at once painful and joyful, a “sweet sorrow.” Love can begin with ourselves, accepting and even delighting in the contradictory elements out of which we are composed. Am I a scientist, a poet, or a spiritual seeker? Yes, to all of them. The structures of our institutions of higher education belie this complexity. At best they struggle to capture it through interdisciplinary conversations among representatives of different disciplines. These often play out like negotiations between nations or ethnic groups at the UN. More is required, much more, if we are to integrate these diverse elements without dissolving them, and it starts by leveraging the inconsistencies in ourselves. This can only happen if we love the contradictions and so love ourselves.

Love of Others

The well-known Buddhist loving-kindness meditation allows one to gradually widen the circle of one’s compassionate and loving attention. Starting from ourselves, we then go on to some-

one close (a friend, relative, spouse). We wish them peace, joy, well-being.... We continue to widen the circle of our loving attention still further to those we do not know well, wishing them also peace, joy, and well-being. And, finally, we choose someone who is troublesome and difficult in our lives. Even to them, we wish peace, joy, and well-being.

By this time in the class, we are reading Plato's *Symposium*, his great dialogue on love. Love, as taught to Socrates by Diotima, is not only practiced toward other persons, but also toward beauty in nature and toward the great institutions that embody our highest ideals. Ultimately we love the ideal forms that are reflected everywhere throughout the beautiful in both natural and human creations. The "ladder of love," however, leads not only up to the realm of pure forms, but it also descends to the mundane. The closing pages of the dialogue in which the drunken Alcibiades describes his love of Socrates, and dares to speak of the noble life of Socrates, these are testimony to a life lived in love for his students and for his fellow Athenians, as well as the eternal ideals of truth, beauty, and goodness, a love which was repaid with a glass of hemlock.

Love of the Deed

An important figure in our course at this point is the Beguine Marguerite Porete who lived and died around 1300. In her book the *Mirror of Simple Souls*, Porete used the new language of *fin amor* as sung by the troubadours in Old Provençal to describe her *amor de loing*, her "love from afar." In her case her distant love was not for an earthly companion but for God. Through the intensity of her love for her beloved, she realized that true moral action was not guided by the rules of what she called "the church of the little," but by the great church of love. In place of the theological Virtues, from which she declared herself free, she espoused action guided by love alone, quoting Saint Augustine: "Love, love and do what you

will." Her espousal of love as the true guide for action brought her into conflict with certain bishops within the Catholic Church of France. As a result she was arrested, imprisoned, and tried before the Inquisition in Paris. She refused to recant her love and views, and was thus condemned to die by fire for "The Heresy of the Free Spirit." At her execution spectators cried when they saw with what quiet nobility she met her death.

Students are deeply moved by Porete's valiant if tragic life. We ask them to meditate on Augustine's line, "Love, love and do what you will," which was at the heart of Porete's life, and to write on how eros and insight are here raised to a form of contemplative knowing. After all, Marguerite Porete knew something so surely that she could stand silently and confidently before the greatest scholars of the Paris Inquisition without wavering. Loving love had granted her an insight or aperçu for which she was willing to die. To do otherwise would be to betray her beloved, which is to say everything she knew.

Re-Imagine Your Education

Our final assignment to our students was to re-imagine their Amherst College education in light of eros and insight. They had studied Kepler and Rembrandt; they had read Oliver Sacks, Niels Bohr, Barbara McClintock, Albert Einstein, and Werner Heisenberg. They had read the troubadours, Merton, Rilke, T. S. Eliot, and Plato on love.

In addition they had meditated on silence, attention, openness, contradiction, self-love, love of others, and love of the deed. What, we asked, should educa-

tion—their education—be in light of all this? This was their final paper assignment: Redesign your Amherst education in light of eros and insight, in light of the relationship between love and knowledge.

Upton and I ended *Eros and Insight* with an image suggested to us by a pair of students in our first version of the course. In its simplest form, the

**We know by virtue of connection,
not disconnection, because we
are identical with the object of
our attention.**

visual metaphor is a doorway or entry composed of two posts with a lintel spanning the space between them. The two posts are a visual metaphor for the course's two parts: eros and insight. As our students pointedly recognized, eros can quickly be debased to lust, but insight can also be diminished to instrumental reasoning alone. Yet eros can also be enhanced to become the lintel of love, which seems to imply that the enhancement of insight becomes love as well, a knowing that is also a loving, an epistemology of love.

In this manner, as it turns out, the task first put to us by Rilke, learning to love, is also the task of learning to know in its fullest sense. Karl Jaspers quotes Nicolas of Cusa concerning the highest form of human knowing, saying: "knowledge is here identical with love and love identical with knowledge." Or, as Aristotle puts it in *Metaphysics*, "The supreme desirable is one with the supreme Intelligible." An epistemology of love is not a flight from reason to sentiment. The academy has nothing to fear from contemplative inquiry; indeed, this alternate is in some measure already part of a covert curriculum that educates for discovery, creativity, and social conscience.

As contemplative educators, I believe that we are all engaged in an important project, one with a long tradition. The project of ancient philosophy was to live a right life, to embody virtue, not only legislate it, to engender creativity and the capacities for insight, not only memorize formulae and works of art. As Hadot puts it, their education was "a course of training which would make them simultaneously contemplatives and men of actions—since knowledge and virtue imply each other."

In his final paper for Eros and Insight, Rajiv (not his real name) confessed that he was now unsure about what to tell his parents about his career plans. His mother was a nuclear physicist and his father was a neurosurgeon. They expected a six-figure salary for him immediately upon graduation, and prior to the course he had gone along with their expectations. In his final paper he

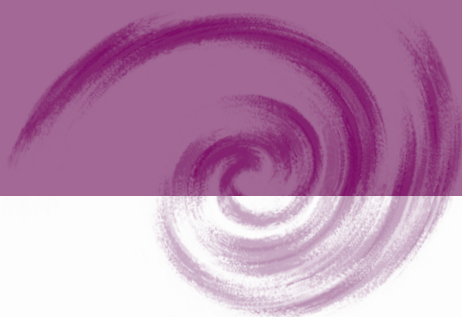
wrote, "How do I tell them that now the only thing I want to be in life is a lover?" Given his formidable talents, I feel confident Rajiv will succeed outwardly, but I hope he remembers to live deliberately, to cultivate silence, attention, and relational awareness, and even to sustain contradictions. Then he will be vulnerable to and participate in the mysteries that are everywhere around him. He will move from being a spy to being a lover whom nature will accept. In the process, he will reform himself, shaping organs for cognition, for a high kind of seeing that is true theory. The ethic associated with this epistemology is one he can live by. Since at this highest level, which is the level of deep contemplation, knowing and loving are one, his actions will be virtuous and his words true. He will, in some measure, have accomplished the greatest and most difficult task of all, that for which everything else is but a preparation: He will have learned to love.

Endnotes

1. This paper was given at Teachers College, Columbia University, on February 13, 2005, at the conference "Contemplative Practices in Education: Making Peace in Ourselves and Peace in the World."
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3. Rainer Maria Rilke, *Love and Other Difficulties*, edited and translated by John J. L. Mood. New York: W. W. Norton, 1975, pp. 30–31.
4. Parker Palmer, "The Violence of Our Knowledge: Toward a Spirituality of Higher Education," *21st Century Learning Initiative*, http://www.21learn.org/arch/articles/palmer_spirituality.html.
5. Rudolf Steiner, *Die Verbindung zwischen Lebenden und Toten*, GA 168, pp. 94–95.
6. Rilke, *Love and Other Difficulties*, p. 97.

7. Rilke, p. 28.
8. Goethe, *Scientific Studies*, translated and edited by Douglas Miller. New York: Suhrkamp, 1988, p. 307.
9. Erwin Schrödinger, *Mind and Matter*, Cambridge: Cambridge University Press, 1967, Chapter 3.
10. Pierre Hadot, *What Is Ancient Philosophy?* Cambridge, MA: Harvard University Press, 2002, p. 274.
11. Quoted by Hadot, p. xiii.
12. Quoted by Hadot, p. 276, and Maurice Merleau-Ponty, *Phenomenology of Perception*, London: Routledge, 1962, Preface.
13. Goethe, *Scientific Studies*, "Significant Help Given by an Ingenious Turn of Phrase," p. 39.
14. Douglas Sloan, *Insight-Imagination*, Westport, CT: Greenwood Press, 1993; Robert J. Sternberg and Janet E. Davidson, *The Nature of Insight*, Cambridge, MA: MIT Press, 1995.
15. Goethe, "Maxims and Reflections," p. 307.
16. Goethe, in a letter to Soret of December 30, 1823, quoted by Rike Wankmüller, *Goethe's Schriften, Hamburger Ausgabe*, vol. 13, p. 616. "In science, however, the treatment is null, and all efficacy lies in the aperçu."
17. "Every morning in the early part of the above-cited month [October], on my coming down to breakfast, your (then) little brother William Edwin, and yourself, used to ask me, 'Well, Papa, can you multiply triplets?' Where to I was always obliged to reply, with a sad shake of the head: 'No, I can only add and subtract them.' But on the 16th day of the same month—which happened to be a Monday, and a Council day of the Royal Irish Academy—I was walking in to attend and preside, and your mother was walking with me, along the Royal Canal, to which she had perhaps driven; and although she talked with me now and then, yet an under-current [sic] of thought was going on in my mind, which gave at last a result, whereof it is not too much to say that I felt at once the importance. An electric circuit seemed to close; and a spark flashed forth, the herald (as I foresaw, immediately) of many long years to come of definitely directed thought and work, by myself if spared, and at all events on the part of others, if I should even be allowed to live long enough distinctly to communicate the discovery. Nor could I resist the impulse—unphilosophical as it may have been—to cut with a knife on a stone of Brougham Bridge, as we passed it, the fundamental formula with the symbols, i, j, k ; namely, $i^2 = j^2 = k^2 = ijk = -1$ which contains the Solution of the Problem." Letter of Hamilton's: <http://www.maths.tcd.ie/pub/HistMath/People/Hamilton/Letters/BroomeBridge.html>.
18. Ralph Waldo Emerson, quoted by Peter Antony Obuchowski, Jr. in *The Relationship of Emerson's Interest in Science to His Thought*, University of Michigan Ph.D. 1969 (Ann Arbor, MI: University Microfilms, Inc., 1969), p. 47, and in *The Complete Works of Ralph Waldo Emerson*, edited by Edward Waldo Emerson, vol. 8, pp. 364–365.
19. For further details on the course, see the article "Eros and Insight" in *Amherst Magazine*, and the associated web links, www.amherst.edu/magazine/issues/04spring/. Also see my article in *Liberal Education*, "Spirituality in Higher Education: Overcoming the Divide," Winter 2003, pp. 50–58.
20. Translated by Nobuyuki Yuasa. See <http://www.bopsecrets.org/gateway/passages/basho-frog.htm>.
21. Stephen Mitchell, *Tao Te Ching*, New York: Harper Collins, 1988, verse 15.
22. Buddhaghosa, *Path of Purity*, London: Pali Text Society, 1975, pp. 143–204.
23. Amin Maalouf, *In the Name of Identity: Violence and the Need to Belong*, New York: Arcade Pub, 2001.
24. Marguerite Porete, *The Mirror of Simple Souls*, translated by Ellen L. Babinsky. New York: Paulist Press, 1993.
25. Karl Jaspers, *Anselm and Nicholas of Cusa*, edited by Hannah Arendt, translated by Ralph Manheim. New York: Harcourt Brace Jovanovich, 1974, p. 51.
26. Aristotle, *Metaphysics XII*, 1072a25ff.
27. Pierre Hadot, *What Is Ancient Philosophy?* Cambridge, MA: Harvard University Press, 2002, p. 90.

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Teachers' Self Development as a Mirror of Children's Incarnation

G · 43

Renate Long-Breipohl

In a lecture on self-education in the light of anthroposophy, Rudolf Steiner differentiates between self-education in the realm of thinking and self-education in the realm of will. In educating our thinking, we strive to develop clarity with regard to ideas and ideals, the ability to discriminate between what is essential and what is not. Essentials can be of help in finding the big picture or strengthening such a picture within us. To identify these essentials is to find signposts in the vast spiritual landscape of ideation. In educating our will the situation is different. We place ourselves in the middle of life and are as open as possible to whatever comes. We try not to retreat from what surrounds us, but to accept what meets us as the challenges of life.

In approaching the question of the essentials of early childhood education, let us begin with four images of incarnation, extending our thinking as far as the zodiac. Rudolf Steiner has encouraged us to do so, to look at these pictures of incarnation, if we want to educate young children. In *Practical Advice to Teachers*, he says:

The time is now that the human being must extract the essentials of education from the knowledge of the connection of the human being with the cosmos. The growing child experiences the continuation of happenings which have occurred in the supersensible world before birth.

Out of the cosmos, the zodiac and the planets, come those forces that form a child's body in the womb and continue their formative activity through the first seven years of life. On the other hand, Steiner indicates that cosmic influences continue to work in children's lives; all children

A child's ability to imitate and to live in total trust in the goodness of the world and of those human beings surrounding the child originates in spiritual existence.

around the world share archetypal experiences. These archetypal experiences are here called "essentials" of childhood, and they are connected to spiritual qualities associated with specific signs of the zodiac. In particular, Steiner points to the signs of Aries, Taurus, Gemini, and Cancer, which he describes as powers behind incarnation. "When we arrive in the world, the first four powers or impulses [meaning the first four signs of the zodiac] are already in us, though we only develop them afterwards." The younger the child, the closer he or she still is to these four principles or powers. Discovering the connection between a young child and the zodiac is an inner journey.

Once, on a trip to Thailand, I saw a wooden carving depicting the zodiac in the entrance area of an old house from the north. It was the beginning of my journey into the realm of the zodiac, which I had not explored very much before. The carving showed a man and a woman sitting in the opening of a gateway. The man is lifting up a baby and handing it to the mother. Around this scene in circular arrangement are the twelve signs of the zodiac. Twelve animal signs, as known in the Chinese tradition, those which give the theme for each year in a set sequence, formed a second outer circle. A being sits upright on each of these outer animal signs. In the case of the signs of the dragon and the snake, the being holds them under control.

In Thai culture these beings are seen as "Devas," lower divine beings. We could also see them as images of the higher self of the human being overcoming or "taming" the animal forces still present within us. The outer circle could be understood as pointing to moral forces in the cosmos, beyond the zodiac. Thus the family group in the center is surrounded by and part of the outer world of the stars and the inner world of morality.

A second experience occurred at a kindergarten in New Zealand. The kindergarten room had a most unusual doll's house, an area without the usual drapery, but with a specially decorated back wall. In accord with the Maori creation myth, the wall was decorated with a woven arch above which were stars representing the zodiac. In front of them, grass stars were hung, representing the planets. Below the arch hung a three-dimensional woven form similar to a lemniscate. Below this, wooden figures depicting the ancestors stood on a pedestal. Finally, dolls lay on the floor, a special weaving behind their beds. What a wonderful picture of the human being's connection to the cosmos.

The intellect does not help to find this connection, but in the soul experience of feeling we can build a bridge to this realm. While the child's connection to the cosmos is a "gift of heaven," adults have emancipated themselves from a connection with the cosmos.

Building a relationship to the world of the stars does not come naturally anymore. The body has long been completed, ties to the past are cut. In the act of thinking and in the performing of deeds the human being experiences, to a certain degree, a sense of freedom and independence. As Steiner puts it, "Man has renounced the universe at the head end and at the limb end so that we are only wholly given up to the rhythm of the universe in so far as we are rhythmical human beings."

We experience this, for example, whenever we endeavor to understand the spiritual forces in and around the child. When we consider the planets and the days of the week, we reach out into cosmic rhythms related to the earth. We reach out and bring our ego or "I" into contact with these rhythms. We may also embrace what comes from the region of the zodiac and influences a child in the first seven years. This step is an act of conscious inner development. We become interested in the soul experience of the zodiac and in the practice of those virtues that are related to the signs of the zodiac. The practice of the virtues that correspond with the first four signs can become our effort as developing adults to attune

ourselves to this realm of the cosmos and to the incarnation of a child.

Images of Incarnation

Aries in Relation to Children: The Ram Looking Back

Steiner describes Aries, the ram, with his head turned back, as if looking over his shoulder, a frequent depiction of this zodiacal sign.

"Looking back" is also a gesture of the young child, not as conscious act but out of a kind of "spiritual habit." Steiner speaks about the "telephone connection" which children still hold to the spiritual world. Living in the spiritual world has shaped their way of relating to human beings. A

child's ability to imitate and to live out of total trust in the goodness of the world and of those human beings surrounding the child originates in spiritual existence. In many children we witness the acceptance of the spiritual reality behind birth and death as an unquestioned reality. We observe how

effortlessly children connect to worlds different from ours, how easily they slip into images depicting the other worlds of fairy tales, and how naturally elements of long-gone cultures appear in their play. How can we as adults relate to this? What is an adult's gesture of "looking back"?

Aries in Relation to Adults: The Virtue of Devotion

As educators we have learned to respect the connection of children to the spiritual world as depicted in the image of the ram looking backward. We respond by consciously striving to build our own relationship with the spiritual cosmos, becoming ever more aware that the spiritual realm is in and behind the things we see and do. In the presence of people who are open to the spiritual realm, children will feel "at home" and met with acceptance.

If we want to accompany children, who still so easily traverse the border between worlds, we also need to offer an environment that facilitates incarnation into the earthly world. It does this by containing elements that still remind children of their heavenly home. This does not mean prescribing the kind of dollhouse or type of dolls or soft

... Devotion requires that we feel ourselves as working in the presence of spiritual powers and toward the highest possibilities of the human being.

toys, as these are only the outer appearances of less tangible things. The proper environment lives in the inner mood of the teacher, which radiates out into the environment and shapes it.

I was once invited into a Steiner school to evaluate a kindergarten teacher. On the day of my visit the teacher and her assistant were working very hard. Lots of things were going on in the room. The assistant made dough for bread. The teacher set up a table for painting in small groups, calling new children from time to time and tidying up between children. She had to leave the painting table several times in order to re-direct children whose play did not move smoothly or who requested assistance. Once painting was finished, a task connected with the autumn festival was waiting. All children were called to sit down in a circle to decorate their little autumn tree with colored beeswax. The teacher conducted herself with gentleness and love. One could see that she really was committed to her work and wanted the best for the children. Yet there was not a mood of devotion, because the teacher was stressed. The children responded by being unsettled.

The teacher recognized the hectic schedule as the cause of her stress and was able to reduce and slow down her activities. During another visit to this room not long after, I saw at least four groups of children busily creating landscapes on the floor and the teacher sitting close by with her work. It was calm; there was intense play. The teacher was able to “be with” the children rather than to “control” them. And in this “being with” there lived the virtue of devotion—an openness to what happened, and a feeling of timelessness within intense activity.

When we work in devotion, we work in a sacred space. It is our form of looking back, of relating to the spiritual world. Devotion is different from performing our duty. We cannot rightly say that we are devoted to our duty. For devotion requires that we feel ourselves as working in the presence of spiritual powers and toward the highest possibilities of the human being. We can bring this to children as a mood.

Creating a mood of devotion demands of us that we are able to let go of tight time schedules

and a continuous succession of planned activities as well as an initiating or supervising role in these. When we are less driven by a schedule and more open to the sacred quality of our work with young children, then the children will sense that we also are “looking back.”

Taurus in Relation to Children: Movement and Balance

Steiner describes Taurus as the bull jumping sideways. This gesture expresses movement and balance simultaneously. What better picture could be given for young children? In moving, children find themselves in a new world, in space. In moving they learn about their bodies and their relationship to space, and they learn what the body can do, twisting, turning, bending, walking, and running. In the practice of finding out about the forces behind movement and balance, children have their first experience of what it means to be on earth.

Symbolically too movement is a gesture of going toward the future, the new. Young children are immensely curious about the world and eager to learn. They learn from the moment they wake until they go to sleep and are—if healthy—in movement for most of that time,

working with tremendous will. They experiment with the physical laws of movement and balance.

When we work with children, we use rhythm in speech and rhythmical movement to assist with mastering new movement patterns. We know how much the rhythmic movement in a morning circle or the rhythms of hand gesture games or nursery rhymes can help children to incarnate. M. L. Nuesch has wonderful anecdote about this:

He got to know the kindergarten and the teacher only recently, but he learnt quickly that the teacher understood his language. He did not take any initiative in play. If he played with others, he could do that only in a role such as a wild animal or a monster. His imagination was filled with characters of a virtual reality. The little knitted sheep which the teacher had made for him, he brought back into

The greatest transition that children have to make is from the spiritual world to the physical world.

the kindergarten, there was no room for it in his world.

"You are now my mommy and you must go and get me from the back there, because I am frozen into an ice block." He really stands there like an ice block, without any movement. Some children help me to carry him away. "You have to bring me into a warm country," he said. But this does not help. He hides in a cave (under a table), he obviously needs protection and quiet.

"Now something will come out," he announces. But it is not a "thawed" child which appears, but another horrible monster...

Many weeks later he comes back to the theme. "Look, I am all frozen," he says. He stands there in a twisted position, even eyes and hair look as if affected by stiffness. This time the teacher takes him on her lap and starts to massage his arms and legs firmly while talking to him with humor. "Also the ears," he says. (He had surgery because he did not hear well.) The teacher shakes him a little and he is content when she tells him that the "frozenness" now is flowing out. He says it has to flow out from both his ears. Then the teacher takes him on her lap like a little parcel, kneels down herself and rocks him backward and forward. "I am not a baby," he cries, but he sounds content. The teacher says that this is what one has to do if somebody is "frozen." After a while the teacher lets him go with a little friendly smack. His face is now relaxed.

This story shows a teacher working with the Taurus quality, which requires the courage to try new ways. It also requires acceptance that not everything that we would wish for can be achieved. The child left the kindergarten shortly after this event so that the situation remained unresolved.

Taurus in Relation to Adults: Balance Becomes Progress

There is no recipe for the virtue of balance. Finding balance in working with children is an act

of attuning our inner perception to what children need, inwardly and outwardly. We may have to leave behind familiar ideas, habits, and conventions to experience inwardly how a situation may be handled. We discover a rhythm between "old" and "new;" they belong together and need each to be moved to come to balance.

Steiner describes here, for example, the relationship of a younger generation to an older generation. He speaks of three enemies to real understanding: empty phrases, conventions, and set routines. For example, repeated sayings like, "Gentle hands" or "Inside voices" can become empty phrases in our kindergartens. While there is a place for repetition in early childhood, there are many situations where a new way of saying things may be needed and where the right word can be found from immediate experience.

Conventions take over when we do something that has lost its meaning but we still do it because it has always been done this way, for example, lighting a candle before beginning some ritual. Unless we have reflected on why we do it and are convinced of the relevance of lighting a candle in a particular situation, it is better not to light one. The children will feel it if candle lighting has become a convention; they may react by misbehaving.

In mentioning routines in an early childhood context, we acknowledge, of course, that young children need routine. But routine needs to have a rhythmical quality, not a mechanical quality, so that there are possibilities for variation. We would not break the rhythm of a day, but we do allow activities to move slightly within a daily schedule, giving the schedule a living Taurus quality.

Children are eager to both move forward and look back. How much can we tolerate a child trying something new? How do we move within ourselves ("emotion" means, literally, "movement arising from within") so that we do not become rigid? By being aware of the danger of stagnation in empty phrases, convention, and routine, we can harmonize stability and change.

Gemini in Relation to Children: The "I" Meets Self

The image of Gemini is "two-ness in oneness," twins holding hands. Consciousness of self is possible only in the realm of matter, where there are borders around things and where beings are physically separated from one another. The greatest

transition that children have to make is from the spiritual world to the physical world, the transition from being able to merge and live within other spiritual beings to separation and individualization. It takes years for children to go through this process.

We know that the ability to imitate is a great aid in this transition, and we know of the crucial role that a teacher may play in this process. From birth onward we experience “two-ness:” adult and child, “holding hands” literally and metaphorically. The self of a child rests within the mother and caregiver, the earthly helpers of spiritual powers. Then, from around age three to the end of early childhood, we still “hold hands” with mother, teacher, or caregiver, but also become aware of ourselves as separate entities. When a child says, “I am Laura” or “I don’t want to” or “I don’t like my drawing,” then the child has learned to look at herself; “I” and self face each other.

For some children this individualization does not occur easily. We find a wonderful report on this process of discovering oneself in Virginia Axline’s *Dibs: In Search of Self*. Axline writes about the first session of play therapy with a five-year-old boy:

When we got into the playroom, Dibs walked slowly around, touching the materials, naming the items with the same questioning inflection he had used on the first visit to the other playroom.

Sandbox? Easel? Chair? Paint? Car? Doll? Every item he touched, he named in that manner. Then he varied just a little. Is this a car? This is a car. Is this sand? This is sand. ...After he had completed the first circuit of the room, I said, “Yes. There are many different things in this room, aren’t there? And you have touched and named most of them.”

“That’s right,” he said, softly.

I did not want to rush him. Give him time to look around. ...He stopped in the middle of the room.

Being served, being nurtured, and being loved create the necessary foundation for developing selflessness later in life.

After a while I ask him, “I say, Dibs! Would you like to take off your hat and coat?” “That’s right,” he said. “You take off your hat and coat, Dibs. You take off your hat. You take off your coat, Dibs.” He made no motion to do anything about it. “All right,” I replied, “Take off your mittens and your boots too, if you want to.” “That’s right,” he said almost in a whisper. He stood there, plucking

idly and restlessly at his coat sleeves. He began to whimper. He stood in front of me, hanging his head, whimpering. “You would like to take them off, but you want me to help you? Is that it?” I asked.

“That’s right,” he

said. There was a sob in his voice as he replied.

It is obvious that this child had not been able to form his own identity, that he spoke about himself in the third person as if he were an onlooker with no relationship to himself. In the therapeutic process he discovered himself as a human being who can relate to himself as an “I.” He also discovered the ability to express feelings that he could identify as his own. Axline describes their twelfth session:

He ran over to the table, got the nursing bottle, and went back to the sandbox. He lay down and sucked on the bottle like a small baby. He closed his eyes. “When I was a baby,” he said. ...Then he suddenly sat up. “No, no, no,” he said and got quickly out of the sandbox. “I am not a baby. I was never a baby....”

Later:

He got the nursing bottle, took it to the sink, refilled it, tried to put the nipple on, but it was too slippery. “Miss A. will do it for you, Dibs,” he said. “Miss A. will not turn you down.”

She: "You think I'll fix it for you?" "That's right," said Dibs. "I know you will." He handed me the bottle. [She did it and returned the bottle to him.] He stood in front of me sucking on the bottle looking steadily at me. "You do not call me stupid," he said. "I say help, you help. I say I don't know, you know. I say I can't, you can." "And how does that make you feel?" I asked.

"Like that," he said. "I feel." He looked at me steadily, seriously.

Gemini in Relation to Adults: Perseverance Becomes Faithfulness

We can learn something about the virtue of perseverance through this story of a therapist "holding hands" with a child. She loves him with a form of objective devotion. She serves him—taking off mittens, helping with his bottle—even though she knows he could do these things himself. She does not ask for independent action, which he may be able to perform but does not, as yet, want to. She follows his steps, she mirrors his actions and intentions, out of the deep conviction that what the child harbors in the depth of his soul is valuable and that, in due course, he will bring forth his inner treasures. This is the virtue of perseverance and faithfulness: to take the place of the self of a child at a time when he cannot do it for himself. Temporarily, she becomes his twin. Today, this is a well-known method of dealing with autistic children, mirroring what children do in order to awaken in the children the ability to "see" themselves.

We also work with mirroring in the education of healthy children, but in normal cases children are able to mirroring or imitate as well. They are able actively to accept an adult as their "twin."

Steiner tells us that the benefit for children is all the greater the more they are able to live not in their own souls but in those within their environment. This ability to live in the souls of those in their environment forms the basis for children's experience of trust and belonging. The part of the adult in forming a relationship of trust and belonging is the virtue of faithfulness—faithfulness to what a child is not yet, but what the child unconsciously wants to become. We can do this by holding within us a picture of the child's higher

self, which will lead him to his destiny. To take the other into ourselves is a gesture of love.

In that we persevere as models for the children to imitate for as long as they need it, we help them, when they are ready, to become individualized and independent. It seems like a contradiction that imitation should lead to freedom, but such is the way of the healthy development of children and the way of Gemini, the twins.

Cancer in Relation to Children: Enclosing and Embodiment

Of the sign Cancer, Steiner says, "So far as we enclose ourselves, using the crab principle, we are head. This is the gift of heaven and we do not have to contribute." The essentials of incarnation contained in the first four signs of the zodiac are all linked to the process of bodily development, to "growing down" from the head. They relate to what works in children as living etheric forces that work downward, enlivening and fine-tuning the physical body. The bones of the skull can be understood as an image of the hard shell of the crab, protecting the brain, the delicate organ of human thinking, the image of the cosmos. The crab principle is the building of a bodily house around the soul and spirit of the child. Around age three, children act out in their play this fundamental need for enclosure and protection. Children build or seek out playhouses and hiding places. A playhouse is a wonderful image for the bodily house of the human "I."

Cancer in Relation to Adults: Selflessness Becomes Catharsis

Raphael's *Sistine Madonna*, the Madonna who carries the child from the realm of the heavens toward earthly life, holding the child near her heart and enclosing it with her veil, is a most beautiful depiction of incarnation.

Infancy and childhood are times to be protected, nurtured, carried, embraced, and surrounded by human warmth. Being served, being nurtured, and being loved create the necessary foundation for developing selflessness later in life. Young children cannot yet be expected to be selfless. They need adults for the fulfillment of their needs and for the development of trust in the world.

Selflessness as a virtue cannot be demanded. We choose selflessness or we do not; otherwise,

selfless behavior becomes pretence. When we are unable to act selflessly, but we recognize that we should, this may be cause for real self-reflection.

Children depend on our selflessness, outwardly and inwardly. They depend on our giving and our ability to decide freely not to pursue our own needs and wishes when these collide with children's needs. One of the great illnesses of our time can be seen in that more and more parents and teachers experience the foregoing of their own needs, emotionally and physically, as difficult or impossible. In wrestling with such inner stumbling blocks, mothering, teaching, or caregiving can become paths toward initiation. This struggle creates the possibility of becoming different, more spiritually aware persons. It begins a process of purification, of the transformation of the "egotistical" gesture of the crab, a closing off, into inner openness and receptivity to the needs of others.

Conclusion

Four essentials are symbolically written in the signs of the zodiac as archetypal processes for an incarnating human being:

- Aries: Preserving the connection to the spirit world from whence the child comes;
- Taurus: Moving forward in life and orienting to the future;
- Gemini: Developing consciousness of self; and
- Cancer: Practicing embodiment, enclosure, and enfolding.

As adults, we respond to these essentials. We may, in this regard, practice the four virtues of devotion, balance, faithfulness, and selflessness to deepen our pedagogical work in response to the essential spiritual needs of the young child. We may take seriously Steiner's charge that we learn to feel ourselves increasingly part of the universe, that we base our educational work on the images and powers present in the spiritual cosmos, and that, recognizing these, we bring them into earthly reality.

Endnotes

1. This article also appears, in a slightly different form, in the proceedings of the 2008 International Waldorf Early Childhood Conference, published by the Waldorf Early Childhood Association of North America (WECAN), copyright 2009, in association with the International Association for Steiner/Waldorf Early Childhood Education (IASWECE). Part II of this article will appear in the next issue of the *Research Bulletin*. Full proceedings may be ordered from WECAN at <http://www.waldorfearlychildhood.org>.
2. Rudolf Steiner, *Self-Education in the Light of Spiritual Science*, p. 18.
3. Rudolf Steiner, *Practical Advice to Teachers*, Lecture 2, p. 37.
4. Rudolf Steiner, *Cosmosophy*, Vol. 2, p. 78.
5. In Chinese consciousness, morality is seen as the highest principle, not only ruling the cosmos beyond the zodiac but also demanding the highest moral qualities from each human being.
6. Rudolf Steiner, *Cosmosophy*, p. 80.
7. *Ibid.*, p. 118.
8. We received the gift of the descriptions of these spiritual virtues through the work of Madame Blavatsky. Her findings were confirmed as spiritually correct by Steiner. Robert Sardello has written a comprehensive study on working with these spiritual virtues.
9. Rudolf Steiner, *Cosmosophy*, p. 67.
10. Rudolf Steiner, *The Spiritual Guidance of the Individual and Humanity*, p. 9.
11. M.L. Nüesch, *Spiel aus der Tiefe*, p. 87ff (translated by author).
12. Rudolf Steiner, *The Younger Generation*, Lecture 4, p. 72.
13. Virginia Axline, *Dibs: In Search of Self*, pp. 33-34.
14. Axline, pp. 126ff.
15. Rudolf Steiner, *Education as a Social Problem*, p. 13.
16. Rudolf Steiner, *Cosmosophy*, p. 80.

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The great object of Education should be commensurate with the object of life. It should be a moral one; to teach self-trust; to inspire the youthful man with an interest in himself; with a curiosity touching his own nature; to acquaint him with the resources of his mind, and to teach him that there is all his strength, and to inflame him with a piety towards the Grand Mind in which he lives. Thus would education conspire with the Divine Providence. A man is a little thing whilst he works by and for himself, but, when he gives voice to the rules of love and justice, is godlike, this word is current in all countries; and all men, though his enemies, are made his friends and obey it as their own.

—Ralph Waldorf Emerson, from
"Education"



Of Seeds and Continents: Reliability, Predictability, and Scientific Knowing

Michael D'Aleo

"I am not interested in what you think will work or what should work theoretically; build me a working model!"

This statement was repeated many times in the engineering career I had in the electronics industry prior to my teaching career. The owner and CEO of the company for which I worked had a Ph.D. in physics from Purdue University and had also served in the Navy. He had built the company from nothing, and the key to his success was that every product the company sold would work the first time, would be easy to use, and would be reliable for a long time. He knew all the reasons why something should work, but he was interested in spending time only with the designs brought to him for approval that were actually working models. A successful businessman and scientist, he wanted to see them, feel them, interact with the equipment; he respected the evidence of his senses.

Engineering is different from science because, at the end of the day, you need something that works. During the design phase you develop possibilities, you test them, and, in the end, try to knit these ideas into a whole fabric. You don't need to do a statistical analysis on the likelihood of your computer crashing or your automobile failing to start in the morning. If those things happen regularly, you will cease using the unreliable items and replace them with something that works. If the company that manufactures the product fails to remedy the poor performance, it goes out of business as customers refuse to purchase something that should work but in fact doesn't.

The situation becomes more complex when we leave the created world of the engineered product, a machine, and enter any scientific endeavor in which we are working with an aspect of the natural world. Many engineered products are designed to be worlds unto themselves. The engineer's task is to create a space in which the only laws that matter are those for which the

engineer accounts. All interactions are generally lawful because a certain input always results in the same specific outcome. Would you want to drive a car that usually starts when you turn the key? How about a computer that sometimes writes left to right and, at other times, right to left? Nothing annoys a user, or the creating engineer, more than a "bug," an interaction in which an unexpected element has crept into the apparent world of complete control.

That sounds wonderful for machines, but what about living organisms? What are the interactions or variables that control the growth of a plant? We are now beginning to enter that aspect of the natural world in which predictability, expected in the "machine world," becomes less possible. The world of machines is based primarily on inorganic and causal relationships, but the world of living creatures and beings is not. Instead, the organic world is more complex, more environment-dependent, and less predictable or linear.

Seeds of Change

Behind my house there is a small patch where I grow a few vegetables. Early on, I became curious about biodynamic agriculture. I put a few biodynamic preparations on the garden and attended to the effects. When I learned of the availability of biodynamic seeds, I wasn't initially interested. My belief was that it must be the biodynamic preparations that are important; to think the seeds important would be materialistic thinking, right? My curiosity in these seeds was piqued, however, and one spring I potted three different seed suppliers' seeds, working with ten different varieties of plants. The first group was from an organic supplier, the second were heirloom varieties from an organic seed exchange, and the last were the biodynamic seeds. To be fair, I gave all of them the biodynamic preparation and watered them all at the same time. I mixed up the peat pots so that the labels were visible only when the pots were taken out of the flats.

When it was time for transplanting, I removed all of the pots and placed the plants in their three groups for examination. The differences were clear, visually apparent, and not what I had expected. For nine of the ten plants that I had selected, the biodynamic plants were larger, had more leaves, were more upright, and appeared more robust than the other varieties. The one biodynamic plant that didn't do better was corn. The seed exchange, Native American variety, bred locally for hundreds of years, beat the biodynamic corn hands down. I recall that Guenther Hauk, the biodynamic gardener in Spring Valley at the time, laughed about this when I told him of the results with the corn. "Of course," he said, and continued, "this plant is native to North America, and no German biodynamic corn is going to stand a chance against it!"

I could have continued and done all types of tests to check for the yield of each crop, the mass of the plants, their resistance to various diseases, or when they first yielded edible fare. At that point, I didn't feel it was necessary to perform any further investigation. For the type of gardening that I was doing the impressions I had received from looking at the health and vitality of the three groups of seedlings in front of me spoke much more strongly than would any series of charts and graphs proving what had happened.

What I learned from this little experiment was to be open to getting results other than what you expect. What you see in front of you is usually more important than what you expect to see. No one type of seed will always be the best. Understanding why the native corn had grown more vigorously would have required a much longer study, but I did note that this corn had been grown and developed in local conditions near Saratoga. I had chosen the corn, in fact, because it was local, but I had not anticipated any particular result.

As a trained mechanical engineer, I have developed a deep appreciation and love for creating and experiencing how all of the pieces fit together in a lawful and expected manner. This is the gift of a materialistic worldview. Without such a view we wouldn't have any of our present machines. There is an interesting distinction, however, between a science based on physical objects

(materialism) and one based on relationships or interactions. The first focuses primarily on the product, the thing. How we create or engineer it is often not so important. This can have important and often negative implications for the environment and space around the desired object. If you have ever been near an old paper manufacturing plant, for example, you may have experienced what I am driving at. The air of the town and the water of the river are usually adversely affected until regulations force the manufacturer to take into account the environment around the plant.

Note that we focus on the product, a physical object, as a noun, while a focus on process or relationship is much more verb centered. Such thinking points toward a move from a science primarily of nouns to one that equally emphasizes verbs. This brings us to a second approach, one based on interactions and relationships.

In this second approach we don't simply focus on the end product, but attempt to make conscious every aspect of the process. This approach often finds complex sets of interactions, even approaching the level of complexity that is found in nature. Often it is not possible to test every possibility. If you have to analyze water purity, the level of testing can be overwhelming. Do you want to check for bacteria and parasites or for heavy metals? What about agricultural runoff, fertilizers, industrial cleaning agents, or trace levels of radiation? Usually a local water engineer will rely on his experience of what might be a problem locally and suggest just those particular tests, a balanced and appropriate approach, but not a definitive one. Here, the complementary strengths of object-oriented and a relational orientation can be seen as mutually beneficial.

Integrating Approaches

Interest in and appreciation of a more process- or relationship-oriented approach to science, as opposed to a strictly object (objective) one, is increasing. Over the past few months I have noted a new pattern in the questions and comments that follow the lectures I give on phenomena-based science to Waldorf school communities and other interested groups. Previously, every single question and answer session contained at least one comment similar to the following.

The comment usually began by relating an appreciation for the implications of a phenomenological approach to science. This was followed by an articulation of a frustration with the classical statistical method in which the questioner had been trained and either presently or recently employed. All of these comments were from persons associated with the medical field and, particularly, the field of medication and pharmaceuticals. These were trained chemists, physiologists, statisticians, and specialists. Most of them had Masters degrees or Ph.D.s in their field.

Each of them stated that the statistical method for proving the efficacy of drugs—a practice they were themselves often engaged in—was no longer effective. Most of them used even stronger language to suggest that the testing had become compromised by a desired outcome that ignored side effects, overstated the product's effectiveness, and often relied on data that was tainted. In short, no one was really paying attention to the whole reason for developing the medication in the first place—the health of the patient. Instead, the sole objective was to show statistical correlations (even if minimal) between specific symptoms and particular substances without significant regard for other possible effects.

One person, focusing on the statistical side of the field, said, “If you take any specific symptom you can likely cite a study somewhere that shows a statistically significant correlation to any drug that has been tested for that symptom.” It was sad to hear such frustration and despondence from such talented and obviously dedicated people. One can understand their keen interest and sincere desire to know more about an integrated approach to science, one that focuses on relationships and interactions as strongly as on results.

The possibility of integrating a classical or object-based approach with a phenomenological or relational and integrated approach is potentially exciting. A classical approach must be limited because it is looking for a single causal material effect that can be affected or eliminated by another singular curative material solution. A phenomena-based approach constantly looks for relationships and, therefore, seeks to understand a group of interactions in relationship.

We could, of course, make the claim that all good classical science must be a part of a

phenomena-based approach since, in truth, no phenomena should ever be discarded. While this is correct, I have tried to draw the distinction between these two approaches more on the worldview underlying them and not on the investigative approach to phenomena—perhaps defined differently in each worldview—that they share. It is precisely this distinction of which we are trying to make teachers aware in the upper elementary school science teacher training called “Teaching Sensible Science.”

I am reminded of the work of Alfred Wegener, the German scientist who first articulated, in 1915, a fairly detailed description of the possibility of continental drift as the means by which our present landmasses have come into being and by which they change over time. Wegener's approach was unusual for his time, and likely ours as well, in that, rather than staying in one area of specialization, he tried to synthesize many different phenomena from many different fields of science. He was initially inspired in his thinking during two successive trips to Greenland in 1906 and 1912 by observing the process of isostasy, the process whereby the earth rises or rebounds after glaciers recede or melt. Wegener thought: If the earth can move up and down, why not side to side?

He then proceeded to investigate many different phenomena relating to the apparent similarity between the eastern coastlines of North and South America and the contours of Europe and Africa at comparable latitudes. Wegener investigated the similar geology of these regions and the common flora and fauna. Even the older fossil records had much in common. In short, Wegener dedicated the next 15 years of his life to trying to show that all these common phenomena pointed to the fact that the contents must indeed move. During his lifetime, his work was generally rejected, ridiculed, and unaccepted.

It took almost 40 years until a number of scientists, generally geologists, could no longer ignore the observations and relationships that Wegener had pointed out. This was aided by the significant number of new observations that had arisen from the regular use of the submarine during and after World War II. By the late 1950s and early 1960s, the scientific world was ready to consider his theory. Today, with the development of

accurate Global Positioning Systems, we can actually measure annual changes in distance between the continents. Perhaps we are now ready for a more open view or approach to science in other fields as well. We might say, although this takes us too far afield to consider here, that the best scientists have always worked this way.

Around 1920, when Rudolf Steiner was asked by some of the teachers at the first Waldorf school, what they should be teaching, one of his responses was that in high school, students should be exposed to some of the new thinking that was going on at that time. Steiner saw that a materialistic worldview was beginning to loosen its grip on scientific thinking. One of his suggestions to the high school teachers was that the students in the Waldorf school should become familiar with the work of Alfred Wegener.

This should prompt in us the question: What are the appropriate ways of thinking that are being developed today that will still be valuable for students in schools 100 years from now?

Endnote

1. In the fourth edition of his book, *The Origin of Continents and Oceans* (he was to write five before his death), Wegner once again found it necessary to defend his work and advocate for a more open approach to science. Constantly criticized for crossing the clear lines of specialization that existed in his time (and ours?), he penned the following:

Scientists still do not appear to understand sufficiently that all earth sciences must contribute evidence toward unveiling the state of our planet in earlier times, and that the truth of the matter can only be reached by combing all this evidence. ... It is only by combing the information furnished by all the earth sciences that we can hope to determine 'truth' here, that is to say, to find the picture that sets out all the known facts in the best arrangement and that therefore has the highest degree of probability. Further, we have to be prepared always for the possibility that each new discovery, no matter what science furnishes it, may modify the conclusions we draw.

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Honest, Complete Assessment and Social Renewal: A Revolution

Patrice Maynard

*"The revolution will not be televised...
the revolution will not be right back... the
revolution will not go better with Coke..."*
— Gil Scott Heron, 1968

The Revolution

We underestimate the revolutionary possibilities of Waldorf education. Constructive revolution was inherent in the ideas Rudolf Steiner gave the first Waldorf school teachers and asked the parents of those first classes to support. There are many revolutionary ideas inherent in the way Waldorf educators teach, but four are highlighted here:

1. To view a human being as an unfolding mystery.
2. To view human beings as unfolding in clear developmental stages.
3. To practice what we may call "practical altruism."
4. To teach concepts imaginatively, aiming at rich, pictorial insight.

The first two, knit together, show our students to be "developing mysteries" and provide a framework in which children can learn as individuals held in a developmental wholeness. Each child learns at his or her own pace; however, he or she does this within an imaginative picture of children in a certain developmental time of life as the guarded, invisible area that grown-ups hold on the child's behalf. In each developmental phase teaching methods differ. Teachers in Waldorf schools try not to begin a different way of teaching until the signs are clear in a child that a developmental phase is actually shifting. Teachers may wait longer than the world deems proper so that a child can actually consolidate learning from one phase before beginning the next. Just as a plant

rests and even shrinks a bit after outgrowth and before launching into the development of buds, or as the sea pauses after hitting the shore before rushing back upon itself again, a child waits a bit before rushing forward with recently completed mastery, grasping it as personal accomplishment before plunging into what can be done with it.

Regarding practical altruism: In Waldorf elementary schools, students are rarely held back simply because of academic failure; nor are students pushed forward because of academic prowess. This attention to the health of the group holds an important message: "Here we all are, lucky to be together. What good will it do us to push anyone out or up or back? We are good as a whole class and shall remain that way. If one of us is wanting in an area, we will help that want to be fulfilled. If one of us is especially gifted, we will share that gift with those who need it." Young people leave Waldorf schools and go out into the world imbued with ideas like this. Giving up on others is not an option that gets us anywhere. Rejoicing in the opportunity of those with whom we are gathered is the only way to fulfill any community. Working through conflict, not excluding an opponent, is the revolutionary result.

And regarding imaginative teaching: The actual thought processes of Waldorf school students are cultivated with pictures full of imaginative light. Waldorf school students tend to imagine things first and to act upon them only after there is a full picture in their well-practiced imaginative capacity.

Through the rigorous use of artistic work to comprehend things and to illustrate them, through the insistence that experience comes first and deriving a concept comes later, and through the steadfast preparation of a teacher to find the appropriate picture, symptom, or overview in pre-

senting any new subject, biography, or line of learning, each student learns a number of important skills. The feelings of students are exercised as imaginative pictures arise within them and course through their inner experience. Students' feelings may rush from like to dislike and back again as a teacher fleshes out a biography of, say, Queen Elizabeth. Tender-hearted young queen, shrewd politician, lover of music and theater, aggressive and acquisitive ruler, patron of many in need of support, loved by her people, never married, courageous and canny diplomat, ferociously independent, and always alone. The imaginatively educated feeling life of a Waldorf school student is noteworthy because quick reaction is not so ordinary in them. Their educated feelings tend to say in the face of an unsettling story, "There must be another side to that tale, another point of view, another piece of the picture. I'll react and decide when I know a bit more."

Child observation is a key element in this fourth point, because, as the teacher creates images for the students' feeling life to consider, he or she watches carefully. Which children react in which ways to which parts of the story? Later in the day, the teacher imagines the students, forms a mental picture of the class, and evaluates her teaching along these lines. The students feel this and react in confidence that the teacher sees them, knows them, and imagines them. The students then complete this process by imitating their teacher's practice of inner picture-making.

Moral Encouragement

Woven through these four revolutionary points is moral encouragement. To view a developing human being reverently and to protect each developmental phase of a young person's growth is responsible, moral, and kind. To make space for all children, all students, is an ethical practice. To view the world imaginatively, as a series of connected illustrations, and not as isolated facts or intellectual concepts, is to give a human being an organ of perception able to care for the world and to be interested in the world. Imaginative thinking is limitlessly flexible and rarely sinks into "either-or," "good or bad" assessments. Wholeness is a moral gift of pictorial thinking because nothing can exist outside of a context. All things influence other things, and to understand this is to pause to consider before taking action.

In speaking to the parents of the first Waldorf school, Steiner explained that the Waldorf school would be ridiculed because the way of teaching would be so revolutionary and that parents should be prepared for this. He also explained that it would not be necessary to worry about the ridicule because Copernicus and Galileo were also ridiculed when they first introduced the revolutionary concept of a heliocentric universe. Just as, after one or two hundred years, most embraced the heliocentric universe, so, in one or two hundred years, most would recognize the wisdom of the Waldorf school approach to education.

Parents Are Essential

Recently the Association of Waldorf Schools of North America (AWSNA) has been working on the most effective language by which to characterize the uniqueness of Waldorf education. A next step in spreading an appropriate message is to invite all who come into a Waldorf school community to become co-creators of the constructive revolution implicit in Waldorf education.

Those parents who bring their children to a Waldorf school who have not been formally invited into the constructive revolution may bring with them a fear, like that engendered in some by the "No Child Left Behind" Act (NCLB) of 2001. These parents might want Waldorf education to be a prep school education that keeps their children competitive, introducing academic subjects early in children's school years and at a brisk clip so that they can "succeed" in the "real" world. The arts may then be viewed as delicate embroidery around the edges of a more standard education and not as the powerful heart of original and revolutionary ideas.

Assessment may become a point of brittle disagreement among those who have not taken the part of co-creator, those who are not aware of the revolution. How can parents tell that students know what teachers think they know? How is a parent to trust "subjective" teachers' reports? When too much in our culture points to "objective" data like test scores and believes that we have adequate tools to hold schools accountable through testing, parents are pressured not to believe that a written report can tell enough about a student's achievements.

Assessment and Transformation

It is in assessment that the agreement among parents, teachers, and administrators to be co-creators becomes a constructive revolution that defines Waldorf education. We must all become conversant in viewing growing human beings as unfolding mysteries that may or may not learn what we think ought to be learned in the way we think it ought to be learned. All involved in Waldorf education must become conversant in the language and art of child observation. This may sound easy enough. After all, parents and teachers alike are engaged in caring for the child.

Good Waldorf school teachers, however, know that child observation is a demanding, subtle, and difficult part of teaching. It is nuanced and tender. Students, trying to do their best, often compensate ingeniously for what they struggle to achieve and this may be missed if observation is not careful enough.

The demanding tasks at the heart of the revolution are often quoted as, “Receive the child in reverence; educate the child with love; let the child go forth in freedom.”¹ All involved must keep these goals at the heart of their work on behalf of children. Parents cannot do this without teachers; teachers cannot do this without parents.

In Waldorf school communities, making a conscious request of parents to join the revolution would define the point of transformation clearly. It would require articulating all that must be sacrificed in order genuinely to create something new. Things to be sacrificed include: standard assumptions about how to assess human development; suspicion of other adults; demands to alter curriculum without due consideration; a view of human beings as receptacles to be filled early and abundantly; and fear. Practices to replace sacrificed attitudes include: child observation; trust in each human being’s desire to learn and capacity for learning; gratitude for the opportunity to educate children in a new way; loving attention (tough love included) to the needs of children; self-discipline; courage to speak directly and honestly about concerns; and collaboration in forming a picture of a child.

One former parent in a Waldorf school community suggested that parents might write a report about his or her child at the same time the teacher does. Both teacher and parent could read

both reports and learn more about the student in the process, and more about each other as adults responsible for the unfolding of the student. Such a practice could contribute to the revolutionary possibilities of Waldorf education.

Focus and Patience

Revolutions are difficult and require focus and patience. The time in which we are undertaking this effort is, perhaps, more difficult now than it was when Rudolf Steiner started the first Waldorf school.

The inability of our Congress to ratify NCLB with alterations is testament to a consensus that this legislation is a failure. Despite the idealism inherent in the original vision of NCLB, and the yearning in all good American hearts to make a good education possible for all children, NCLB is widely viewed as unsuccessful. There is agreement that testing inappropriately directs curricula. Dropout rates continue to rise in many high schools as students feel increasingly labeled as “failing.” Preparation for testing and testing itself take too much time from actual teaching. Teachers often dare not deviate from a given curriculum and, therefore, are frustrated because they cannot answer the real needs of children in their classes. And yet, the rewards of “accountability” are still too difficult to leave behind (NTLB: No Test Left Behind).

Lisa Keegan, educational consultant to John McCain’s recent presidential campaign, speaking to the Council for American Private Education (CAPE), said that no one is willing to let go of the accountability portion of NCLB now that, at last, we have a way really to monitor failing schools and failing teachers. After decades of not knowing what’s going on in schools, at last we know, she said. Even as Ms. Keegan acknowledged that a data-based approach might be choking off the very educational goals we hold dear for our young people, accountability through testing is perceived to be too compelling to change.

In light of these trends, the possibilities for a constructive revolution provided by Waldorf education become more promising. Graduates of Waldorf schools all over the world provide the bountiful testimony of satisfied people, happy in life, happy with friends and family, grateful for peace and purposeful work. The results of this

revolution, evidenced in its graduates, hold potential for the social renewal Steiner intended for it to have.

As co-revolutionaries, all in our Waldorf school communities can encourage each other to examine what it is that is genuinely new in what is being done, what of the old must be released, which pillars of trust are forged on behalf of the young people entrusted to our care. Courage, not fear; trust, not suspicion; imaginative comprehension, not quick reaction to an isolated point: These are the tools we must create ever anew to succeed in this constructive revolution. Appreciation for all the people we meet and with whom we work, celebration of the rewards of difficult tasks: Social renewal is the castle built from such pillars. Here's a revolution worth working for.

Endnote

1. Editor's note: Quotation attributed to Rudolf Steiner. The actual quotation is:

If we have received the child in religious reverence, if we have educated him in love up to the time of puberty, then our proper course after this will be to leave the youth's spirit free, and to hold intercourse with him on terms of equality. We aim, that is, not to touch the spirit but to let it be awakened. When the child reaches puberty, we shall best attain our aim of giving the child over to free use of his intellectual and spiritual powers if we respect the spirit and say to ourselves: You can remove hindrances from the spirit, physical hindrances and also, up to a point, hindrances of the soul. What the spirit has to learn it learns because you have removed the impediments. If we remove impediments the spirit will develop in contact with life itself even in very early youth. Our rightful place as educators is to be removers of hindrances.

(Steiner, Rudolf. *The Spiritual Ground of Education*, GA 305. Full text available at <http://wn.rsarchive.org/Education/19220819p01.html>.)

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I believe that our own experience instructs us that the secret of Education lies in respecting the pupil. It is not for you to choose what he shall know, what he shall do. It is chosen and foreordained, and only he holds the key to his own secret. By your tampering and thwarting and too much governing he may be hindered from his end and kept out of his own. Respect the child. Wait and see the new product of Nature. Nature loves analogies, but not repetitions. Respect the child. Be not too much his parent. Trespass not on his solitude.

—Ralph Waldorf Emerson, from “Education”

Crises in the Kindergarten

Why Children Need to Play in School

Joan Almon

Editor's note: The following article is an executive summary and recommendations from a new and significant report from the Alliance for Childhood. The full report may be found at the Alliance website,

www.allianceforchildhood.org.

According to the website, "The Alliance for Childhood promotes policies and practices that support children's healthy development, love of learning, and joy in living. Our public education campaigns bring to light both the promise and the vulnerability of childhood. We act for the sake of the children themselves and for a more just, democratic, and ecologically responsible future."

Kindergarten has changed radically in the last two decades in ways of which few Americans are aware. Children now spend far more time being taught and tested on literacy and math skills than they do learning through play and exploration, exercising their bodies, and using their imaginations. Many kindergartens use highly prescriptive curricula geared to new state standards and linked to standardized tests. In an increasing number of kindergartens, teachers must follow scripts from which they may not deviate. These practices, which are not well-grounded in research, violate long-established principles of child development and good teaching. It is increasingly clear that they compromise both children's health and their long-term prospects for success in school.

The traditional kindergarten classroom that most adults remember from childhood—with plenty of space and time for unstructured play and discovery, art and music, practicing social skills, and learning to enjoy learning—has largely disappeared. The latest research indicates that, on a typical day, children in all-day kindergartens spend four to six times as much time in literacy and math instruction and taking or preparing for tests (about two to three hours per day) as in free play or "choice time" (30 minutes or less).

Kindergartners are now under great pressure to meet inappropriate expectations, including academic standards that, until recently, were reserved for first grade. At the same time, they are denied the benefits of play—a major stress reliever. This double burden, many experts believe,

contributes to a rise in anger and aggression in young children, reflected in increasing reports of severe behavior problems. Given the high rates of psychiatric disturbances among children today, it is critically important that early education practices promote physical and emotional health and do not exacerbate illness.

High-stakes testing and test preparation in kindergarten are proliferating, as schools are increasingly required to make decisions on promotion, retention, and placement in gifted programs and special education classes on the basis of test scores. While some testing of children under age eight may be useful for screening, it is a highly unreliable method for assessing individual children. Observational and curriculum-embedded performance assessments should be used instead. The argument that standardized testing takes less time and is therefore more efficient is called into question by new data suggesting that teachers now spend 20 to 30 minutes per day preparing kindergarten children to take standardized tests.

The nine new studies and analyses on which this report is based all point to the same conclusion: Kindergarten, long a beloved institution in American culture, is in crisis. If the problems are not recognized and remedied, the same ills will be passed on to preschools and even to programs for children ages birth to three.

The implications of these radical changes in early education practice reach far beyond schools. Until recently few people were talking about the long-term effects of the disappearance of children's play. Now, while many politicians and policymakers are calling for even more tests, more accountability, and more hard-core academics in early childhood classrooms, the leaders of major business corporations are saying that creativity and play are the future of the U.S. economy.

Daniel Pink, author of *A Whole New Mind*, and who writes about the "imagination economy," says, "People have to be able to do something that can't be outsourced, something that's hard to automate and that delivers on the growing demand for nonmaterial things like stories and

design. Typically these are things we associate with the right side of the brain, with artistic and empathetic and playful sorts of abilities.” How can we expect our children to thrive in the imagination economy of the future when we deny them opportunities for play and creativity in kindergarten?

We recognize that the restoration of child-initiated play to early education will not by itself solve the complex problems of helping all children—especially those with special needs or in poor families and neglected schools, as well as English-language learners—to reach their full potential. We are not calling for a simple return to the practices of an earlier time. We now understand much better the kinds of rich experiences that young children need in order to become avid learners. Teachers need to understand the ways in which child-initiated play, when combined with playful, focused learning, leads to lifelong benefits in ways that didactic drills, standardized tests, and scripted teaching do not.

In a healthy kindergarten, play does not mean that “anything goes.” It does not deteriorate into chaos. Nor is play so tightly structured by adults that children are denied the opportunity to learn through their own initiative and exploration. Kindergartners need a balance of child-initiated play in the presence of engaged teachers and more focused experiential learning guided by teachers. We call for educators, their professional organizations, and policymakers to develop as fully as possible the two central methods in the continuum of approaches to kindergarten education (illustrated below):

The creation of a healthy balance described above has been blocked by current policies and government-imposed practices and programs, including No Child Left Behind and Reading First. These well-intentioned but fundamentally flawed mandates rely on testing and on didactic and scripted approaches—especially for teaching children from low-income backgrounds—in spite of the fact that these practices are not well-supported by research evidence. Indeed, many of the current approaches to kindergarten education are based on unfounded assumptions and preconceptions about what is best for children and schools.

“The problem is not political but ideological,” writes Lilian Katz, who directed the ERIC Clearinghouse on Elementary and Early Childhood Education for 30 years. “Ideologies are deeply held beliefs that fill the vacuum created by the unavailability of hard data. Our best strategy in such situations is to make our ideas and the data that we do have readily available to others who can subject them to vigorous argument and debate.”

If we are to best serve children and to foster the full professional development of early childhood educators, we must reject an ideological approach to teaching young children, consider all the evidence of decades of research and experience—not just the results of a few narrow tests of suspect validity—and begin a thorough reassessment of our kindergarten policies and practices.

Based on our reading of the evidence, we call on policymakers, educators, health professionals, researchers, and parents to take action as follows:

The Kindergarten Continuum			
Laissez-Faire, loosely structured classroom	Classroom rich in child-initiated and child-directed play	Playful classroom with focused learning	Didactic, highly structured classroom
Ample play but without active adult support, often resulting in chaos	Exploring the world through play with the active presence of teachers	Teachers guiding learning with rich, experiential activities	Teacher-led instruction, including scripted in teaching, with little or no play

1. Restore child-initiated play and experiential learning to their rightful place at the heart of kindergarten education, with the active support of teachers .

- Provide time and space for play to kindergartners every school day, both indoors and during recess.
- Make room in kindergarten for all types of play that contribute to children's development, including make-believe, sensory, language, construction, large- and small-motor, and mastery play.
- Engage parents and educators in discussion of the role of play and experiential learning in healthy and effective kindergartens, so that they can advocate for play with school administrators and policymakers.

2. Reassess kindergarten standards to ensure that they promote developmentally appropriate practices, and eliminate those that do not.

- Replace one-size-fits-all kindergarten standards with flexible guidelines based on well-grounded knowledge of children's cognitive, social, emotional, physical, and creative development.
- Recognize the differences between the kindergarten child who is an emergent reader and the first-grade child who has become an early reader. Recognize similar differences in children's learning of math, science, and other topics. Do not expect kindergarten children to achieve academic goals best suited to first-graders.
- Change conditions that cause normal child behavior to be wrongly labeled as "misbehavior."
- Eliminate the practice of kindergarten retention based on inability to meet rigid standards or to pass particular tests.

3. End the inappropriate use in kindergarten of standardized tests, which are prone to serious error especially when given to children under age eight.

- Use alternatives to standardized assessments in kindergarten, such as teacher

observations and assessment of children's work. Educate teachers in their use and in the risks and limitations of standardized testing of young children.

- Do not make important decisions about young children, their teachers, or their schools based solely or primarily on standardized test scores.

4. Expand the early childhood research agenda to examine the long-term impact of current preschool and kindergarten practices on the development of children from diverse backgrounds.

- Evaluate current kindergarten practices with qualitative as well as quantitative methods. Such research should assess children's overall health and their cognitive, social, emotional, and physical development until at least fourth grade.
- Replicate on a much larger scale the quantitative studies of kindergarten use of time and materials described in Chapter 2 of this report so that a representative sample of teachers in many different areas contribute to the full picture of current kindergarten practices.
- Investigate the links between developmentally inappropriate kindergarten practices and behavioral and psychiatric disturbances and other health problems among young children.

5. Give teachers of young children first-rate preparation that emphasizes the full development of the child and the importance of play, nurtures children's innate love of learning, and supports teachers' own capacities for creativity, autonomy, and integrity.

- Make course work in child development and the use of play in the classroom mandatory in early childhood education programs.
- Give teachers professional development, mentoring, and other support in learning how to encourage and support play, especially with children who have had limited opportunity to engage in creative play or who have poor self-regulation skills.

- Help teachers communicate with parents about the importance of play and ways to support it at home and in the community.
6. Use the crisis of play's disappearance from kindergarten to rally organizations and individuals to create a national movement for play in schools and communities.
- Work across traditional boundaries of profession, geography, and interest group to advocate for play in classrooms, after-school and camp programs, parks and playgrounds, neighborhoods and cities.
 - Establish local, state, and national play policies that recognize the importance of play for children of all ages—including the ways that play enhances physical, social, emotional, and cognitive development.
 - Address the obstacles to play, such as unsafe neighborhoods, over-scheduling of children's lives, excessive screen time, toys linked to entertainment media, and education that emphasizes skills, drills, and homework and undermines creativity, imagination, and overall well-being.

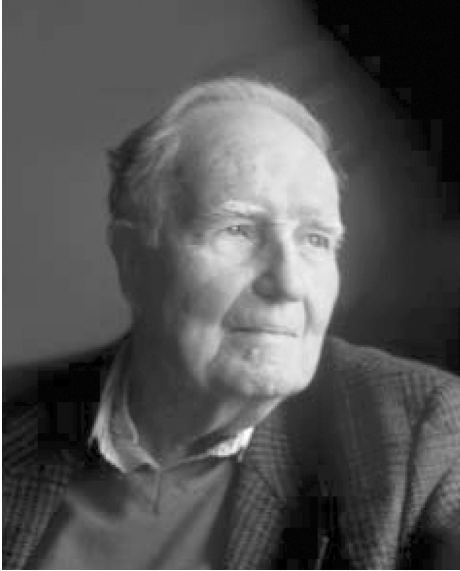
Respect the child, respect him to the end, but also respect yourself. Be the companion of his thought, the friend of his friendship, the lover of his virtue--but no kinsman of his sin. Let him find you so true to yourself that you are the irreconcilable hater of his vice and the imperturbable sligher of his trifling.

—Ralph Waldo Emerson, from “Education”

Henry Barnes and Waldorf Education

A Personal Tribute

Douglas Sloan



Henry Barnes

It was my good fortune to meet Henry Barnes just at the time when I had joined the Anthroposophical Society. I discovered Rudolf Steiner relatively late in my life; I joined the Society in 1978, the same year I met Henry. The occasion for this first meeting was initiated by Eckehard Piening, another of the many accomplished teachers with Henry at the Rudolf Steiner School in New York City. 1978 marked the 50th anniversary of the founding of the Steiner School, the first Waldorf school in North America. At the time I was an associate professor of history at Teachers College, the graduate school of education of Columbia University. Knowing that I had joined the Society and of my interest in Waldorf education, Eckehard asked me if Teachers College might host a major conference on Waldorf education as part of the celebration of the 50 years of Waldorf education in this country. It was a great idea, and, to something of my surprise, we secured the agreement of the President of Teachers College to go ahead with the conference. Henry had retired the year before from the faculty of the Steiner School, where, for nearly forty years, he had served as teacher, and, for much of that time, as Chair of the Faculty. It was clear

that Henry was the ideal person to give the keynote lecture at the conference, which he agreed to do.

The conference was held the following spring of 1979. Thorn Zay at the Steiner School had put together a traveling exhibit of art by Waldorf students, which Eckehard and Henry had arranged to be installed at Teachers College for the conference. The exhibit was subsequently shown in many cities across the country, but it made its debut at Teachers College, Columbia University, and the first experience of people attending the conference was to enter the halls of Teachers College lined with the remarkable artistic work of Waldorf students.

The President of Teachers College, Lawrence A. Cremin, gave a welcoming address and Henry followed him with the keynote lecture, entitled simply, "An Introduction to Waldorf Education." His was followed over the course of the weekend by three other lectures: by John Davy of Emerson College in England; by Alan Howard, a leading figure in Canadian anthroposophy and Waldorf education; and by Professor Hope Lechter, an anthropologist at Teachers College, herself a parent of two sons in the New York Steiner School, and a good friend of Henry Barnes.

I should mention: This was not Henry Barnes' first appearance at Teachers College. On the contrary. As a child and as a young person Henry attended the Lincoln School, a renowned experimental school based on the educational philosophy of John Dewey and located at Teachers College. Then, in 1946, upon discharge from the army, in which he served for three years during the war, he applied his service benefit to earn a masters degree in the teaching of history from Teachers College. Now, here he was, some three decades later, describing for the attendees at the conference, including the President of the College, what a genuinely creative and living education looks like.

After the conference, we published the four lectures as a special section in *Teachers College*

Record, one of the main professional journals of education in this country. We then reprinted the special section as a little booklet with Henry's lecture as the leading article, with the whole thing under the title of Henry's lecture, "An Introduction to Waldorf Education." I still consider Henry's article to be one of the best, brief introductions to the nature and substance of Waldorf education available in English. For many years thereafter, his article was sought after by parents and Waldorf schools for just that purpose, as a solid, brief introduction to Waldorf education. And, consequently, the little booklet containing his lecture had to be reprinted more than once.

I would like to touch, out of gratitude and respect, on a couple of ways in which Henry's life was especially important for me personally, and I think also for many others. For one thing, the presence itself of Henry Barnes as an intelligent, committed, and leading representative of anthroposophy and Waldorf education was extremely important to persons like me coming into anthroposophy for the first time. For example, my friend Robert McDermott and I discovered Rudolf Steiner almost simultaneously and, at the same time, both met Henry Barnes. Over the years, to know Henry simply as a model of what anthroposophy could be and mean was itself an assurance that we were on a worthy path. And then to have the opportunity to have talks and meetings with Henry from time to time deepened that assurance.

For me, two things especially stand out. In the 1990s I was deeply involved with AWSNA, the Association of Waldorf Schools in North America, as was Henry Barnes. Again and again it was Henry's leadership and wisdom that helped deepen my own understanding and grasp of Waldorf education and of its potentially crucial importance in our time. The other thing I want to mention is that it was my privilege to read a couple of early drafts of Henry's history of anthroposophy in North America, *Into the Heart's Land: A Century of Rudolf Steiner's Work in North America*. He had already written his biography of Rudolf Steiner, *A Life for the Spirit: Rudolf Steiner in the Crosscurrents of Our Time*, an insightful and accessible portrayal of the life and work of Rudolf Steiner. Then, in his nineties, Henry undertook a major work of historical research and writing: the enormous task of bringing together in one volume the history of anthroposophy in North America in all its myriad

expressions. It is a path-breaking work, which in its comprehensiveness is not only an essential resource for the general reader interested in the development of anthroposophy in North America, but also a necessary starting point for anyone in the future who undertakes to write a specialized history of any particular aspect of anthroposophy in North America.

What I have written should make clear Henry's dedication to research in anthroposophy and in Waldorf education. When I was editor of this *Research Bulletin*, Henry's donation often arrived before we had mailed any solicitations. His support and interest were ready and sincere.

The last paragraph of Henry Barnes's keynote lecture, "An Introduction to Waldorf Education," presents his clear grasp of the heart of both anthroposophy and Waldorf education; namely, an understanding of the wholeness of life and the critical importance in our time of developing a living thinking capable of dealing with the wholeness of life:

Life itself is a whole, a web of inter-related, wonderfully interpenetrating facts and processes. The analytical intellect dismembers the living chain and sets up a linear equation in which *A* is linked with *B* by mechanical cause and effect. It is "linear thinking" that is unraveling the delicate balances in nature and is leading us into environmental disaster. It is the same mentality that reduces the sensitive complexities of social life to abstract formulae, which inevitably break down and plunge us into still greater chaos. Life is calling to be understood but the call cannot be answered with the thinking that became dominant in the nineteenth and twentieth centuries. What is needed is a thinking that can flow with the movement of life itself, that is inwardly mobile and alive, that can perceive the whole as well as isolate and enumerate the parts. Such a thinking is in tune with life, is itself alive. It cannot be satisfied with definitions and will not rest until it has come to grips with the full reality. It is this quality of intelligence toward which Waldorf education strives.

And Henry, by his own life-example, demonstrated that it is this quality of living intelligence toward which the whole of anthroposophy strives.

Systemic Educational Change and the Argument against High-Stakes Testing

To the Editor:

I appreciate that David Mitchell, et al., address the fundamental question of the purpose of education in their article, “Assessment without High-Stakes Testing: Protecting Childhood and the Purpose of School” (*Research Bulletin*, Vol. XIII, no. 1, Spring 2008). They argue that education is not beholden to the business world; its purpose is not to ready young people for the global marketplace. Nor is it meant to manufacture good citizens. It is, instead, a way “to draw out students’ nascent capacities” as human beings.

Whenever we consider true education for children and adolescents, we explore deep philosophical questions about human nature and development. Education is formative, an essential part of growing into adulthood, a basic necessity for human beings. Humans are not born with everything we need to know to become adults; our instincts are not as strong as those of animals. On the contrary, we would die if we weren’t cared for at birth, and life would be extremely difficult if we were not supported through childhood and adolescence. Children who are neglected or mistreated suffer deep trauma that affects the rest of their lives. We must be educated by others to become truly human, to fulfill our destiny as individuals and as a part of the evolution of humanity. Thus, the nature of the human being must be central to our conversations about education.

Mitchell, et al., articulate how Waldorf schools assess students to show alternatives to high-stakes testing as mandated by the “No Child Left Behind” (NCLB) legislation; I am not clear, however, toward what end. Is the goal to convince teachers or the Department of Education and Congress to discontinue this damaging approach to education? From my experience, public school teachers would love nothing more than to learn from Waldorf educators, but most teachers and administrators in this country are bound by NCLB. A part of me cringed while reading the article: when I feel how insulated we are from other educators and how this stance contributes to our feeling that we have all the answers if we can only articulate clearly enough and if others are open to all we have to offer. Many of our teachers err on the side of sentimentality, with nebulous educational goals and minimal objective assessment of what is actually being learned by

each child. I’m not sure that we always know whether the children have learned what we think we taught them; we could learn something valuable from public school teachers about outcomes-based assessment.

Many spoken and unspoken assumptions feed education today, affecting curricula, methods, and assessment: the human being as a machine with a brain that manufactures ideas and memories, the child as a machine that must be accurately programmed, the child as an animal that needs to be trained and managed. These metaphors fly in the face not only of anthroposophy, but also of recent brain research, not to mention Jean Piaget’s observations of children. If we start, however, with the human being as a spiritual being, with a physical body, a personal soul, and an eternal spirit—stamped with the ideals of humanity, each connected to the whole yet having its own unique destiny—the approach to education will be different to its core. We are blessed in the Waldorf school movement to have this picture at the center of our educational approach.

In my experience, many teachers and administrators in different kinds of schools see the human being as a spiritual being and infuse their work with the children with intuition, imagination, and inspiration. My work over the past few years with “Courage to Teach” retreat circles strongly validates this (see www.CourageRenewal.org). If we look, we can see the stamp of the human spirit in the eyes of many fellow travelers. Unfortunately, forces against this spiritual birth of humanity are also strong, and the majority of teachers, school leaders, and children in our country today are in schools where they feel robbed of their abilities to teach, to lead, and to learn in a rightful, joyous way. Since 2001, through the NCLB act, the U.S. Department of Education has attempted to rip power from public school teachers and leaders.

It is no coincidence that this comes at a time when corporate interests force themselves upon every aspect of life from water to food to health care and education. It is not hard to uncover nor is it a surprise that NCLB has been extremely profitable for corporations. The testing, textbook, and curriculum industries have made windfall profits from NCLB.

Mitchell, et al., lay out the way to approach learning at each stage of development so that teachers work with the impulses that live within each growing child, with a young person's own forces and hunger to develop certain capacities and specific aspects of being human at each stage of development. What, when, and how children learn—a condition that changes roughly every seven years as children grow and develop—affects their physical health and development, their emotional well-being and capacity for healthy social interaction with peers and adults, and, ultimately, their ability to develop thinking and moral judgment. Neither corporations nor the government can be expected to consider the complexities of the educational process or to acknowledge the reality that human beings learn best in an atmosphere of love—not sentimental love, but true caring.

Teaching children effectively requires patient observation, interaction, and understanding. It requires consideration of what their deepest questions may be, what they need at any given moment, how they interact with classmates, how they do their work, where their obstacles are rooted, and on and on. Within a safe, welcoming atmosphere and a compassionate approach to students, assessment that serves the teacher, the students, and the school community can be born. In this loving community, everyone feels safe to make mistakes, to try again, to do better the next time, to slip back; all are valued regardless of what they are good at or what they struggle with; everyone is respected, regardless of race, or country of origin, or first language, or test scores. In healthy schools, the whole school community is a loving community.

Since a loving, safe atmosphere is critical to learning, teachers and school administrators need the power to create such an environment in their schools. Social-emotional learning programs are being developed and implemented gradually all over the country to promote safe school environments. A four-year study by the Collaborative for Academic, Social and Emotional Learning (CASEL) shows that “school-based social and emotional learning programs that help students build positive relationships, develop empathy, and resolve conflicts respectfully and cooperatively also have a positive affect on academic performance.” This result is obvious to Waldorf school educators. Teachers everywhere can choose nurturing daily interactions with children in their care and create warm, supportive, respectful class communities. Public school teachers know there are other ways to assess children besides high-stakes testing, as mandated by federal law. Most feel it's a terrible waste of time, at best, but they also feel powerless to stop the pain they know this inflicts on their students.

Systemic educational change will come about only through building a broad coalition of teachers, school leaders, corporate executives, and government leaders, a coalition in which members respect one another's input and have a will to renew education by placing children at the center of their hearts and minds, by hewing to a true image of what it means to be a human being, and by a regard for the future of humanity and the living earth.

Cat Greenstreet, M.A., M.Ed., is Director of the Waldorf Educator Program, Sunbridge College, NY, a former Waldorf school teacher, and a cofounder of the Austin Waldorf High School in Texas. She is also a facilitator of *Courage to Teach/Courage to Lead*, a unique retreat-based approach to renewing personal identity, professional integrity, and vocational vitality, developed by Parker J. Palmer and colleagues.



Teaching Sensible Science

Calisa O'Keefe

A Letter from a Participant

To the Teaching Sensible Science (TSS) teachers—Michael D'Aleo, Lylli Anthon, Gary Banks, and Barbara Richardson:

This letter is both a letter of sincere appreciation for the course the four of you have created and a letter of earnest request that TSS be integrated into Waldorf teacher training centers throughout the country.

As you recall, I had the good fortune to attend TSS during the three-week session that began in June 2006 and finished in February 2007. Having just completed fourth grade with my class, I questioned whether attending this preparatory course for teaching upper elementary science (i.e., physics and chemistry) would be premature. But given that I was a new teacher on the threshold of the upper elementary grades, and given that I had a strong conventionally-taught science education (I received both Bachelor's and Master's degrees in engineering), my school's faculty strongly encouraged me to attend.

In just the first few days of that first session, I quickly realized that what I had anticipated as simply a sixth grade physics prep course was actually an experiential course in phenomenology that would affect not only how I would eventually teach physics, but also how I would teach everything else. In that first session, we teachers, as adult students, observed phenomena and then, through our own sense-based experience, searched for patterns, found relationships, and discovered lawfulness. We had a visceral experience of what it was like to have to trust in our senses and what it was like to think, really think, about how the “visible and the invisible work together to produce the miraculous.” This process

of working from phenomena to lawfulness is what really made TSS meaningful for me.

This was not razzle-dazzle science by any means, or a parade of continuous Oooh! and Ahhh! experiments. This was a course in which simple and seemingly mundane experiments were approached with awe and reverence. It was a course in which quiet subtleties often led to the most profound revelations. Placing a warmed hand and a cooled hand in the same tepid water bath so simply, so elegantly, revealed sensations of hot and cold to be relative to the human experience. Slowly illuminating a dark room revealed the essential conditions for seeing to be a human being, an object to be seen, and a luminous body.

Not only did TSS teach me that “less is more,” but also that, in teaching science, what we are trying to cultivate is the ability for students to enter into a reverent sense-based relationship with the world in such a way that they can bring meaning to that relationship through their own thinking and experience. It was the epistemological work of this course—the constant conversation about how science is a way of understanding the world, how we live in our preconceptions and not our actual perceptions, and how the only way to get beyond the concepts we already know is to come back to our senses—that I found so profound and foundational for my subsequent teaching.

I finished the third TSS session during the middle of my fifth grade year. The three sessions spread out over eight months seemed at first unreasonable, but now I see the wisdom in that arrangement. Time between sessions enabled the seeds of ideas to germinate and take root. We teachers had an opportunity to take our TSS lessons back to our classrooms and our lives. We then returned to the next session with more refined questions and an intimate sharing of our

experiences, our struggles, our epiphanies. With each session we deepened our understanding of how sense-based teaching cultivates a meaningful relationship with the natural world, an active interweaving between the individual and the world, without the alienation that can arise when materialistic models of the world are brought as reality.

The time between sessions helped us work with phenomenology, and it also helped us to begin to relinquish the ingrained mechanistic, materialistic paradigms we had all learned from our own science education. Words, phrases, and concepts like molecules, beams of light, and flowing electrons had to be supplanted with words, phrases, and concepts that actually described the phenomena perceived. I realize now how fortunate it was that I had a year before bringing physics to my class in sixth grade to loosen the hold of my past scientific training and to build my confidence in phenomenological teaching.

When I brought physics at last to my class, I doubted at first whether children of this generation could actually experience simple phenomena richly while living in such a fast-paced, technologically alluring world. How wrong I was. My doubts were quickly vanquished after our first experiment. For our first physics experiment the students had to sit silently and listen to the sounds around them and then to sounds I created with different materials. They were utterly transfixed by the phenomenon of sound. This simple experiment led to a rich conversation in which they eagerly shared their observations and appreciation for sound. They then earnestly worked together and thought through their experience until they could articulate the conditions for sound. Then a stroke of brilliance—we'd go on to have many of these—brought them all to the conclusion that one must have the intention to hear in order to be aware of sound.

Each experiment that followed built in a meaningful way upon the one before it. We explored acoustics, optics, warming and cooling, and magnetic and electrical phenomena. Each day we thoroughly reviewed the simple yet profound experiment from the previous day. Each day was an opportunity to practice the process of thinking. The students' confidence in their ability to perceive even subtle phenomena grew. Like

Leonardo, they sought to observe what others might have overlooked. A highlight from the block occurred when a student attempted to attribute the movement and eventual dissipation of a drop of ink in a beaker to molecular movement.

Another student vehemently rejected her assertion declaring, "Don't you get it? We're supposed to figure this out for ourselves and not give an answer like a brainy scientist." The class subsequently went on to wrestle with the relationship between the movement of the ink and the quality of the water.

Another pivotal moment for me occurred when we explored electrical phenomena with a pith ball. Again, a simple everyday occurrence for Michiganders during the dry winter—static electricity—utterly captured their imaginations. How could rubbing a rod with a cloth bring about movement in a pith ball? They were fascinated, and many stayed in at recess to rub every possible pairing of materials together to test for this phenomenon. They made a chart of their findings. The next day they earnestly sought a pattern. What was the relationship? After much discussion a quiet child in the middle row said, "It seems like for this to occur man-made stuff like plastic works really well when rubbed closely with something else and then separated from it."

My class is now in seventh grade, and we've just begun our seventh grade physics block. When asked to share what they remembered from sixth grade, I was impressed by how confident they were when describing the phenomena we had experienced and the conclusions we had reached. They seem completely comfortable this year in approaching the new, confident in observing phenomena, and willing to think for themselves as they wrestle with concepts. When we reviewed the camera obscura, not a single one said anything about light beams. Instead, they immersed themselves in the wonder of the phenomenon and were delighted when they made the connection between the upside-down images they saw and the mirror experiments they had explored earlier.

So, Michael, Lylli, Gary, and Barbara, thank you for creating and teaching a course that has so greatly influenced my teaching. I've had science teacher training courses the past two summers in preparation for sixth and seventh grades, and these have provided ample experiment demon-

strations and suggestions. Neither course, however, formally addressed the epistemological importance of sense-based science teaching. I believe that, without your course, I would not have been able to guide my students from phenomena to conclusions reached by their own effort. I also doubt whether I would have been able to nurture their confidence in their own perceptions and to help them so readily to put aside materialistic models. From what I see in my students, I believe TSS has helped me to help them develop a meaningful connection to the natural world and a sincere desire to understand it through their own experience. I hope you can find some way of integrating your work into Waldorf teaching centers around the country.

I have just one more thing to share, and that's how TSS has affected me personally. Ever since that first experience we had of walking down to the pond to observe the rain on the sur-

face of the water, I've been different. My eyes had seen it before, my ears had heard it, my skin had felt it, my nose had smelled it, but until that moment, I had never known rain. That simple experience of sitting by a pond in the rain made me realize how we walk around in these bodies of ours with these amazing sense organs, yet we overlook and "underlook" all the time. "How many times must a man look up before he sees the sky?" Now when I go out into the world, I strive to seek that experience again—that meeting of the outer and inner world of my existence. I am forever delighted in observing phenomena—the sundogs around the sun, the antennae of a moth, the spirals of a spruce cone....

Thank you for enlivening my teaching and thank you for enriching my living.



Report on the On-Line Waldorf Library

Marianne Alsop

Since the autumn of 2008 there has been a continuous and pronounced increase in OWL site use and a corresponding increase in the number of questions and inquiries. It appears that our articles and e-books are accessed frequently. It is gratifying to know that so many people in so many different countries around the world find the OWL helpful.

Over the past few months OWL site visitors have requested help with a number of research questions. Recent research inquiries have included:

- Materials for faculty study;
- Preparing for child study;
- Teacher evaluation;
- How a Board of Trustees is organized and working groups developed;
- The role of organized sports in the middle grades;
- Study materials for a public school group wishing to develop the inner life of the teacher;
- Home schooling questions;
- Foreign language teaching in high school;
- Creating an arts-centered curriculum in low income public schools;
- Waldorf school daily and weekly schedules; and
- First grade readiness.

In addition, there are daily inquiries from those who have general questions for which there are usually easy and direct answers. Contacts throughout the world add so much to my ability to answer the many questions that come my way.

In the spring of 2009, the OWL web site will have a new look and many new features specific to online libraries. These include a broader search capacity, which will include quick links to a number of resources and an easier interface with our Journals and online or e-books, the numbers of which are growing. The new site will also have a **Frequently Asked Questions** page that will help guide site visitors to exactly what they are looking for. New books and articles will be featured on the home page as they are added.

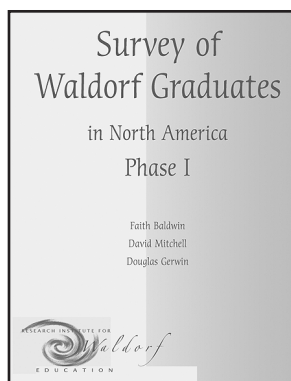
We welcome your comments and suggestions for improving the site and the library.

Find the Online Waldorf Library at: www.waldorflibrary.org.

Research on Waldorf Graduates from the Research Institute for Waldorf Education available from AWSNA Publications.

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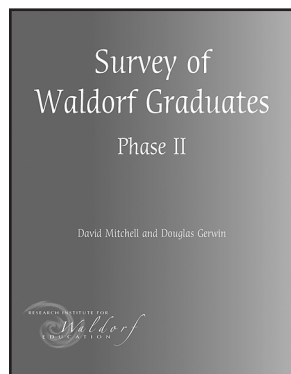
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Phase I

This study examines which universities and colleges were attended by Waldorf graduates during the ten years prior to the study. All Waldorf high schools in North America provided data.

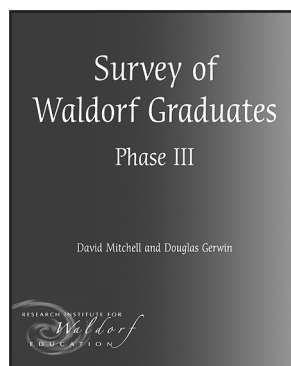
46 pages, spiralbound
ISBN 978-888365-88-7



Phase II

This comprehensive study looks at Waldorf graduates from 1943–2005 and what they did following graduation from their Waldorf high school: what values do they hold in life; what do they value in life due to their education; what honors have they achieved? There are extensive comments about Waldorf graduates from professors who taught them in college and from employers who hired them. This survey compiles a profile of a generic Waldorf graduate.

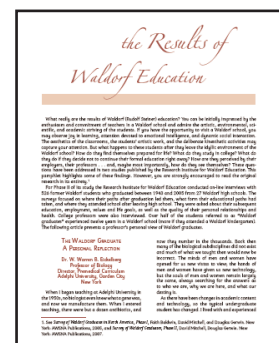
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Phase III

This study summarizes recent research conducted on Waldorf education in Sweden, Germany, Switzerland, and North America. The full data is analyzed, compared, and criticized. Reflections of Professors on Waldorf graduates are analyzed and constructive criticisms by graduates are offered in the spirit of the renewal and growth of Waldorf education.

108 pages, perfect bound
ISBN 978-888365-87-0



The Results of Waldorf Education

This eight-page pamphlet is a compilation of research summarized to give an overview for perspective parents and individuals interested in learning more about Waldorf graduates.

If a child happens to show that he knows any fact about astronomy, or plants, or birds, or rocks, or history, that interests him and you, hush all the classes and encourage him to tell it so that all may hear. Then you have made your schoolroom like the world.

—Ralph Waldorf Emerson, from “Education”



Contents from Past *Research Bulletins*

Volume I, Number 1

- Waldorf Education in an Inner City Public School System
 - Research Report
- Encounters in Waldorf Education—A Tribute to Ernst Boyer
 - Eugene Schwartz
- Waldorf Education Research Institute in North America
 - Susan Howard and Douglas Sloan

Volume I, Number 2

- Racism and Waldorf Education
 - Ray McDermott and Ida Oberman
- Reflections on the Education of Consciousness
 - Douglas Sloan
- Standardized Testing in a Non-Standardized World
 - Eugene Schwartz
- Africa
 - Betty Staley
- Research in the Life Sciences
 - Craig Holdrege

Volume II, Number 1

- Technology issue including:
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 - Joan Almon
 - Building on Shifting Sands: The Impact of Computer Use on Neural and Cognitive Development
 - Donna M. Chirico
 - Meetings with a Snake
 - Stephen Talbott

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- A New Educational Paradigm
 - Michaela Glöckler, M.D.
- Changes in Brain Formation
 - Michael Kneissle
- Organology and Physiology of Learning
 - Wolfgang Schad
- New Health Problems of Children and Youth
 - University of Bielefeld (Germany)
- Rudolf Steiner's Efforts to Encourage Cultural Diversity
 - Detlef Hardorp
- The Middle Passage—Out of Diversity We Become Whole
 - Cindy Weinberg

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 - David Elkind
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 - Christopher Schaefer

- The Third Space
 - Henry Barnes

- What Conditions Are There for Taking Responsibility in an Independent Culture?
 - Heinz Zimmermann

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 - Gerald Karnow, M.D.
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 - Michaela Glöckler, M.D.
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 - Joan Almon
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 - Stephen Talbott
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 - Peter Stuck, M.D.
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 - Edward Miller
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 - Will Brinton
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 - Craig Holdrege

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 - Frank Wilson, M.D.
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 - Dorit Winter
- Atopy in Children of Families with an Anthroposophic Lifestyle
 - Johan S. Alm, M.D., et al.

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– Roberto Trostli
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– Michael Howard
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– Kim Payne and Bonnie River-Bento
- Learning Expectations and Assessment Project (LEAP)
– Leap Project Group (Staley, Trostli, K. & B. Anderson, Easton)
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– Langdon Winner
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– Johannes Kirsch
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– Lowell Monk and Valdemar Setzer
- Low SES Minority Fourth-Graders' Achievement
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– Dave Grossman
- Education of the Will as the Wellspring of Morality
– Michaela Glöckler, M.D.
- Hand Movements Sculpt Intelligence
– Arthur Auer
- The On-Line Waldorf Library Project
– Dave Alsop

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– David Mitchell
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– Craig Holdrege
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– Michael Howard
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– Mark Riccio
- Phases and Transitions in Waldorf Education
– Harlan Gilbert
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– Douglas Gerwin
- Initial Report of the Waldorf ADHD Research Project
– Kim Payne, Bonnie River-Bento, Anne Skillings
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– Earl Ogletree

- Case Study Research: The Waldorf Teacher
– Nina Ashur

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– Alduino Mazzone

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– Stephen Keith Sagarin
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– Langdon Winner
- How Poems Teach Us to Think
– Gertrude Reif Hughes
- Educating the Will—Part III: Common Will and Comprehensive Will
– Michael Howard
- Whom Are We Teaching?
– Susan Kotansky

Volume VIII, Number 2

- The Vital Role of Play in Childhood
– Joan Almon
- In What Respect Are Star Children Different?
– Georg Kühlewind
- The Hague Circle Report
– James Pewtherer and Monique Grund
- Special Section: The Push for Early Childhood Literacy: Taking a Careful Look
- Editor's Introduction
- Moving in Slow Motion
– Barry Sanders
- A Risk Factor in Child Psychopathology
– Sharna Olfman
- Critical Issues and Concerns
– Nancy Carlsson-Paige
- The Loss of Nature
– William Crain
- The Push for Early Childhood Literacy: A View from Europe
– Christopher Clouder

Volume IX, Number 1

- Rudolf Steiner and the New Educational Paradigm
– Christof Wiechert

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– Johannes Denger

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– Jaimen McMillan

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– Gerald Huether

The New Generation of Children
– Renate Long-Breipohl

Volume IX, Number 2

Wellsprings of the Art of Education: Three Reversals in the
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– Christof Wiechert

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– Paul Zachos

The Kindergarten Child
– Peter Lang

The Teaching of Science
– David Mitchell

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Waldorf Curriculum
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Volume X, Number 1

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– Stephen Talbott

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– David Adams

The Lowering of School Age and the Changes in Childhood:
An Interim Report

Volume X, Number 2

The Current Debate about Temperament
– Walter Riethmüller

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– Vladislav Rozentuller and Stephen Talbott

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– Trevor Mephram

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– David Mitchell and Douglas Gerwin

Research on Graduates in North America, Phase I
– Faith Baldwin, Douglas Gerwin, and David Mitchell

Volume XI, Number 1

Puberty as the Gateway to Freedom
– Richard Landl

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– David Mitchell

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– Frank Teichmann

The Seer and the Scientist
– Stephen Keith Sagarin

The Four Phases of Research
– adapted from Dennis Klocke

Reports from the Research Fellows
Beyond Cognition: Children and Television Viewing
– Eugene Schwartz

PISA Study
– Jon McAlice

State Funds for Waldorf Schools in England
– Douglas Gerwin

On Looping
– David Mitchell

The Children's Food Bill
– Christopher Clouder

All Together Now! Oscillations of Heart Rate and
Respiration Synchronized During Poetry Recital
– Stephen Keith Sagarin

Waldorf Senior Survey
– Waldorf High School Research Project (Gerwin,
et al.)

Volume XI, Number 2

Reading in Waldorf Schools Begins in Kindergarten and Avoids
Clouding the Mind's Eye
– Arthur Auer

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– Martyn Rawson

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– Van James

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– Magda Lissau

Education and Healing
– Rudolf Steiner

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– Aksel Hugo

Reports from the Research Fellows
Nature Deficit Disorder
– David Mitchell

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– Stephen Keith Sagarin

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School Children
– Philip Incao, M.D.

Left-handedness: A Call for Research
– Douglas Gerwin

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Nurture
– Eugene Schwartz

Against Anticulturalism: A Review of Books by Kay
Hymowitz
– Jon McAlice

Volume XII, Number 1

Reading in Waldorf Schools, Part II: Beginning in Flow and Warmth

– Arthur Auer

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– Daniel Hindes

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– Dorit Winter

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– Susan Johnson, M.D.

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– Jane Swain

On Spiritual Research

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Volume XII, Number 2

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– Douglas Gerwin and David Mitchell

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– Arthur Auer

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– Helen Lubin

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– Rudolf Steiner

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Twenty Myths about Waldorf Education

– Stephen Keith Sagarin

Reports from the Research Fellows

New Research on the Power of Play

– Susan Howard

High-Stakes Testing

– Eugene Schwartz

Rethinking the Waldorf High School:

Two European Examples

– David Mitchell

Volume XIII, Number 1

Human Development and Moral Force:

An Anthropology of Moral Education

– Ernst-Michael Kranich

The Moral Reasoning of High School Seniors from Diverse Educational Settings

– Christine Hether

Can Moral Principles Be Taught?

– Magda Lissau

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– Christopher Clouder

The Riddle of Teacher Authority: Its Role and Significance in Waldorf Education

– Trevor Mepham

Religious and Moral Education in the Light of Spiritual Science

– Rudolf Steiner

Reports from the Research Fellows

Profits and Paradigms, Morality and Medicine

– Philip Incao, MD

Visions of Peace

– Michael Mancini

"A Still Small Voice": Three Tools for Teaching Morality

– Patrice Maynard

Blinking, Feeling, and Willing

– Eugene Schwartz

From Virtue to Love

– Arthur Zajonc

Volume XIII, Number 2

Rhythm and Learning

– Dirk Cysarz

Thinking and the Consciousness of the Young Child

– Renate Long-Breipohl

Assessment without High-Stakes Testing

– David Mitchell, Douglas Gerwin, Ernst Schuberth, Michael Mancini, and Hansjörg Hofrichter

The Art of Education as Emergency Aid

– Barbara Schiller

What Have We Learned? Comparing Studies of German, Swiss, and North American Waldorf School Graduates

– Jon McAlice

Cultivating Humanity against a "Monoculture of the Mind"

– Stephen Keith Sagarin

Reports from the Research Fellows

"Learning Arts, and the Brain" – The Dana Consortium Report

– Patrice Maynard

Waldorf Around the World

– James Pewtherer

The Intercultural Waldorf School of Mannheim, Germany

– David Mitchell

The Health and Heartiness of Waldorf Graduates

– Douglas Gerwin

Research Institute Proceedings

Find this information on the Research Institute website.

www.waldorfresearchinstitute.org



About the Research Institute for Waldorf Education

The Research Institute for Waldorf Education is an initiative working on behalf of the Waldorf school movement. It receives support and guidance from the Pedagogical Section of the School of Spiritual Science and financial support through the Association of Waldorf Schools of North America (AWSNA), the Midwest Shared Gifting Group, the Waldorf Schools Fund, the Waldorf Curriculum Fund, and private donors through the Rudolf Steiner Foundation.

The Research Institute was founded in 1996 in order to deepen and enhance the quality of Waldorf education, to engage in serious and sustained dialogue with the wider educational-cultural community, and to support research that would serve educators in all types of schools in their work with children and adolescents.

The Research Institute has responded to the call for research as a top priority of the Waldorf school movement by becoming a supporting organization of AWSNA and by co-sponsoring research projects with the Association and with the Pedagogical Section.

We support research projects that deal with essential contemporary educational issues such as the role of play in early childhood, attention-related disorders, trends in adolescent development and innovations in the high school curriculum, learning expectations and assessment, computers in education, the role of art in education, and new ways to identify and address different learning styles. The Research Institute has sponsored colloquia and conferences that have brought together educators, psychologists, doctors, and social scientists. We have published a *Research Bulletin* twice a year for the last decade, and we are developing and distributing educational resources to help teachers in all aspects of their work.

We sponsor the Online Waldorf Library: www.waldorflibrary.org, whose mission is to make available contemporary writings on Waldorf education, and we host our own site:

www.waldorfresearchinstitute.org, where up-to-date research is posted.

The Research Institute is a 501(c) (3) tax-exempt organization and gratefully accepts donations.

Summary of Activities Supported by the Research Institute

Research Projects

Art in Human Development
Attention-Related Disorders Research Project
Evaluation of the Urban Waldorf School in Milwaukee
Learning Expectations and Assessment Project
Mathematics – Phobias and Remediation
Reading, Writing, and Reading Comprehension
Survey of Waldorf Seniors
Teaching Sensible Science Workshops
Waldorf High School Research Projects
Waldorf Graduates Survey Phase I
Waldorf Graduates Survey Phase II
Waldorf Graduates Survey Phase III
Results of Waldorf Education

Colloquia and Conferences

Towards Wholeness in Learning, 1996
Pathways of Healthy Child Development, 1998
Andover Proceedings: Tapping the Wellsprings of Health in Adolescence, 2001
Waldorf High School Research Project
Subject-Specific Colloquia, 2000-2004
Chemistry
United States History
Mathematics
English
Computer and Information Technology
Life Science and Environmental Studies
World History – Symptomatology
The Power of Grammar, 2008
Physics, 2009

Resource Development

Computers in Education, handbook for teachers

Being on Earth, a book for scientists and teachers

On-Line Waldorf Library, a website of resources for Waldorf education

Themes in Waldorf Education, compilation of Rudolf Steiner's indications on teaching language arts and mathematics

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