Research Bulletin

Autumn 2005
Volume XI · Number 1

Research Bulletin
Volume XI Number 1
Research Institute for Waldorf Education

RESEARCH INSTITUTE FOR
WALDORF EDUCATION
P.O. Box 307
Wilton, NH 03086

RESEARCH INSTITUTE FOR
Waldorf
EDUCATION

Table of Contents

Report from the Co-Directors
David Mitchell and Douglas Gerwin 3

From the Editor
Stephen Keith Sagarin 5

Puberty as the Gateway to Freedom
Richard Landl 7

Soul Hygiene and Longevity for Teachers
David Mitchell 13

The Emergence of the Idea of Evolution in the Time of Goethe
Frank Teichmann 21

The Seer and the Scientist
Stephen Keith Sagarin 31

The Four Phases of Research 36

Report on the Work of the Pedagogical Research Center of the German BUND 37

Work of the Research Fellows
Beyond Cognition: Children and Television Viewing
– Eugene Schwartz 39
International Student Assessment and Computer Use:
What Do Recent PISA Surveys Show?
– Jon McAlice 40
State Funds for Waldorf Schools in England
– Douglas Gerwin 42
On Looping
– David Mitchell 43
The Children's Food Bill
– Christopher Clouder 44

All Together Now!
Oscilations of Heart Rate and Respiration Synchronized During Poetry Recital
Review by Stephen Keith Sagarin 46

Reports from Current Projects of the Research Institute
Waldorf Graduate Research, Phase II – Arthur M. Pittis 47
Remedial Mathematics Project – Lori MacKinder 49
Reading, Writing, and Reading Comprehension – Paul Gierlach 51
Teaching Sensible Science – Gary Banks 53

Report on the Online Waldorf Library
Marianne Alsop 60

Waldorf High School Senior Survey
Waldorf High School Research Project 61

Rigor Asked for in High Schools
Review by Stephen Keith Sagarin 66

Contents from Past Research Bulletins 67

About the Research Institute for Waldorf Education 71

Report from the Co-Directors

David Mitchell and Douglas Gerwin

No doubt you have already noticed changes with this issue in the look and format of this publication. As the Research Institute gains wider recognition, we are striving to create a more readable and diversified *Research Bulletin* that can serve the mission of protecting childhood and fostering research and debate on education.

These changes coincide with the retirement of Douglas Sloan, Ph.D., our esteemed founding editor. Words cannot express our gratitude to Douglas for his capable navigation of the *Bulletin* since its inception more than a decade ago. Douglas is a gentle, cultured man whose powers of perception, scholarly acumen, and expressive wisdom have been greatly appreciated over the years. As a colleague he radiates calm, compassion, and interest in others. He will remain as a trustee on the Board of the Research Institute.

With this issue Stephen Keith Sagarin, Ph.D., takes over as the new editor of the *Research Bulletin*. Stephen, who received his doctorate from Columbia University, is Faculty Administrator of the Great Barrington Rudolf Steiner School, Chair of the Great Barrington Waldorf High School, and Director of the M.S.Ed. program in Waldorf Teacher Education at Sunbridge College. We are delighted to welcome Stephen as part of the Research Institute.

Christopher Clouder remains our Contributing Editor from Great Britain and will provide us with articles relative to educational research undertaken in Europe.

The Board of Trustees of the Association of Waldorf Schools of North America (AWSNA) has appointed Virginia Flynn as its representative member to the Board of the Research Institute. Virginia is widely known in Waldorf education. Currently she is a member of the AWSNA Board of Trustees and a leader of the Pedagogical Advisors Colloquium. In past years she served on the Coordinating Committee of AWSNA as Chair of the Central Region, and she was a long-standing class teacher at the Great Barrington Rudolf Steiner School. She herself was a student at the Rudolf Steiner School in Manhattan. We are grateful that Virginia has agreed to join the Research Institute as a trustee.

We are in direct contact with the AWSNA Leadership Council through Patrice Maynard who, with James Pewtherer, the newly appointed Chair of the Pedagogical Section Council, is helping us to identify new areas for research in North America.

With this issue we introduce a new circle of Institute Research Fellows. Their task will be to write short articles about research on education in general and on Waldorf education in particular. Some of their work appears in this issue. The Research Fellows are:

Arthur Auer	Jon McAlice
Christopher Clouder	David Mitchell
Michael D'Aleo	Martyn Rawson
Douglas Gerwin	Eugene Schwartz
Paul Gierlach	Douglas Sloan
Susan Howard	Arthur Zajonc

This year the Research Institute is entering into collaboration with the Pädagogische Forschungsstelle ("Pedagogical Research Center," the research arm of the BUND in Germany), as well as the research group of the Pedagogical Section of the Anthroposophical Society in Dornach. Correspondence and exchanges have taken place with Ernst Schuberth, Martyn Rawson, and Hansjörg Hofrichter, the principals of the Pädagogische Forschungsstelle, one of whom

joined us during our autumn Board meeting in Amherst, MA. At present the Forschungsstelle has identified 45 research projects of interest to them. News of these projects will be forthcoming in future issues of the *Bulletin*.

Monthly dialog between the Co-Directors and Christof Wiechert, Head of the Pedagogical Section at the Goetheanum, has further extended our collaborative efforts. We are linking up with major research on Waldorf graduates in Germany and Switzerland directed by Dr. Dirk Randall of the firm Software AG. Earlier this year the IPF initiative in Switzerland, chaired by Urs Hauenstein and Thomas Stöckli, contracted with the University of Plymouth, UK, to cooperate in their Masters degree programs. They will start with three programs:

- Education. One group is working already, a second will start in January 2006.
- Social Banking, also called Ethical Banking, to begin September 2006.
- Social Care and Education. A collaboration between social care and curative education to begin September 2006.

Currently the Research Institute is spearheading three projects, with several more to follow once the necessary funding has been secured. The first project involves a major study of Waldorf graduates. This is Phase II of a two-part project conducted by Arthur M. Pittis of Austin, Texas, with oversight and analysis provided by Douglas Gerwin and David Mitchell. This research will develop both statistical and qualitative data. We ask for full cooperation from the representative Waldorf high schools in North America in order to ensure the success of this project.

Paul Gierlach is undertaking research on a framework whereby writing, reading, and reading comprehension are placed in developmentally appropriate stages for elementary and high school students. The goal is to provide a progressive pattern for teachers to lead their students and themselves to penetrate reading content and writing activity more thoroughly. By the twelfth grade students should comfortably grow beyond content to an understanding of the style used by any author. Graduating students will then be able to comprehend the author's ego and the author's culture. Reading, then, can become a socially responsible activity for the rest of the students' lives. Style, as perceived in reading, will be developed in students' writing over a four-year period. Joy of mastered self-expression should inform the student's writing thereafter.

Lori MacKinder is undertaking a study of teaching remedial math in the high school setting. Her research will consist of a long-range (four-year) study involving mathematics. She will follow a remedial math class through the four years of high school using a combination of mainstream math remediation techniques, big picture imaging, and Extra Lesson movement. She is interested in how the various techniques affect the student in terms of what works and what does not work in the moment and over time. The goal will be to offer specific techniques and curriculum for students with difficulties or deficiencies in mathematics.

We hope that you will be interested in the work of the Research Institute and that you will make others aware of our efforts. We welcome your letters.

From the Editor

Stephen Keith Sagarin

In my initial interviews for editor I asked, "Is there enough research in Waldorf education to justify two issues per year of this journal?" After only a few months in the saddle, I can tell you that there is. Several European countries have vital research institutes, and we bring you news of their work through reports like Ernst Schuberth's in this issue, and also translations of recent research and scholarship. Two articles in this issue are in this category. The first is Frank Teichmann's excellent article on the idea of evolution in Goethe's time. As English speakers we are familiar with a pedigree for the idea of evolution that includes Darwin, English geologists, and others. We are less familiar with the German thinking and philosophy that made scientific discoveries about evolution possible. We hope readers find that Teichmann's article provides insight in this area. Also translated from German is Richard Landl's sensitive investigation of how contemporary brain research supports and can also inform Waldorf education for adolescents.

There are more questions to be answered about Waldorf education and Waldorf schools than there are researchers available to answer them at present. What questions would schools like answered in order to know themselves better and in order to improve teaching and learning? If we think of Waldorf education as a landscape, what does this landscape look like? At the moment, it is hard to tell because it is fairly dark. Researchers like David Mitchell, who writes in this issue on hygienic practices for Waldorf teachers, are taking on these questions, gradually illuminating the landscape of Waldorf education, and the results of their work will continue to appear here. I also have a piece in this issue, excerpted from my history of Waldorf schools in the U.S., comparing Rudolf Steiner and Jean Piaget on concepts of child development. Our hope is that a genuine engagement with the ideas of these two great developmentalists can move us beyond lip service to either.

Fellow travelers and even unintended illuminators in research on spiritual, ethical, and creative aspects of education produce research continually, and we will continue to bring you reviews and synopses of this work. In this issue, David Mitchell writes about looping, Jon McAlice about results of international student assessments, Eugene Schwartz about research on the effects of television, Christopher Clouder on legislation in the U.K., Douglas Gerwin on possible state funding for Waldorf schools in the U.K., and I write on research regarding spoken verse and respiration synchronization.

The Research Institute also funds research, and ongoing reports on this work appear here: Arthur Pittis on Waldorf high school graduates, Paul Gierlach on teaching reading and writing, Lori MacKinder on teaching remedial math in high school, and Gary Banks on teaching phenomenological or "sensible" science. This issue also contains a report from Marianne Alsop on the Online Waldorf Library.

We must no longer belong to a culture of belief; we must become a culture of inquiry. This phrase—I don't remember to whom I should attribute it—has gone through my mind for the past year as I have met with colleagues from Sunbridge College, European and American teacher education and research institutes, colleagues in Waldorf and Steiner schools, colleagues in holistic education in general, and the Board and members of the Research Institute for Waldorf Education.

Before I agreed to become editor of this journal, I had determined that research in Waldorf education—as a Waldorf teacher, as a teacher of teachers to be, and as a scholar—is an important part of my present and my future. When Douglas Gerwin and David Mitchell contacted me about assuming the editorship following the retirement of my mentor and friend Douglas Sloan—large shoes to fill—I knew that I didn't have time in my life to take this on, but I also knew that it was exactly what I needed to do. I look forward to immersing myself in current research in Waldorf education, to helping the Research Institute support necessary research, to working with schools and teacher education programs to determine what research is necessary, and to assisting with research and its publication.

Puberty as the Gateway to Freedom

Richard Landl

Transformation of the Etheric-Astral in Puberty

All teachers are familiar with the physical presentation of a young person at puberty: the increasing weightiness of the body as it "descends" into a young person, typically visible in gait and posture, and also the soul chaos that often manifests in seemingly incomprehensible and contradictory behaviors. Let me add an image of Rudolf Steiner's that clarifies what occurs at this time in the soul-body of a young person. In his lecture of May 25, 1922, on "Human soul life and spiritual striving in relation to world and earth evolution," Steiner describes how, before birth, a human being assembles its own etheric body out of the entire etheric cosmos. This etheric body contains a copy of the entire cosmos, in particular of the animal world, the sun, and the moon. During the first years of a child's life, this prenatal etheric body is born. This soul development parallels physical development with regard to the inherited etheric body. In this process, the configuration of the etheric body is transformed in such a way that, among other things, a certain concentration of etheric formative forces takes place in the region of the heart. Steiner describes this process as the formation of a new etheric heart to replace the old etheric heart. Spatially, this etheric heart should be conceived as occupying the same location as the physical heart. This process reaches its height, its conclusion, at the time of puberty. From this time onward a young person carries a copy of the entire cosmos in his or her heart region.

Steiner also presents an image of the transformation of astrality. The astral body, too, is brought into a new incarnation following pre-natal stages. At first, the astral body is a copy of a person's experiences between death and rebirth. All the secrets of a particular individuality are visible in the highly differentiated structure of the astral body. Here, again, developing astrality gradually replaces inherited astrality. According to Steiner, beginning with ego or self-consciousness in the second or third year, highly differentiated astral structures plunge into the physical organs. This affects particularly organs above the diaphragm—principally the brain. This especially dynamic process also concludes in puberty. Prior to puberty, astral structures become increasingly undifferentiated and the astral body is reduced to a kind of foggy cloud. Dissolved astral forms begin to form anew in puberty.

Teachers are faced, then, with the pressing question of the process responsible for this reformation. Here again developmental processes emerge that match in significance those of early infancy. Infant development, however, is primarily the responsibility of parents. Pubescent and prepubescent development involves teachers. According to Steiner, new astral formations are the result of all the movements performed by the growing youngster's arms and legs: "All of a person's actions that are meant to be expressed in the outer world are now inscribed in this astral body." Every activity of the young, including activities outside of school hours, is significant for later soul development. Neither fleeting ideas, nor fantasies, nor emotions have a primary influence in this reconfiguration of the astral body; instead, it relies on everything that the youngster accomplishes concretely in the world.

Steiner explains further that in puberty the astral body also experiences a new con-

centration in the heart region. The etheric and the astral meet in the region of the heart, a meeting more intensive than in any other realm of human physicality. All of the astral body's new formations are transmitted to the etheric in order to be absorbed there. "From puberty onward, with a detour through the astral, all human activity is connected with the etheric heart, the one organ that was formed out of the images of the stars, of the cosmos." These processes inform an understanding of Steiner's description of the process of the creation of future destiny: all human deeds are inscribed, by way of the astral body, into a copy of the cosmos that lies in the etheric heart. "Here the cosmos connects with its own happening and with human karma." Steiner thus makes clear that the process of future karma-creation begins only in puberty. A human being relinquishes all her deeds to a copy of the cosmos in the heart region, and in the life after death this copy, born in the heart, expands into the cosmic ether, creating the foundation for a future life.

A young person's ego or self is still deeply connected with the astral body in puberty and participates in the soul events described above. According to Steiner, the ego lives with a sympathetic connection to the images of the astral. Intentions and ideas that underlie our actions are also inscribed in the etheric, in an image of the cosmos, pointing to a moral or ethical dimension to our actions.

Groundbreaking Discoveries in Brain Physiology

In the last 25 years much progress has been made in the field of brain physiology, especially with regard to the architecture and function of the brain. The decade from 1990 to 2000, in particular, could be called the Decade of the Brain. The impressive increase in knowledge is due to new technologies that make it possible, without surgery, to obtain an image of processes in the inner recesses of an active brain. Investigators put special emphasis on the late embryonic period and early childhood up to approximately the third year.

The brain responds by reinforcing those connections that are stimulated frequently and by extinguishing those that are little used or not used at all.

Two simple and effective processes are shown to be responsible for the brain's ability to adapt: overproduction and destruction of neural connections. At birth, the brain is only partially formed. During the first 18 months of child development, we observe a marked increase of gray matter. By far most of that growth occurs as the result of a kind of explosive network-building between individual brain cells—up to 30,000 connections per nerve cell. This overproduction is soon followed by the erasure of a major portion of these connections, of which only one third survive. The process guiding this destruction of connections can, for the most part, be traced to impulses from the sensory organs. One should include here all twelve senses, as described by Steiner, so as not to miss the striking formative work of the lower senses—touch, sense of life, self-movement, balance—which are acutely involved in the first years' movements of arms and legs. The brain responds by reinforcing those connections that are stimulated frequently and by extinguishing those that are little used or not used at all. The formative law here is "use it or lose it."

Since the beginning of this century, we have gained revolutionary new information through the use of Magnetic Resonance Imaging (MRI). The use of MRI causes no known damage to the brain, unlike earlier

technology, so it can be used on healthy individuals. Research has now been conducted on subjects of all ages in order to obtain patterns of brain activity related to a great variety of actions. In this way, a research team working with Jay Giedd of the National Institute of Health in Bethesda, Maryland, established that a process similar to that in early childhood starts again in pre-puberty, bringing about a second wave of overproduction. This is followed by further destruction of neural connections during puberty. The most surprising discovery was the observation of renewed production of gray matter, a possibility that researchers had previously discounted. An important difference from early childhood development resides in the fact that the entire brain is no longer involved in this process, which now concerns particularly the lobes of the prefrontal cortex. This process starts in girls around the age of eleven and in boys around the age of twelve.

Higher cognitive functions find their physical bases in these areas of the brain. Brain physiologists include in these functions self-control, capacity for judgment, organization and coordination of intellectual processes, synthetic understanding, and socially appropriate behavior. From the point of view of an anthroposophical anthropology, what is described here is the quality of the ego as it intervenes creatively in conscious soul processes.

An important difference from early childhood development resides in the fact that the entire brain is no longer involved in this process, which now concerns particularly the lobes of the prefrontal cortex. This process starts in girls around the age of eleven and in boys around the age of twelve.

Parents, other adults, and the environment in general have a primary responsibility for healthy childhood development. At the time of puberty, the young person himself or herself becomes at least partially responsible for the reconfiguration of the frontal parts of the brain, that is, of the physical foundation of ego-activity. But what force stimulates this reconfiguration? Brain research has an answer: everything that a youngster does! Whether she plays sports or music, does mathematics, wastes her time in front of the TV and computer games, or lies on the couch, her brain adapts to the task. The brain does not differentiate between meaningful and meaningless tasks. The brain does not care or demonstrate through corresponding cerebral formation whether a well-honed ability is developed to serve the skillful use of a computer game or a particularly artistic performance; the brain just optimizes! Here we see the explosive power of puberty. Puberty from this point of view is not foremost a time of youthful rebellion, but represents instead a formative phase for the physical anchoring of later higher cognitive faculties.

Brain research also casts a new light on two widely observable feelings of the young, a feeling of impotence and a feeling of omnipotence. Explosive reconfiguration of nerve connections leads at first to a situation in which young people cannot draw on learned behavior. The brain therefore calls upon different regions in an attempt to form a judgment—in particular it calls on those regions used for quick, feeling-laden decisions, "gut instincts." Only when reconfiguration of the frontal cortex nears completion will it increasingly be used again. The flip side of this new development of the frontal brain is the feeling that everything is possible, everything can be attained. These are feelings, familiar to all adults, between which the

young vacillate, producing familiar lightning-quick reversals of mood.

We should not neglect another part of the brain: the cerebellum. This organ is subjected to little genetic influence but is strongly dependent on the environment. It undergoes significant changes during puberty. It is responsible in particular for muscular coordination and the coordination of cognitive processes. While not essential for these processes, it makes them smoother. The more complex the demands on the brain, the more the cerebellum is stimulated. Here again, brain physiology has established that movements—whether external or intellectual—are the formative element of this organ. According to Giedd, "[During puberty] physical movement most strongly stimulates the development of the cerebellum and is ultimately more important than any academic content." Understanding this process makes it possible to understand more profoundly the connection between soul and body processes in Steiner's description of astrality.

[During puberty] physical movement most strongly stimulates the development of the cerebellum and is ultimately more important than any academic content.

Soul-Physical Connections in the Astral Body

In order to bridge physical and soul development, it is necessary to consider the etheric and the astral in relation to waking and sleep. Steiner describes how, in sleep, the astral body and the ego abandon the sleeper. The astral body goes into the outer soul-world, and the ego connects itself with beings of the spiritual world. Both parts of being experience a transformation at night; this can be seen as an "answer" from higher worlds and may be recalled or experienced when we awaken. But what do we take into our sleep from our daily experience that can interact with spiritual worlds? We answer: everything that comes from the metabolic-limb system, all our actions and the feelings that accompany them.

Steiner points here to a deep connection between happenings of the night and formation of the human brain. The image of a lemniscate—the symbol of infinity, a "figure eight" turned on its side—can help us understand better the processes of the astral body. If we picture the lemniscate as a ribbon that displays its outer surface in one loop and its inner surface in the other, then the outer part can stand for the head organism and the inner part for the metabolic-limb system. Both are mediated by the crossing of the lemniscate, that is, the rhythmic system.

If we simplify the process that occurs during human sleep, we might say that astrality withdraws from the upper region of the lemniscate, the head, and expands into the astral world in the lower region, the limbs and metabolism. Steiner describes the part of us that withdraws in sleep as a photographic negative and he describes the forms of the human brain as the matching positive image. Here, then, he expresses an immediate connection between realms of soul and realms of body.

Steiner also describes this connection when examining two successive incarnations of a human being. The deeds of a previous life shape the form of the physical brain in the next life. A human being's actions in one life determine the physical formation of the head organization in the next life. Through this metamorphosis, human beings are "framed" in their thinking and representational capacities, that is, in the fundamental physical conditions of intellectual capacities. Separate from this predetermined aspect of head

organization, experience shows that other capacities may be schooled and are not predetermined. These include the ability to concentrate, to connect ideas and representations, to order images, and to produce syntheses and interpretations. The thinking and meditative path of anthroposophy—this intensive ego activity—ultimately rests on freedom. We may choose to practice and improve, or we may not.

The brain remains more plastic to a more advanced age than had previously been assumed. This shows that an active thinking life makes possible a soul-development that reaches into the physical forms of the brain. It is equally clear that human activity also profoundly influences brain development.

We note here a surprising agreement with research in brain development. Experience suggests that human cognitive capacities are largely given to us, whether through inherited gifts or through individual dispositions from a previous life. These are manifested physically during embryonic and early childhood development. By contrast, as a result of new formative possibilities in parts of the brain that arise in puberty, a free space for the acquisition of higher cognitive capacities appears. The brain remains more plastic to a more advanced age than had previously been assumed. This suggests that an active thinking life makes possible a soul-development that reaches into the physical forms of the brain. It is equally clear that human activity also profoundly influences brain development.

First Pedagogical Consequences

At school age, capacities formed in a previous incarnation and adapted for use during early childhood now become available to a child. It is important to awaken this set of general cognitive capacities. In doing so, a teacher must naturally observe the boundaries set by a child's own physical conditions. Teachers can make children aware that differences here, like all bodily differences, constitute a natural condition of life. But, beginning appropriately in pre-puberty, it is especially important to help the young understand that they themselves are now the shapers and co-creators of everything they can develop in the way of higher intellectual capacities—not using these precise words, of course. Central tasks of middle school teaching may be to communicate a sense of freedom in possibilities and also a sense of responsibility for creating these possibilities. These senses of freedom and responsibility will be developed more consciously in high school.

If we glance at current subjects of educational discussions, like centralized examinations, educational standards, and graduation requirements, we find that these almost always test or require purely logical, cognitive capacities. In other words, we are testing the past, what has been, not what may be! What is it that we in Waldorf schools aim to do with new forms of examination? We aim at those competencies that rest upon higher cognitive capacities, that is, on ego-activity that bears the future. What does it mean for students to be measured only by their old capacities rather than by what they are becoming, what is growing toward the future? This question may lead our high schools to new and appropriate forms of education.

Soul Hygiene and Longevity for Teachers

David Mitchell

Jack and the Beanstalk, as told by Andrew Lang, contains a subtle message for teachers seeking to have long and healthy careers in Waldorf schools. Jack trades a white milk cow for three beans and subsequently grows an immense beanstalk that stretches through the clouds into an unknown realm. Faith, childhood wonder, and trust allow Jack to make his beanstalk grow and to undertake his adventure. Eventually, he gains treasure in the form of a basket full of golden eggs.

The soil has to be robust to provide for his beans' healthy root growth. This is where it all begins. The first and most important lesson for teachers is that we must enter the first day of our teaching profession, and each day thereafter, with our feet firmly on the ground. We need to be fully present and wakeful in all that we do with children.

But what about the beans and the beanstalk that grows from them? What can we use to allow us to climb as Jack did? Fortunately, we have many meditations, exercises, and thoughts from Rudolf Steiner that we can cultivate, like Jack's three beans. With effort, steadfastness, and ever-renewed striving, we can grow our own beanstalks and ascend from everyday consciousness to an experience of our higher selves and the transformation of our habitual life of thought. This acquired consciousness transcends the day-to-day; it is empty and free and is achieved by concentrated attention and active, dedicated, inner work.

In the fairy tale Jack possesses a playful spirit; this mood is indicative of the gentleness of will that we cultivate as we enter into our meditative, transformative work.

In the fairy tale Jack possesses a playful spirit; this mood is indicative of the gentleness of will that we cultivate as we enter into our meditative, transformative work. We create a space, as that of a child in quiet play, and allow ourselves to arrive at this space empty of judgment and expectation. Knowing this is a first step, but in doing it we face obstacles.

Many teachers in North America find it a challenge to establish and maintain a meditative practice. Western culture presents us with a host of distractions to the development of our meditative work. As we work to develop the refined soul force of imagination we are flooded with diverting pictures from television, billboards, and movies—media that can easily fill our souls with falsehoods. It makes sense that the medieval monks took oaths of poverty to help them, absent everyday distraction, to gain this higher imagination. Further, a rhythmical cloistered life was conducive to purification of the astral body.

As we strive to awaken to the higher soul quality of inspiration, we are bombarded by a cacophony of sounds—sounds from the technology with which we live, music in every store in which we shop, and the omnipresent, isolating "iPod." This constant barrage of noise blocks or muffles our ability to listen to our own thoughts. The monks took oaths of obedience in order to cultivate higher inspiration and used chants and prescribed prayer from the Abbott in order to listen inwardly.

The higher soul power of intuition, an act of union, is dulled by our society's fixation on sex—a yearning for union made physical—alcohol, and drugs. All of this becomes a distraction from higher intuition. The monks, of course, took vows of abstinence. Modern men and women look in vain to places other than themselves to hear the words of the gods. We are not permitted an Essene existence, nor the protection of the abbey wall—we must transform ourselves and develop amid the dissonance and turbulence of modern life.

Our own childhood mis-education continually surfaces and threatens to influence our teaching. Our habits of thought cloud the philosophical foundations to which we dedicate ourselves. Our biographies present us with challenges at every turn. Each of these challenges also presents opportunities for growth. Given these overwhelming obstacles, however, how can we help ourselves to become the best Waldorf teachers we are capable of becoming?

When we first encounter Waldorf education we experience a curriculum that is both powerful and unique; but a curriculum alone does not make our schools special. What we, as aspiring Waldorf teachers, do is equally important.

We soon realize that Waldorf education is not a method alone; it depends upon active individual deepening and development through personal study and active involvement in spiritual science. A teacher's inner work energizes the curriculum and makes Waldorf education stand out from other educational philosophies in that every subject is related to the evolving human being.

Today, the world and everything in it have become subject to question. The manner in which questions are posed, however, leads us deeper into chaos instead of toward resolution. Unexamined assumptions about the control of nature, the separation between human beings and the cosmos, and the lack of meaning in existence threaten our ability even to ask proper questions. Expanding consciousness requires the right questions.

Fortunately, Steiner offered some simple and helpful ways to develop our consciousness and to strengthen our soul forces. Working out of anthroposophy, each of us as a striving Waldorf teacher needs to take three particular steps in anthroposophical training if we wish to expand our everyday consciousness. These steps involve concentration, meditation, and active participation in our own moral development and may be described as follows:

- Concentration, in which we focus our consciousness on a freely chosen object and hold it fast;
- Meditation, in which we stay in our thought powers with an object, living with it but not pondering it intellectually; and
- Life-Guidance, in which we take ourselves

on in our own moral development and actively guide ourselves in developing our own capacities for love, patience, and perseverance.

Athletic training exercises the muscles required for a particular physical skill. The development of consciousness also requires training, and the three steps listed above are exercises toward the attainment of a higher perspective and inner strength and mobility.

We know that who we are as striving persons is as important as what we teach. Anyone who has taught children can confirm this. Children see right into our inner core, and we reach them in subtle ways beyond the mere presentation of a clever lesson plan.

As teachers it is also necessary that we look after our own personal hygiene, soul and body, so that we can be properly present for our children. How we re-create ourselves is important if we want to succeed in our work. Cultivating interest in the arts, music, sculpture, painting, crafts, and reading are all activities that rebuild forces that we exhaust in our teaching. Especially in our modern age, which often centers on passive entertainment, artistic activity is a potent healer. Conscious artistic development is an activity that rewards us with newfound strengths.

John Gardner, a pioneer in Waldorf education in North America, offered the following maxims for hygiene of the will:

- Always have in mind an aspect of yourself that needs strengthening.
- Always do what you promised yourself to do.
- Fight to establish order and rhythm in your life.
- Keep in touch with nature.
- Always be engaged in some form of creative art.
- Honor and properly prepare for sleep.
- Learn to pray.
- Do not squander strength for the illusion of pleasure.

Reflecting on my own teaching from first grade through twelfth grade, I recognize helpful rhythms of the year. The summer, when many external pressures are removed, is best for creating an overview for the coming year. We do our background reading and gather our resources. We can use the summer's outbreath to prepare the mood for the year. We can separate essentials from non-essentials. We are carried by the enthusiasm of the coming new year. During this time I like to prepare, as completely as possible, each block or course up to holiday break.

Once the academic year begins we have to take each day one at a time and pay attention to detail. In the autumn I feel my will forces to be strong, but by Lent I always feel weaker. During the holiday break I prepare my blocks up to the mid-winter vacation. Then I try to organize details up to the spring break, during which time I am finally able to prepare for the period lasting to the end of school. At this time I always begin to feel restored by the forces of spring and the returning light of the sun. We must learn to observe our own rhythms and plan our preparation time accordingly, allowing for months that may be difficult for us.

Each year, when extra meetings and late night preparation begin to sap our strength, I remember that the prime sleeping time occurs in the hours before midnight, and I try to take advantage of this with an earlier bedtime. The average person requires three successive nights of such sleep for self-restoration. I have always found that I can restore myself when I do this.

Steiner emphasized the importance of walking in the morning before meeting our students. This allows our thoughts to stir about in us and our ideas to metamorphose and transform. It is especially important to plan time specifically for ourselves and to be firm about holding to it. This will bring energy to our tasks and allow us to discover other aspects of our own being.

Establishing, maintaining, understanding, and working in harmony with our bodily rhythms help to keep us healthy. Every day brings profound changes in our mental and physical condition as our body and brain alternate between states of high activity during the waking day and recuperation, rest, and repair during nighttime sleep. These cycles are not a passive response to the world around us—they are prearranged and driven by an internal clock. Have you ever noticed that you can wake up within minutes of the time you indended to get out of bed? How does this happen?

> The highest reward for man's toil is not what he gets for it, but what he beomes by it.
> — John Ruskin

Our organs and mental powers show evidence of more than one hundred circadian rhythms. These are monitored in our brain by a type of "clock" called the suprachiasmatic nucleus (SCN), a pair of pinhead-sized structures that each contain about 20,000 neurons. They are located in the hypothalamus, just above the point where the optic nerves cross. They monitor the firing of nerve cells that are associated with our personal circadian rhythms. One of the triggers—called a Zeitgeber, "time giver"—that sets off the nerve cells is daylight. Other triggers, among many, include sleep, meal times, and social encounters. The SCN also monitors functions that are synchronized with the sleep-wake cycle, including body temperature, hormone secretion, urine production, and changes in blood pressure. Pulse, blood pressure, respiration rate, body temperature, and urine excretion all have higher levels—called "peaks"—that occur during the day, and lower levels—called "troughs"—that occur at night. The most well-known circadian rhythm is that of body temperature, which varies daily by a degree or two in a healthy person, peaking in late afternoon and troughing in the early morning hours. This rhythm persists even if an individual is confined to bed for the entire twenty-four hours, or if the time of meals is varied, or if the person fasts. Pulse rate and blood pressure also peak around the same time as body temperature. According to research, most normal skin cells divide between 1 a.m. and 4 a.m. The senses of hearing, taste, and smell are more acute at certain times of day. Studies show sensory acuity is highest at 3 a.m., falls off rapidly to a low at 6 a.m., then rises to another peak between 5 and 7 p.m. This cycle is related to the hormone cycle; when steroid hormones are released, sensory acuity falls.

No area of our body is unaffected by circadian rhythms. Athletes seem to perform best in the late afternoon, when strength, body temperature and flexibility peak. Pain tolerance is generally highest in the afternoon. Brain wave activity, hormone production, cell regeneration, and other biological activities linked to a twenty-four hour cycle all show clear patterns. Disruption of circadian rhythms usually has a negative effect. For the past five decades, investigators have questioned whether abnormalities in circadian rhythm regulation might be involved in the pathogenesis of mood disorders, including rapid-cycling bipolar disorder.

We each have internal prime times during the day when we are mentally alert and fresh. We also have external prime times when we need an external stimulus or interaction to motivate us. We need to pay attention to these biological times and prepare ourselves. Keeping a weekly log can help to identify individual peaks and troughs. Other external rhythms affect us as well.

The week also has rhythms within it. In antiquity the 7 days of the week were named after the planets: Monday for the Moon, Tuesday for Tyr or Tiwaz or for Mars, Wednesday for Wotan or Odin or for Mercury, Thursday for Thor or Jupiter, Friday for Frigg or for Venus, Saturday for

Saturn, Sunday for the Sun. Studying the qualities of the planets gave the ancients the astral characteristics of each day and their influence on the feeling life of human beings; these influences work beneath the threshold of waking consciousness. The seven days of the week also accord with the laws of the musical scale, which ascends in 7 notes and reaches the beginning again with the eighth, one octave higher. This pattern may be imagined as a corkscrew spiraling upward.

The days of the week have the following overarching qualities for a teacher:

- Monday is a day of reflection.
- Tuesday is a day of will.
- Wednesday is a day of movement.
- Thursday is a day of future promise.
- Friday is a day of enhancement.
- Saturday is a day of heaviness and rebuilding.
- Sunday is a day of peaceful contemplation and uniting with nature.

Sadly, the Sunday experience has been greatly diluted in our busy modern times and we can renew it only through effort.

The moon rhythm affects our entire being. It is a rhythm roughly equal to four times seven, or twenty-eight days. Human beings have evolved and become largely free of nature's control, but the moon exerts tremendous power over the fluid elements of the earth as seen in the ebb and flow of the tide at the seashore. Some claim that the moon's cycles affect our powers of imagination and spiritual productivity. Practicing self-observation helps to make us aware of these subtle effects on us and of how we can use them to advantage.

> No area of our body is unaffected by circadian rhythms. . . . Brain wave activity, hormone production, cell regeneration, and other biological activities linked to a twenty-four hour cycle all show clear patterns.

The rhythm of the sun brings us to a full awakening in our earthly bodies. As mentioned above, light activates our circadian rhythms. Sunlight affects our moods and is necessary for our sustenance. Imagine what the power of light-filled thought does for the health of our souls if we apply it. As the sun is necessary for the heliotropic upright tendency in plants, the sun in its yearly rhythm supports the uprightness and health of our etheric beings.

Children need the etheric strength of their teachers. After the school day is completed, teachers frequently feel drained and tired. This is because the children have sapped our etheric strength. The way to rebuild this is through the activity Steiner referred to as the "Rückschau," or review. This activity, usually done in the evening, consists of going backward through the day in memory, capturing significant activities without passing judgment on those activities. Many teachers have found, however, that it is also strengthening to do a Rückschau right after school has ended. We set aside a few moments of quiet time for this. Then we can become quite refreshed before meeting our family and other obligations. A regular Rückschau is still performed in the evening as well. Other exercises in Steiner's *How to Know Higher Worlds* can help us to build up our "etheric insulation."

If we teach older children, those who are entering or in puberty, then we need to strengthen our astral bodies. Adolescents swim in astrality and it is their right to do so. They need teachers who are able to remove subjectivity from their thinking, who strive to work objectively. Steiner's *Practical Training in Thought* is an important aid to accomplishing this difficult task.

To work intensively with other human beings is a great gift. We form deep friendships and gain a sense of brotherhood through working together. There are also shadows in such work. Each of us invests so much in our work that it is easy to think we "own" it. We can become possessive of ideas that we ourselves did not create. We can become the guardians of dogmatic principles. We may fall prey to fixed ideas or build castles out of thoughts that we then feel obliged to defend. We become knights who protect these little subjective castles of abstract thoughts. We speak, then, to another person's castle and not to the person. Such illusions may easily cause huge, disruptive interpersonal difficulties. We may become fixated on a colleague's difficulties and blind to his or her strivings.

If we picture meditatively each evening such a colleague bathed in a golden light, we may avoid an emotional spider's web. During this meditation we have to remove all subjective thoughts and try to stir up feelings of sympathy in our own souls. Sometimes this activity requires many repetitions before we notice a change in our attitude.

To work together collegially requires that we have confidence in each other and that we speak our thoughts directly to one another. Gossip undermines the confidence of a group. We must continue to use judgment and discrimination when dealing with our colleague's problems, but when these flow into idle chatter we violate the social fabric of a school's community. We must be careful not to wear our hearts on our sleeves, and we must beware of the trap of gossip that would lure us into illusory disputes which can bubble up from secondhand talk. Gossip may also act like a boomerang—eventually the gossipers themselves become the object of destructive conversations. We must learn to observe the striving in each of our colleagues and not be caught by recognition only of their negative sides or doubles.

John Ruskin (1819–1900) author of *The Seven Lamps of Architecture*, recognized the social health required for longevity in one's work, and he listed three necessary ingredients:

- You must want to do the work.
- You must experience your success and see it recognized by your colleagues.
- You must be careful to not do too much.

Steiner tells us again and again to strive for equilibrium—to bring some joy into our sadness and some sadness into our joy. We each need to find a colleague who is a safe "listening ear," who is not judgmental, with whom we can share our struggles and from whom we can get advice. We all need to strengthen our egos; we must strive to not take everything that happens in our schools personally; and, finally, we have to learn to accept our own personal destinies.

Steiner gave 4 guiding beacons as guides toward health in his lectures to the teachers at the first Waldorf school:

- A teacher must be a person of initiative. [The teacher must tend to the hygiene of his or her ego.]
- A teacher must be interested in all that exists in the world. [The teacher must tend to the hygiene of his or her astral body.]
- A teacher must never compromise with truth. [The teacher must tend to the hygiene of his or her etheric body.]
- A teacher must always be fresh, never sour. [The teacher must tend to the hygiene of his or her physical body.]

The path of a striving Waldorf teacher is one of constant inner discovery and adventure. When we are in tune with ourselves, clear in our direction, and able to recognize our soul's hygienic needs, then we will find the greatest success and joy in our work. This will be our basket full of golden eggs.

References

Aschoff, J. *Handbook of Behavioral Neurobiology*, Vol. 4. Biological Rhythms, New York: Plenum, 1981.

Gardner, John. *Right Action, Right Thinking*, Garden City, New York: The Myrin Institute, 1973.

Hastings, M.H. "Central Clocking," *Trends in Neuroscience*, 1997.

Klein, D.C., R.Y. Moore, and S.M. Reppert. *Suprachiasmatic Nucleus: The Mind's Clock*, New York: Oxford University Press, 1991.

Meyer, Rudolf. *Rhythms in Human Beings and the Cosmos*. Oxford, England: Floris Press, 1985.

Pittendrigh, C.S. "Temporal Organization: Reflections of a Darwinian Clock-Watcher," *Annual Review of Physiology*, 1993; 55: 16-54.

Smit, Jørgen and David Mitchell. *The Steps Toward Knowledge Which the Seeker for the Spirit Must Take*. Fair Oaks, CA: AWSNA Publications, 1994.

Steiner, Rudolf. *The Child's Changing Consciousness*, GA 306. NY: Anthroposophic Press, 2000.

_____. *Deeper Insights in Education: The Waldorf Approach*, GA 302a. Spring Valley, NY: Anthroposophic Press, 1983.

_____. *The Foundations of Human Experience*, GA 293. Hudson, NY: Anthroposophic Press, 1996.

_____. *Health and Illness*, GA 348. Spring Valley, NY: Anthroposophic Press, 1981.

_____. *How to Know Higher Worlds*, GA 348. Spring Valley, NY: Anthroposophic Press, 1981.

_____. *Man's Being, His Destiny and World Evolution*, GA 226. Hudson, NY: Anthroposophic Press, 1966.

_____. *A Modern Art of Education*, GA 307. London: Rudolf Steiner Press, 1981.

_____. *An Occult Physiology*, GA 128. London: Rudolf Steiner Publishing Co., 1951.

_____. *The Philosophy of Freedom*, Seventh English Edition, London: Rudolf Steiner Press, 1964.

_____. *Practical Advice for Teachers*, GA 294. London: Rudolf Steiner Press, 1976.

_____. *Practical Training in Thought*, GA 301. Forest Row, Sussex, U.K.: Steiner Fellowship Publications, 1981.

_____. *The Riddle of Humanity*, GA 170. London: Rudolf Steiner Press, 1990.

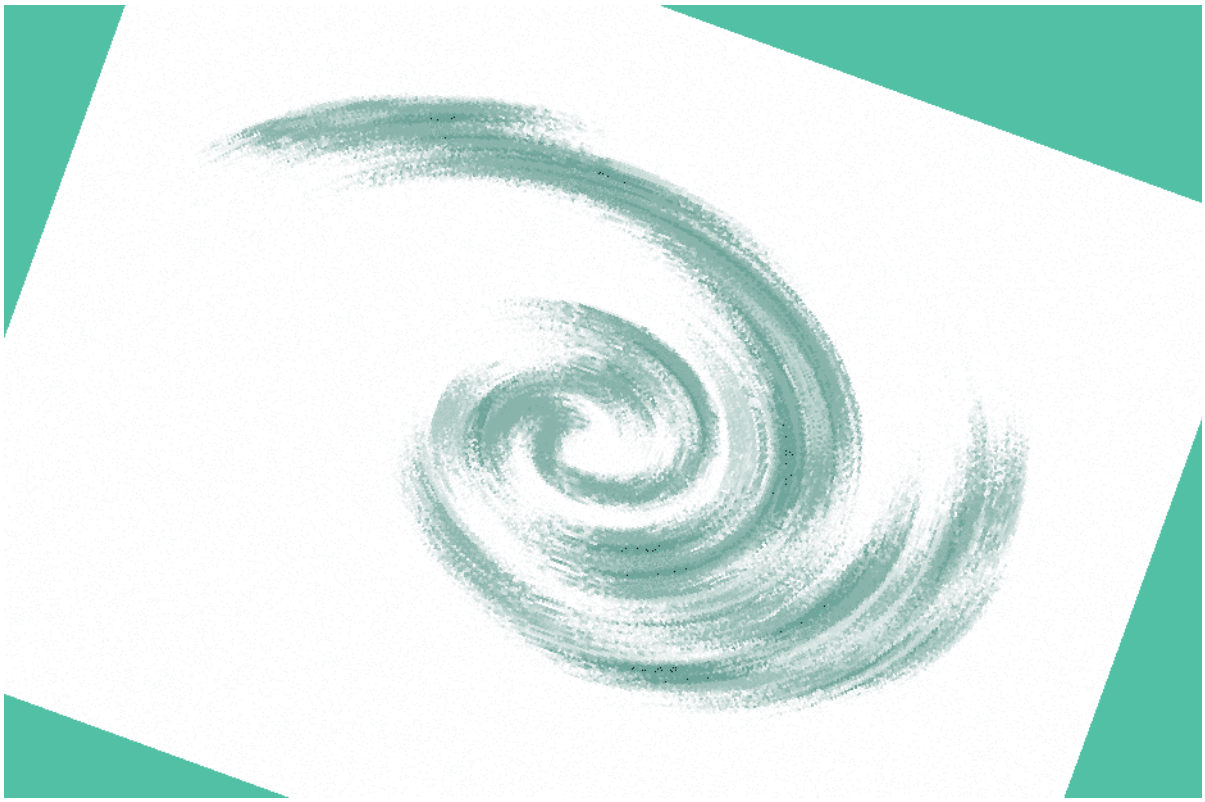
_____. *Theosophy*, GA 9. Hudson, NY: Anthroposophic Press, 1994.

_____. *Waldorf Education for Adolescence*, GA 302. Hudson, NY: Anthroposophic Press, 1991.

Note: The drawing of Jack and the Beanstalk, is by Ausa M. Peacock in the book *Fee Fi Fo Fum,* and can be found in the reader series by Arthur M. Pittis, published by AWSNA Publications. Permission was granted for its inclusion in this article.

In the attitude of silence the soul finds the path in a clearer light, and what is elusive and deceptive resolves itself into crystal clearness. Our life is a long and arduous quest after Truth.

– Mahatma Gandhi



The Emergence of the Idea of Evolution in the Time of Goethe

Frank Teichmann
translated by Jon McAlice

The Evolution of Evolution

The earth has gone through a long period of evolution; this is obvious to everyone today. We know that plants, animals, and human beings have evolved, too, and we generally accept that the concept of evolution applies not only to the kingdoms of nature, but to cultures, languages, and even forms of consciousness. An evolutionary approach has become so widely accepted that today every good textbook on evolution begins with a chapter covering the evolution of the subject itself. We may be surprised to remember, then, that the concept of evolution is barely 200 years old. Before that time there was no comparable concept.

The contemporary meaning of the term evolution is the lawful change of what are, usually, sense-perceptible phenomena. For the biologist "evolution is a transformation of an organism in form and behavior, with the result that succeeding generations differ from those that preceded them."[1] Even more reflective of today's mentality is the statement that "phylogenesis—the true meaning of evolution—is the creation of ever new programs of genetic information."[2] This mentality, all to o common, chooses to forget that a being is evolving and, thereby, manifesting or revealing itself in various forms of appearance. This insight was of the utmost importance, however, to the early discoverers of the idea of evolution.

The word *evolution* dates at least to Roman antiquity. At that time, evolution meant the unrolling of a scroll. Everything that the scroll contained was evolved or unrolled as it was read. Evolution still has this meaning in relation to the development of a thought, when we articulate step by step what is present as a whole in our consciousness.[3] Kant used the term with essentially this meaning in his *General History of Nature* to describe the origin of the universe out of a gaseous mist. For him, for celestial bodies to be "uncoiled" from matter in which mechanical laws hold sway corresponds most closely to the nature of God. In Kant's words, "The origin of the world lies in a mechanical evolutionary process rooted in the general laws of nature."[4]

In this sense, evolution assumes preformation, the presence of a perfectly formed miniature encapsulated in the germ that, in the course of time, evolves. Whether in botany, where preformationism was widely held to be true (v. Haller), or in the literature of the time, this use of the term was widespread. Seventeenth century novels, examined with this in mind, have "preformed" heroes everywhere. Princes are intelligent, just, manly, brave, occasionally even able to speak from the moment of birth. The stories of their lives consist essentially of their using and preserving these character traits and capacities through a series of adventures. They rescue imprisoned virgins, slay villains and outlaws, punish the overly proud and, in the end, are given a kingdom—the goal that has lived in their souls from the beginning. A good example of such a bo ok is *Hercules and Valisca* by Andreas Heinrich Buchholtz (1659).

At the beginning of the 18th century, movement begins to creep into this rigidity of thought. Leibniz is one of the first to enter new territory. In his later letters to Lady Masham (1704), he differentiates between two elements that underlie all development: uniformity, which nature maintains within objects, and change, which reveals itself outwardly:

> I hold not only that these souls or entelechies all have with them some kind of organic body appropriate to their perceptions, but also that they always will have, and always have had, as long as they have existed: so not only the soul, but also the animal itself (or what is analogous to the soul and to the animal, so as not to argue about names) remains, and thus that generation and death can only be developments and envelopments of which nature, as is her custom, gives us several visible examples to help us to work out what she keeps hidden.

This idea is expressed in private letters and therefore remains hidden from Leibniz' contemporaries. It surfaces again in Herder, who takes it up vehemently—"my grand theme!" In keeping with his character, Herder immediately publishes his first attempt at a philosophical history, entitled *This Too a Philosophy of History for the Formation of Humanity* (1774). Herder writes about change and the process of becoming throughout history:

> Those who have so far undertaken to unfold the progress of the centuries for the most part have in the process the pet idea: progress to more virtue and happiness of individual human beings. …Should there not be manifest progress and development but in a higher sense than people have imagined it? …Do you see that growing tree, that upwards striving human being, having to pass through diverse ages of life, all manifestly in progress, a striving one for the other in continuity! Between each there are apparent resting places, revolutions, changes, and yet each has the center of its happiness in itself.…No one is in his age alone, he builds on the preceding one, this becomes nothing but the foundation of the future, wants to be nothing but that—this is what we are told by the analogy in nature, God's speaking exemplary model in all works! Manifestly so in the human species. The Egyptian was not able to exist without the Oriental, the Greek built upon them, the Roman raised himself onto the back of the whole world—truly progress, progressive development, even if no individual won in the process. Its goal is on the large scale. It becomes—what husk-history boasts about so much and what it shows so little of —the stage of a guiding intention on earth.[5]

This initial sketch, in which nature provides an analogy for the development of humanity, is soon revised and rewritten, thanks to Goethe's support and interest: "Herder is writing a philosophy of history, which, as you can imagine, is new from the ground up. We read the first chapters together yesterday. They are delicious… the history of the world and of nature was just racing by us."[6]

Beginning with a fairly simple plan that he brings progressively to perfection, Herder works to develop the idea of the evolution of humanity. Natural evolution appears in his work as a precursor to the cultural evolution of the human race:

> Air, fire, water and the earth evolve out of the spiritual and material staminibus in periodic cycles of time. Diverse connections of water, air, and light precede the emergence of the seed of the simplest plant, for instance moss. Many plants had to come into being, then die away before an animal emerged. Insects, birds, water animals, and night animals preceded the present animal forms; until finally the crown of earthly organization appeared—the human being, microcosm. He is the son of all the elements and beings, Nature's most carefully chosen conception and the blossom of creation. He must be the youngest child of Nature; many evolutions and revolutions must have preceded his formation.[7]

There are still many transformations to come before human beings reach the "radiant glow" of their "bud of humanity." Nature aims to reach this stage, for

> …nothing in Nature stands still; everything strives and moves forward. If we could only view the first stages of creation, how the kingdoms of nature were built one upon the other, a progression of forward-striving forces would reveal itself in all evolution.[8]

But human beings cannot count on nature for their own further evolution. They have to "lay the foundation for [their] own future appearance" themselves. Through "spiritual exercises" they must "spin the fabric" that will once again clothe them.[9]

Goethe's Evolution

How deeply Goethe feels himself connected to these ideas becomes clear in his morphological studies, written some 30 years later:

> My difficult, painful study of nature was lightened, even sweetened, as Herder began to draft his *Sketch of the History of Humanity*. Our daily discussions revolved around the primordial origins of the aqueous earth and the organisms that have evolved upon her through the course of time. The origin and its ongoing evolution were discussed at length and through the exchange of ideas and the arguments that ensued, our scientific understanding was purified and enriched. With other friends I also had lively discussions about these topics, which interested me passionately.[10]

Goethe goes on to say, however: "Today, thanks to broader experience and a greater depth of philosophy, there are aspects that have become visible which were hidden to us at that time." Goethe had gained a "greater depth of philosophy" through an understanding of nature that was still closed to him in the 1780s. What does he mean by this?

Another source[11] sheds light on this question. In Goethe's youth in Leipzig and later, Susanne von Klettenburg brings him into contact with pietistic autobiographies. These constitute a form of literature that, like journaling, grows from an author's willingness to account for the way he or she leads life. In pietistic circles it was also the practice for an author to show herself to be worthy of God's guidance in her own life and to continually examine her efforts to achieve this worthiness.

Pietism touches Goethe directly during his time as a student in Strasburg. He becomes acquainted with Johann Heinrich Jung-Stilling, who tells him stories of his own youth, highlighting the adventures in which he believed himself truly to have been under God's guidance. Jung was raised in a simple, peasant-like surrounding and had as a child already been drawn to spiritual questions. In addition to an apprenticeship and practical training, he had trained as a teacher and taught at seven different schools in an equal number of years. At the end of this time he experienced a revelation. A radiant cloud enveloped him and permeated him with an unknown energy. In that moment, he dedicated his life "to the honor of God and to human charity." He also "made a strong and unshakable pact with God, in the future to subject himself fully to God's guidance and refrain from all vain wishes and desires, if God so wished, to remain a simple working man for the duration of his life and to do so contentedly and joyfully."[12] He proves not to be content as a simple working man, but becomes first a private tutor, then a doctor. Goethe meets him while he is studying medicine in Strasburg. After hearing his stories, Goethe suggests that he write the story of his youth and young adulthood. Jung-Stilling applies himself to this task and sends the manuscript to Goethe, who edits it in a number of places, then has it printed without mentioning any of this to his friend. In the meantime, the latter has begun to practice medicine. His initial success quickly takes a turn for the worse. Patients become ever rarer and family finances plummet catastrophically. Finally, Jung-Stilling finds himself with unpaid rent and only fourteen days to eviction.

> The fourteenth day drew closer and there was absolutely no indication as to where the money would come from. Time and again, tears came to poor Stilling's eyes; he often ran to his sleeping chambers, buried his face in his hands, wept and begged God for help, and when his work called, his wife Christine would take his place. . . .Finally the dreaded Friday arrived, both prayed incessantly as they went about their work. . . .At 10:00 a.m. the postman arrived; in one hand he held the bill and eviction notice, in the other a heavy letter. Full of anticipation, Stilling took the letter. It was in Goethe's writing; on the edge was the notice that it was weighted with 120 talers in gold. Astonished, he opened it and read that his friend Goethe had published the beginning of his memoirs under the title of *Jung-Stilling's Life* and this was the author's honorari-

> um. How powerfully this tangible intervention of divine providence affected Stilling and his wife is indescribable; they resolved never again to stumble or doubt, but rather to bear all sorrow and tribulation with patience. In the light of truth, they also realized that the father of humanity was leading them by the hand, that their path was right in his judgment and that he was preparing them for higher goals through such trials.[13]

Following this divine intervention, Jung-Stilling writes to his publisher:

> Now dearest Decker! I have to tell you that I am Heinrich Stilling. Yes it is I. I have had to walk this difficult path before I could reach the point at which I now find myself. Everything you have read in my story is truth without invention. . . .It is strange how God passes out the roles in this flower- or caterpillar-like life of his humans. Everything is all right with me, for I am not yet finished, I am still in the smelting.[14]

Jung-Stilling experiences himself as an evolving being, but he is waiting to see what will be unrolled. He does not take an active part in his own evolution. Karl Phillip Moritz takes this step a few years later and describes it in his novel *Anton Reiser* (1785). This is also an autobiographical account of the author's youth. But how different is his experience; at 17, he has a kind of awakening. He discovers that if he tries hard enough he can independently guide the forces of his own thinking:

> And what were at first but empty names, slowly became full, clear concepts, and when he now read or thought the names again and everything grew light and radiant which had previously been dark and twisted, a wonderful feeling overcame him that he had never felt before—he tasted for the first time the bliss of thinking. …A new creation took place in the forces of his thinking. It was as though dawn had appeared in his understanding and now a new day was breaking and he could not get enough of the stimulating light. …From then on he was less unhappy because the forces of his thinking had begun to evolve.[15]

This does not tell of the finger of God intervening in the course of a person's life. God's part is replaced by the individual's own self-directed thinking. This experience is so powerful that it transcends the pietistic tradition in which Moritz, too, was raised.

This novel is published as Goethe works with Herder on *This Too a Philosophy of the History for the Formation of Humanity* and conducts intensive botanical studies. With this preparation, Goethe sets out for Italy. On this journey, his whole structure of thoughts and ideas is soon brought into fluid motion. In Padua on September 27, 1786, he notes:

> Amidst this new array of different sorts of plants, the idea emerges ever more strongly that perhaps all forms of plants could be developed out of one. …This is where I have been stuck in my botanical studies and I do not yet see my way out of the confusion.

Just a few months later, in Rome (February 19, 1787), he seems more hopeful: "I am on my way to discovering new and wonderful indications how Nature, what an incomparable monster, lets the manifold evolve out of the simple." Then, not long after this, in the botanical garden in Palermo, Goethe finally grasps the idea of the archetypal plant. This idea, which permeates all his future work, is not merely a discovery that allows him to bring order to a small segment of his surroundings. At least as important to him is the leap in consciousness that finally allows him to follow in his mind's eye the flowing, constantly changing forms. His own consciousness likewise must become fluid and mobile. Thus he writes in the introduction to the *Metamorphosis of the Plants* (1807):

> When he who is called to lively observation begins to hold his own in the struggle with Nature, he first feels a strong drive to master the phenomena. It does not take long, however, before they draw near to him with such force, that he rightly feels to have cause to recognize their power and revere their presence. As soon as he becomes cognizant of this reciprocal effect, he becomes aware of a double

> infinity: in the phenomena the manifold nature of being and becoming and the living, weaving relationships, in himself, however, the possibility of an infinite development in that he continuously makes both his sensibilities and his reason able to respond to new forms of accepting and reaching out.

The Wholeness of a Living Idea

Goethe's observation is of the utmost significance for the emergence of the idea of evolution. The idea of evolution cannot be seen or found in the environment if the fact of evolution is not first experienced within a human being. A person who is not himself in the process of evolving will not be able to recognize evolution. It is the fundamental problem of all evolutionary research.

Knowing full well how difficult *Metamorphosis of the Plants* would be for his readers, he adds an introduction in which he sketches out the fundamental problem:

> When we become aware of living Nature in such a way that we desire to gain insight into her being and the way she works, we tend to believe that this is best done by dissecting an organism into its constituent parts. It is true that this approach can bear fruit. . . .But these efforts to understand everything by dissecting it do have a negative side. What was once alive lies before us separated into the elements that made it up, but it is not possible to put these back together and bring the organism back to life. This is as true of many inanimate objects as it is of all living organisms. Thus scientists throughout history have been driven to recognize the living form as such, to grasp the significance of the outer, perceptible parts in the context of the whole, to understand them as a manifestation of something within and thus to master the whole in their examinations. . . .If we observe all forms of Nature, especially the organic forms, we discover that nothing is static or at rest, nothing is finished, but rather that everything is in motion. . . .What is once formed is then transformed and if we wish to achieve a living understanding of Nature, we must follow her example and be just as mobile and formative as she. . . .Each living thing is not singular, but plural; even though it appears to us to be individual, it remains a collection of living, autonomous beings, which can appear to be either similar or dissimilar.

Readers can only understand such a description if they can recreate the connections fluidly in their own consciousness. If they do not do this, they cannot understand. Goethe was aware of this difficulty. He characterizes it in his *Morphological Notes* (1820), in which he publishes his findings concerning the human intermaxillary bone. In this essay he investigates the possibility of envisioning the bones of the skull as metamorphoses of the vertebrae. And he confesses:

> I have been convinced of this hidden relationship for thirty years and have continued to study it. Yet such an apercu, the awareness, grasping, envisioning, the concept or the idea, however one wishes to call it, do what one will, retains a certain esoteric quality. It can be spoken of in its wholeness, but not proven; one can present it in its details, but can't quite mange to fully round it out.

This conceptual difficulty proves painful to Goethe upon his return from Italy:

> From Italy, with its richness of forms, I have returned to Germany, formless; the lovely beckoning skies were traded for gray ones; instead of comforting me and welcoming me back into the fold, my friends drove me to despair. My delight over foreign, little-known objects, the pain I felt at having to leave it all behind me, seemed to be as an insult to them. I missed their interest; no one seemed to understand me. In this embarrassing state, I did not know how to find myself. The loss I felt was too great for my senses to be able to acclimate themselves. My spirit strove to keep itself whole. For the past two years, I had observed, collected, contemplated, and had striven to sharpen all my capacities. As the gifted Greeks

A person who is not himself in the process of evolving will not be able to recognize evolution.

> had striven to evolve the purest art within the context of their nation, I had hopes of slowly seeing the whole and achieving thereby a pure, unprejudiced level of artistic enjoyment. Further, I believed that I had recognized how Nature goes about her work to bring forth living forms, the templates of artistic endeavor.[16]

Goethe describes his own evolution. He develops within himself the "art" of "slowly seeing the whole." In this he mirrors his teacher, Nature. For the moment, he finds himself alone with this capacity; no one in his circle of friends has taken the same path: "It is terribly painful not to be understood, when one with great effort finally comes to the point where he believes to understand both himself and the issue at hand."[17]

Through his own development Goethe discovers the lawfulness that governs evolution in nature. He becomes aware within himself of the seed or germ that maintains continuity in everything that manifests itself outwardly. Through this experience, he searches to discover the generative, autonomous being in Nature that in all its various manifestations remains true to its own ideal. In his papers we find a short note which characterizes this concisely: "It is an enjoyable business to at once explore both Nature and oneself, to use force on neither her nor one's own spirit, but rather to let the two of them bring each other into balance."[18]

Having thus become aware of evolution, Goethe tries to bring the observed lawfulness into artistic form—*Wilhelm Meister*. He works on this, the first of the German "developmental novels," for many years, from 1795 until his death in 1833. Naturally, he returns time and again to contemplation of his own life and his own growth. From 1810 on, he works on his autobiography, *Fiction and Truth*. He characterizes the leitmotif of this work:

> It seems as though the primary task of a biography is to present a person in the context of his time, and to show to what extent it all works with him or against him, how he develops through this a picture of the world and of humanity, and how, if he is an artist, a writer, or a poet, he brings this to expression in the world.[19]

This wholeness can only be depicted artistically, as is true for the wholeness of an "autonomous being" as a living idea. Thus Goethe must give his memoirs the title *Fiction and Truth* and not, as Jung-Stilling said, "truth with no invention." Only through a consciousness of the whole can wholeness be brought to expression.

In the second part of his memoirs, Goethe draws attention to precisely this relationship. He introduces a "hopeful Old German saying: What one wishes for as a youth, one will have in excess when aged." He sees the wish as a striving:

> If a certain focus becomes an essential part of our nature, then with every step we take, a part of this wish is fulfilled. If the conditions are right, the path of fulfillment is a straight one; otherwise it is a winding, twisted one. If one finds something that one once hoped to do being done by another, the wonderful feeling stirs within his breast that humanity in its totality is the true human being and that a single person can only truly be joyful if he has the courage to experience himself within that totality.

Thus Goethe closes the circle, for it is this relationship between individual development and the evolution of humanity that he and Herder pondered as young men. What Goethe strove for in his youth, he attains as an old man!

The idea of evolution emerges for Goethe from the observation of his own life. He discovers his inkling of an idea at work in the forms of Nature. And, vice-versa, what he experiences in Nature, he discovers secretly at work within his own soul-spiritual nature. As an old man looking back over his life, he writes:

> The ever-changing display of plant forms, which I have followed for so many years, awakens increasingly within me the notion: The plant forms which surround us were not all created at some given point in time and

> then locked into the given form, they have been given… a felicitous mobility and plasticity that allows them to grow and adapt themselves to many different conditions in many different places. …How they can be brought together under one concept has slowly become clear to me and that this conception can be enlivened at a higher level [of consciousness]: thus I began to recognize in the sense perceptible form a supersensible archetype. Whoever has felt what a rich, saturated thought … has to say, will admit what a passionate movement comes to life in the spirit when we are enthused, and we anticipate the totality of what will evolve step by step…"[20]

First Definition of the Concept of Evolution

Goethe gains insights from his own sense of his evolving self. These insights, however, do not contain a concept of evolution. The German idealists, who develop their ideas based on Goethe's work, take this step. In the introduction to his book *History of Philosophy*, Hegel characterizes the situation in which he finds himself:

> Evolution is an idea that is bandied about all the time. One of the specialties of philosophy is to examine what is thought to be known. Those things that are applied and used without being examined, the things used to simply get through life, are precisely what are most unknown for those who are not philosophically trained.

Hegel then tries in a circuitous yet fundamental manner to grasp, in thinking, the idea of evolution. He differentiates first, as Leibniz did, between two elements: the idea that has evolved and its articulated, mobile manifestation. He then adds to these the specific, concrete content of the idea itself. Evolution consists in the working together of these three elements:

> What is true and defined unto itself, bears within it the drive to evolve. Only what is alive, the spiritual, is active within and evolves. The idea—in itself concrete and evolving—is an organic system, a wholeness that bears within itself a wealth of stages and moments.

Wherever something is evolving, Hegel recognizes a living spirit, an idea at work. From this point of departure, he turns to an examination of the history of philosophy, characterizing it as a sequential blossoming of the human spirit: "Philosophy is itself the cognition of this evolution and is, as conceptual thinking, itself the cognized evolution. The further this path of evolution proceeds, the closer philosophy comes to perfection."

Schelling also struggles to understand this idea. In his fragmentary work *The Age of the Earth*, he begins with inner unity or oneness:

> If, by any process of evolution, the inner unity of the evolving subject is assumed, then it follows conclusively that each system has but one subject, one living being evolving itself within it. Thus it is in principle impossible to form a definitive, static concept, for since it is in continuous motion, progress, enhancement, any concept can only hold true for a moment; as a living organism it is in fact not one, but many. We see from this that there is no point in the living wholeness of scientific art, where one can stop or that one can hold on to, but that only by waiting for the evolution of the whole is it possible to express the concept of the evolving subject in its totality. The subject is present as well in the middle and at the end, as it is at the beginning, and it is not what it is at any given point; it is in truth not singular, but rather both one and all. Whoever attributes a protean nature to the subject of any given process of evolution has come closer to the truth than he may realize.

This characterization of evolution shows clearly just how close Schelling is to Goethe. This last remark and the use of such terms as "continuous motion," "progress," and "enhancement" shows a close connection between the two great thinkers.

Fichte is a third in this club. He includes the idea of evolution in his work on the history of philosophy. In *Foundations of the Present Time* and *Talk to the German Nation* (1806), he takes up and develops further ideas articulated twenty years earlier by Herder.

How strongly Goethe felt himself challenged by the clarity of the idealist philosophers finds expression in his second collection of *Morphological Notes* (1820) in the essay "Effects of the New Philosophy." He begins this essay with a description of how he had developed an artistic method to apprehend Nature's working. He continues:

> Further progress I owe to Niethammern who has attempted with friendly tenacity to help me solve the main riddles and understand the concepts and expressions. What I owe to Fichte, Schelling, Hegel, the von Humbolt brothers, and Schlegel should gratefully come to fruition in the future, especially if I have the chance to sketch out the events of the last decade of the last century.

None of these later philosophers would have been able to conceive the idea of evolution were it not for Goethe's work. They recognize evolution as occurring between the activity of a spiritual being—which always remains identical with itself—and its changing manifestation in the course of time. Whenever we use the term evolution we should keep in mind that we are speaking of a being. We may focus on a sense perceptible manifestation, but this does not gainsay the being's existence. For the moment, we have merely forgotten it.

The Spiritual Dimension

The discovery of the idea of evolution brought an ancient, static view of the world into motion. This raised immediate questions: How does evolution happen? What stages or changes does something that evolves pass through in the course of time? Answering this question did not bind investigators solely to the examination of nature. The earth, plants, animals, the human species, peoples, cultures and their languages have all gone through long processes of evolution. Great thinkers and scientists of the 19th century focused on placing ever new phenomena within the context of evolution.

Less visible are the results of those thinkers who applied the idea of evolution to spiritual phenomena. A major contribution in this realm is Immanuel Hermann Fichte's exhaustive study of the evolution of human consciousness. (Immanuel is the son of the great philosophical idealist, Johann Gottlieb Fichte.) In the first volume of his *Basic Principles of a System of Philosophy* (1833), Fichte addresses the question of how consciousness evolves to reach the point of desiring to embark on philosophical explorations. This is a matter of choice. But then

> …[i]t educates itself to philosophy, which is not only the beginning of consciousness but its own proof of itself. Thus the first part of the system contains … the scientifically founded evolutionary history of consciousness toward and in thinking, and also an excursus on the possible relation of thinking to truth.[21]

He also observes that thinking itself must reach a certain stage of development to be able to grasp its own evolution. To do so it has to be able to place itself within the focus of its own examination. Fichte calls this most sublime level of thinking, at which the thinker not only thinks but at the same time consciously examines the activity of his own thinking, a "speculative, beholding knowing." It is the highest stage of spiritual activity. It evolves itself only through untiring, self-directed spiritual practice. Consciousness has to want to educate itself.

At the end of the 19th century, Rudolf Steiner expanded Fichte's conception of thinking to include the totality of human experience. The human species has reached a stage in its development at which there is no further natural evolution. The natural course of evolution leads to the emergence of self-directed thinking. This form of thinking gives us the capacity to take our own future evolution as individuals into our own hands, and, in so doing, to give it a direction that we ourselves determine. The idea of the "human

being" is thus one that does not contain all its possible manifestations. It guides the individual to a certain stage of development, then sets her free. Steiner writes:

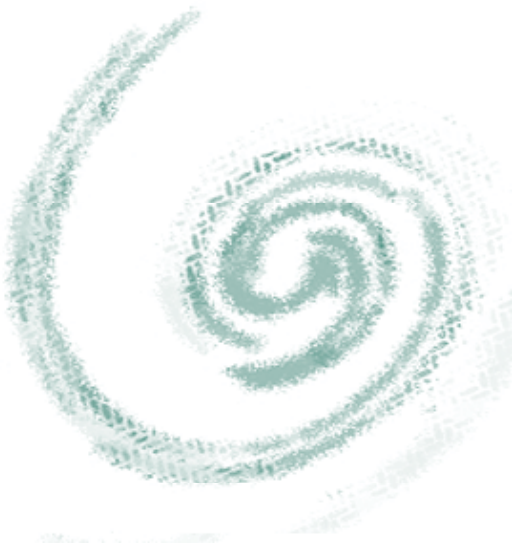
> The perceptual object "man" has in it the possibility of transforming itself, just as the plant seed contains the possibility of becoming a complete plant. The plant transforms itself because of the objective law inherent in it; the human being remains in his incomplete state unless he takes hold of the material for transformation within him and transforms himself through his own power. Nature makes of man merely a natural being; society makes of him a law-abiding being; only he himself can make of himself a free man. Nature releases man from her fetters at a definite stage in his development; society carries this development a stage further; he alone can give himself the final polish.[22]

Goethe said, "What one wishes for as a youth, one will have in excess when aged." Our modern understanding of the path of spiritual evolution is the same: The goal toward which a man or woman strives through practice, he or she will one day reach. Goethe set himself such a spiritual goal, and, in spite of hindrances, remained true to it throughout his life, evolving himself as he went. As a fruit of this striving he was able to bring the idea of evolution to light. Through Goethe's individual effort it became possible for us to find ourselves in a stream of individual development with the goal of becoming freely choosing human beings who can set our own goals. We find ourselves today at the beginning of this process of evolution.

References

1. Zimmermann, W. *Evolution*, Freiburg/Munich: 1952.
2. Wuketits, Franz. *Grundriss der Evolutionstheorie*, Darmstadt: 1980.
3. Cicero, Top 9.
4. Kant, J.H. Akad. A.1.
5. Hanser Edition B1.
6. Letter from Goethe to Knebel (1783).
7. Herder. *Thoughts on a Philosophy of the History of Mankind*, 1784, Book 1.
8. Herder, op.cit., Book 5.
9. Herder, op.cit.
10. Goethe, J.W. von. *Morphological Studies* (1817).
11. My thanks to Prof. R. Habel, Marburg, for suggesting this connection.
12. Jung-Stilling, H. *Story of My Life*, Book 2, Darmstadt, 1976.
13. Jung-Stilling, op.cit., Book 3 (1789).
14. Jung-Stilling, op.cit.
15. Moritz, Karl Phillipp. *Anton Reiser*, Reclam-Universalbibliotheks-Ausgabe.
16. Goethe, J.W. von. *Morphological Studies* (1817).
17. op.cit.
18. Goethe, J.W. von. *Maxims and Reflections*, Nr. 1140.
19. Goethe, J.W. von. *Fiction and Truth*, Part 1.
20. Goethe, J.W. von. *S tory of My Botanical Studies*, 1831.
21. Fichte, I.H. *Knowledge as Self-knowledge*, 1831.
22. Steiner, Rudolf. *The Philosophy of Freedom*, London, 1979.

(First published in *Interdisciplinary Aspects of Evolution*, Urachhaus, 1989. Reprinted here from *Waldorf Journal Project #4*, David Mitchell, editor, Association of Waldorf Schools of North America, 2004.)



The Seer and the Scientist

Stephen Keith Sagarin

Scrutiny

In the course of my research on the history of Waldorf schools in the United States, many people with whom I spoke, admissions directors and teachers among them, casually compared Rudolf Steiner's ideas on the development of children in stages with the developmental research of Jean Piaget. My initial reactions were that this comparison must be meant allegorically and that it wouldn't bear scrutiny. Steiner's and Piaget's reputations were simply too dissimilar; what could the seer and the scientist have in common? The intention, it seemed, was to lend Piaget's weight as a scientist to Steiner's less familiar reputation as an educator. Comparing the two has not changed my suspicions regarding the intentions behind the comparison, but it has thrown some light on the intersection of, for education, arguably the two most important developmentalists of the 20th Century. The ways in which Steiner's and Piaget's ideas on child development are similar, and dissimilar, were not what I had expected.

Piaget on Education

Ignoring the many inferences regarding education that may be drawn from Piaget's research, he wrote surprisingly little on education. In only one essay, begun in 1935 and completed in 1965, does he examine education in general, including the application of his research to education. The essay is a curious hodge-podge of explanation, correction, and opinion. Called "Science of Education and the Psychology of the Child" (1935 and 1965), it begins by examining the psychological foundations of "new methods" in education, and concludes that "active" learning is superior to "passive" learning. It contains, however, the warning that "memory, passive obedience, imitation of the adult, and the receptive factors in general are as natural to the child as spontaneous activity." (p. 696) This distinction between "passive" and "receptive" modes shows Piaget's delicate attention to children's inner worlds.

Th(e) distinction between "passive" and "receptive" modes shows Piaget's delicate attention to children's inner worlds.

Piaget goes on to bemoan the degree to which education professionals in general have not applied what is known of child development to teaching. He remarks that many profound education reformers were philosophers or doctors, not pedagogues—Comenius, Rousseau, Froebel, Dewey, and Montessori among them. And their thinking and research have not become the foundation for a science of education:

> The general problem is to understand why the vast army of educators now laboring throughout the entire world with such devotion and, in general, with such competence does not engender an elite of researchers capable of making pedagogy into a discipline, at once scientific and alive, that could take its rightful place among all those other applied disciplines that draw upon both art and science. (p. 699)

Much of the rest of the essay gives Piaget's opinions on the teaching of mathematics, philosophy, and the humanities. The

essay concludes with a look at four categories of teaching methods: The receptive, the active, the intuitive, and the programmed. By "intuitive" Piaget means a method that asks students to infer an educational lesson from an external representation; manipulatives, filmstrips, and pottery are each intuitive by Piaget's definition. For Piaget, the meaning of intuitive is literal and technical, not transcendental. Piaget's last category, programmed teaching, includes, especially, early use of computers in the classroom, and has been fostered in the United States especially by Piaget's pupil, Seymour Papert. (see Papert, 1980) Piaget notes that many people confuse active and intuitive methods because they take activity too literally, forgetting or ignoring inner, mental activity.

Ginsburg on Steiner and Piaget

Despite the number of times I have heard Steiner and Piaget mentioned in one breath, I am aware of only one published comparison of their work. This is a brief but excellent article by Iona Ginsburg (1982) that compares stages of children's development as conceptualized by Rudolf Steiner and by Jean Piaget. She correlates Piaget's stages of cognitive development—sensori-motor, concrete operations, and formal operations—with Steiner's descriptions of human development—imitative, imaginative, and intellectual stages.

Piaget defines "stage" clearly, while Steiner uses a less technical vocabulary. For development to occur according to a change from one stage to another, according to Piaget, the order of succession may not vary; developed characteristics must be cumulative; periods of change must be followed by periods of equilibrium; and so on. (Piaget, 1955) These requirements apply, too, to Steiner's descriptions of development. Growth alone, as simple accumulation, is not developmental. "Phases" that come and go often do not meet the criteria for stage development. Age-appropriate learning or behavior may or may not occur within the context of stage development. Stage development is at once more rigorous and more global than common understandings of maturation. Stage development provides evidence of "metamorphosis," a change in form that signals a concurrent change in quality; the physical and physiological changes of puberty are accompanied by emotional and intellectual changes, and vice versa.

Among Ginsburg's concerns, shared with Piaget himself, is the degree to which Piaget's work, despite its apparent implications for education, has not been applied to classroom practice. She attributes this lack to the fact that Piaget's research "leaves out vivid and vital aspects of the child's total development—feeling, attachment, impulse, fantasy, and their impact on cognition itself." (p. 328) Because Steiner focused on "the totality of development" (p. 329), Ginsburg believes his work, despite its lack of conventional scientific rigor, has had greater success in influencing classroom practice.

In comparing Piaget's and Steiner's descriptions of stage development, Ginsburg is more specific with regard to ages than either Steiner or Piaget. Steiner (1965 and many other places) refers to a transformation "about age seven" (p. 20), more accurately associated with the loss of milk teeth, a process that often takes more than a year and can begin at age five or be prolonged well past age seven. Similarly, Piaget (1955) is at pains to emphasize "not the timing, but the order of succession [of acquisition]" in stage development. Chronology, he writes, "is extremely variable; it depends on the previous experience of the individuals, and not only on their maturation, and it depends especially on the social milieu that can accelerate or retard the appearance of a stage, or even prevent its appearance." (p. 815) Steiner tacitly acknowledges this characteristic of a stage, too. While many Waldorf teachers speak of Steiner's stages as if they possessed some concrete

reality, Steiner acknowledged not only their relevance to a specific cultural here-and-now, but also their variation based on both spiritual and physiological variations among people. (See, for example, *Curative Education*, 1972.) The point of Steiner's descriptions was not to normalize a child's place in a class—a constant danger of a developmental point of view, regardless of the developmentalist (see Morss, 1995)—but to provide insight for better teaching.

Ginsburg recognizes that many of the contrasts between Steiner and Piaget are based on profound differences in frame of reference and worldview. Piaget, who was not a teacher, focused single-mindedly on the development of the structures of cognition in children, from the perspective of a scientist who studied the changes with age and the growth of the capacity to know. Steiner and the education based on his insights have a view of the stages of child development based largely on intuition, which encompasses awareness of the impact of feeling, fantasy (almost certainly a British mistranslation of what is meant by "imagination"), form, color, and human relatedness in cognitive development.

(B)oth Steiner and Piaget recognize the importance of imitation in the development of children.

Five Similarities

While I agree with Ginsburg's recognition of the differences between Steiner and Piaget, I also believe that there are similarities that she has overlooked. I will examine four of these points below, supporting them with reference to Steiner's early pamphlet, *The Education of the Child in the Light of Anthroposophy*. Readers familiar with Steiner's work will recognize that he made similar points in dozens of other lectures and writings. More to the point, *The Education of the Child* was actually written by Steiner, not transcribed from shorthand notes of a lecture, and can therefore be held to be more precisely what he intended to say.

First, both Steiner and Piaget recognize the importance of imitation in the development of children. Steiner writes, "There are two magic words that indicate how the child enters into relations with his environment. They are: Imitation and Example. . . . For no age in life is this more true than for the first stage of childhood, before the change of teeth. . . . The child… does not learn by instruction or admonition, but by imitation." (pp. 24–25) Piaget (1962) regards "imitation as the process that ensures the transition from sensori-motor intelligence to representative imagery." (p. 509) That is to say, for example, that it is through imitation that an infant learns to speak. Further, Piaget (1966) describes the "mental image" as an "internalized imitation." (p. 490) This could be Steiner's language as well.

Second, both Steiner and Piaget recognize the importance of symbolic understanding. Steiner writes, "It is essential that the secrets of nature, the laws of life, be taught to the boy or girl, not in dry intellectual concepts, but as far as possible in symbols." (p. 33) Piaget writes: "Symbolic play is the apogee of children's play." (p. 492)

Third, Piaget's well-known developmental path from assimilation to equilibrium is mirrored, I believe, in Steiner's description of the process by which memories become concepts. "It is necessary for man not only to remember what he understands, but to understand what he already knows—that is to say, what he has acquired by memory in the way the child acquires language.… First there must be [for example] the assimilation of historical events through the memory, then the grasping of them in intellectual concepts." (p. 39) Not all memory-to-concept shifts achieve the status of Piagetian equilibrium, clearly, but, as each

of Steiner's stages is achieved, the quality of concepts may be said to alter significantly enough to equate with Piaget's description. Specifically, as Steiner describes, concepts in early life grow from activity engendered through imitation and example; later, from feeling-imbued imagination and appropriate authority; and only then from a rational and potentially abstract understanding.

Last, both Steiner and Piaget developed corresponding "threefold" views of human psychology. Steiner described "the several faculties of the soul—thinking, feeling, and willing" (1965, p. 41), while Piaget often described "subsystems" of "intellect," "affect" and "activity." (See 1966, p. 492, for example.)

The central or overarching point of agreement, however, is that both Piaget and Steiner found children intrinsically interesting in themselves and valued children's perceptions and experiences on their own terms. Neither man forwarded a utilitarian or a "Whig" version of childhood (that is, one that is based on expectations of a known but yet-to-emerge adulthood).

The central or overarching point of agreement, however, is that both Piaget and Steiner found children intrinsically interesting in themselves and valued children's perceptions and experiences on their own terms.

A Big Difference

Steiner's and Piaget's use of language differs enormously, however, in connotation. When Piaget uses a phrase like "mental image" (1963) or a word like "imitation" (1962), he is using the terms to designate generalizations based on controlled observations in his life and in his laboratory. When Steiner uses the same terms, he is using them as indications of concepts that have layers, and may be understood at once, for example, on the generic level on which Piaget operates, and also on potentially more profound and more individual levels. Both men were empiricists, but they would clearly have disagreed on the limits of empiricism. I do not believe it is fair to say, as Ginsburg does, that Steiner and Piaget necessarily differed in worldview. It is not possible to intuit from Piaget's careful scientific writings what his actual worldview may have been.

It is tempting to say that Piaget's results, more conventionally scientific and more generic than Steiner's, could be subsumed or swallowed whole by Steiner's more inclusive, comprehensive view or experience. This does a disservice to both men, however, in that Steiner's point was often to transcend the generic (See, for example, Bortoft, 1996, especially "Modes of Consciousness," pp. 61-68), while Piaget aimed to "make of epistemology an experimental discipline as well as a theoretical one." (1995, pp. xi–xii) Both Steiner and Piaget foreswore theorizing as an end in itself. Both believed powerfully in the value of experience. Experience, for Steiner, however, expands as faculties of perception and conception evolve, and is, at root, imaginative and unbounded. Experience, for Piaget, is given through relatively fixed relationships of sense organs to mind, and, within these limits, may be explored through controlled study.

References

Bortoft, H. *The Wholeness of Nature: Goethe's Way Toward a Science of Conscious Participation in Nature.* Hudson, NY: Lindisfarne Press, 1996.

Ginsburg, I. "Jean Piaget and Rudolf Steiner: Stages of Child Development and Implications for Pedagogy." *Teachers College Record*, 84 (2), pp. 327–337, 1982.

Morss, J. *Growing Critical: Alternatives to Developmental Psychology.* New York: Routledge, 1995.

Papert, S. *Mindstorms: Children, Computers and Powerful Ideas.* New York: HarperCollins, 1980.

Piaget, J. "Science of Education and the Psychology of the Child." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1935 and 1965.

Piaget, J. "The Stages of Intellectual Development in Childhood and Adolescence." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1955.

Piaget, J. "The Role of Imitation in the Development of Representational Thought." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1962.

Piaget, J. "The Semiotic or Symbolic Function." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1966.

Piaget, J. "Foreword." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1995.

Piaget, J. and B. Inhelder. "Mental Images." In H. Gruber & J. Vonéche (Eds.), *The Essential Piaget.* Northvale, NJ: Jason Aronson, 1963.

Polanyi, Michael. *The Tacit Dimension.* Gloucester, MA: Peter Smith, 1983.

Steiner, Rudolf. *The Education of the Child in the Light of Anthroposophy.* GA 34. 2nd English ed. G. & M. Adams (Trans.). New York: Anthroposophic Press, 1965.

Steiner, Rudolf. *Discussions with Teachers.* Helen Fox, trans. London: Rudolf Steiner Press, 1967.

Steiner, R. *Curative Education.* GA 317. M. Adams (Trans.). London: Rudolf Steiner Press, 1972.

The Four Phases of Research

The world today asks that problems be solved not only in the most expedient or profitable way, but also in a way that the human beings involved in the work can grow and develop along with the wellbeing of the activity itself. To focus on the appropriateness of the process for those involved not only enhances productivity but develops a deep loyalty and concern among those who are working together. In the distant past the roots of the original trade guilds were built on such concerns for the process. In those times, process oriented thinking was known as alchemy, a study of how processes which fostered the creative activities in Nature could be used to model human interaction in groups and guilds. People who wish to work on processes today can learn much from the language of alchemists. Images taken from Nature can be refined and then employed meditatively as analogues for problem solving, whether personally or in groups.

The following questions can be used to define and implement the stages of alchemical problem solving.

Physical thinking: The fundamental stage in problem solving. Facts and data are gathered with the question—what is different? This stage the alchemists would characterize in terms of Earth.

Living thinking: The facts are arranged into sequences of typical movement or flow patterns with the question—what is changing? This stage the alchemists would characterize in terms of Water.

Feeling thinking: The patterns are considered from the point of view as to how they are likely to evolve to an extreme of where they are today. The ultimate question at this stage being—what is reversing? This stage the alchemists would characterize in terms of Air.

Creative thinking: The rhythm of the problem solving process is considered from the point of view of what the problem is likely to look like in many years with the question — what is the whole? This stage, in which the original material of research is completely transformed and born anew, would be characterized in terms of Fire.

These four stages are an archetypal pattern underlying most interactions between humans as well as most patterns of change in the Natural world. When undertaking research, it is crucial to recognize these four phases and to trust that they do lead to fresh insights. All too easily, research never gets past a "membrane" distinguishing the second from the third phase. At this critical boundary, the researcher may experience a loss of direction and clarity: the data appear to "reverse"; the initial hypothesis comes unglued, one begins to feel that one is losing one's way. This is the first moment of "Air." The risk at this juncture is to revert to the gathering of new data—that is, to circle back to the initial phase of "Earth" rather than simply to trust the chaos and confusion that has arisen and just "hang in there" with a feeling of suspended disbelief.

Practice in recognizing and implementing knowledge about these patterns is an invaluable aid to group process and personal growth. These questions can be arranged in the form of a mandala which is useful when undertaking work on the self or attempting to establish a group awareness of the assets and liabilities of the group with regard to process.

We are most grateful to Dennis Klocek for his articulation of the four phases of research outlined above.

Report on the Work of the Pedagogical Research Center of the German BUND

Executive Group of the Pedagogical Research Center

Peter Guttenhöfer
Hans-Jörg Hofrichter
Stefan Leber
Manfred von Mackensen
Ernst Schuberth

What is the PRC and what does it do?

If the Waldorf school movement in Germany is to have a voice in discussions on education and the educational needs of our time, it will require a venue where this discussion is taken up and where these needs are met by a pedagogy oriented toward the human being. But it must also have a place where all those who work toward the further development and deepening of Waldorf pedagogy find partners for dialogue and support. The Pedagogical Research Center would like to be such a place.

Research and conversation on the questions of our time require "free spaces" and there are not yet enough of these in our movement. Aside from the most important factor—human resources—ample material resources are also necessary. What does it take to enable a few people to work on the issues of early childhood education? Where can important cooperation with university research institutions take place, supported by independent financial resources? How can we organize colloquia and find sufficiently qualified participants to discuss the question of the media in early childhood? There is much to do if the means are available.

The Pedagogical Research Center

Ernst Weissert called the Research Center into existence in Stuttgart during the 1960s. He had a particular interest in research, especially with regard to hygienic aspects of Waldorf education. The original name of the Center translates as The Scientific Institute for the Development of Pedagogy Based on Rudolf Steiner's Anthropology. Its first constitutional meeting listed its objectives as follows:

a) Renewal of teaching and educational institutions;
b) Further development of Waldorf education;
c) New methodological and didactic approaches to linguistic, mathematical/scientific and artistic subjects;
d) Modern biology in technology and sociology;
e) Cooperation between medicine, sociology and pedagogy for the deepening of anthropology;
f) Curative education; and
g) Training the next generation of teachers.

First Projects

Dr. Mathiolius, the school doctor at the Uhlandshöhe Waldorf School, led one of the first projects—on children's physical development—in keeping with the goals set by Ernst Weisserst. Later, Manfred von Mackensen spent a year in Stuttgart before moving to Kassel, where he founded the Kassel section of the Pedagogical Research Center. A few years later, the Mannheim section was added, with larger projects on History Teaching under Albert Schmelzer and Math Teaching under Ernst Schuberth.

The three sections in existence today see themselves as a unity but with different emphases: Kassel's center of gravity lies in research on the natural and cultural sciences; Stuttgart covers a wide spectrum of assignments; and, to this date, the focus in Mannheim remains on the teaching of history and mathematics.

The Organs of the Pedagogical Research Center

The organs of the Pedagogical Research Center are the Executive Council, the Advisory

Board, the Board of Trustees, and the Member's Meeting.

Members of the Research Center include members of the Independent Waldorf Schools and supporting members. They elect the executive and advisory boards at biennial members' meetings, initiate new work, and formally approve the board's performance.

The Executive Council is answerable for legal and economic aspects of the association, convokes panels, and conducts day-to-day business.

In joint meetings with the Executive Council, the Advisory Board discusses proposals, reports on commissioned projects, and ensures publication of results at the conclusion of projects. When discussing proposals, the Advisory Board acts as a granting body. It assesses the feasibility of planned projects, informs proposals' authors of the Board's mission, and keeps in touch with the progress of the work. This means that the Advisory Board must be composed of experts in various areas, joined as needed by professionals with expertise in the field. Very different competencies are required. The most recent expansion of the Advisory Board, through elections, brought about a much-needed addition of younger colleagues.

Working Group

The Working Group meets at least three times a year and serves as an organ of perception for questioning and renewal within the German school movement. At their best, these meetings can assume the character of an "academy."

We have discussed the need for a more proactive research policy, meaning that particular research goals should be publicized within the Waldorf school movement and colleagues encouraged to work in that direction.

Proposals to the Pedagogical Research Center can be directed to any one of the three sections, in Kassel, Mannheim, or Stuttgart. As a rule, proposals are collected by Hans-Jörg Hofrichter, the acting business director, and transmitted to the members of the Executive Council and Advisory Board for discussion in the Advisory Board's meetings.

The results of individual projects are published by the sections of the Research Center and made available to teachers.

Until now the Board of Trustees has led a shadow existence. According to original intentions it is meant to connect the work of the Pedagogical Research Center in the sciences, arts, economic and public life with the broader world of Waldorf education. It also aims to provide intellectual and material support. We would like, soon, to organize a Board of Trustees in line with these intentions.

Members' Meetings

Members' Meetings take place at two-year intervals in the framework of the congresses of the Waldorf Schools Association. Their significance lies predominantly in the encounter among schools, their needs, and researchers. We wish to expand this area in the future.

Financing of the Pedagogical Research Center

Financing of the PRC comes from schools' contributions and also from grants and foundation support of particular research projects. The financing for a research project often demands intensive activity by the leadership of the secretariats to allow others to devote themselves to research. We need to be conscious of this.

The Future

For the future, the Research Center should increasingly be a meeting place for teachers interested in research and a place for critical and stimulating discussions to grapple with concrete questions of education in the spirit of anthroposophical pedagogy.

Beyond Cognition

Children and Television Viewing

Eugene Schwartz

Studies published in the July 2005 Archives of *Pediatrics & Adolescent Medicine* conclude that television viewing tends to have an adverse effect on academic pursuits. In spite of this, many researchers are reluctant to voice condemnation of television viewing by children. "Parents should be encouraged to incorporate well-produced, age-appropriate educational TV into their children's lives. Such programming represents a valuable tool for stimulating children's cognitive development," write Ariel Chernin and Deborah Linebarger of the University of Pennsylvania.

These new studies, in common with most studies that have appeared in past decades, generally assess television's effect on children's cognitive faculties while ignoring the deeper, less-easily quantified effects of TV on children's lives of feeling and willing. Such cognitive studies tend to focus exclusively on the content or "programming" of TV as a positive or negative force. Approaching the question from the perspectives of children's feeling and willing faculties might give more insight into the intrinsic nature of the television experience.

A young child or adolescent sits before the television set, focused on the screen, which serves as a border or threshold separating the inner hardware of the TV and the outer space into which its imagery flows. Behind the screen, a condensed, high-speed beam of electrons flies through a cathode ray tube and hits the back of the TV screen. The cathode ray tube encloses a vacuum; and this tube has a history worth introducing.

In the late nineteenth century William Crookes (1832–1919), a distinguished chemist and physicist, embarked upon a personal investigation of "spiritism," especially those phenomena said to be caused by the intervention of departed souls. Skeptical at first, Crookes soon became convinced that the realm of the dead could be studied with the same scientific rigor as the realm of the living. If the living thrived in air, perhaps the dead could be found in an airless vacuum, and perhaps the same electrical currents that seemed to "animate" so many phenomena in Crookes' time could be used to make dead souls manifest and visible. This passionate quest led Crookes to develop the "Crookes Tube," a partially evacuated bulb through which "cathode rays" were generated. As the tube was further evacuated, unearthly swirls of light and color appeared, without any apparent ether or medium to convey them. Crookes may not have encountered the spirits for whom he searched, but he had established the basis for the cathode ray tube and laid the foundation for the modern television.

The TV screen is coated with phosphors, substances that glow when hit by an electron beam, the path of which is controlled by electromagnetic fields. On the other side of the screen, the child experiences these bursts of energy not as the thousands of small dots or pixels that they really are, but rather as recognizable images, e.g., a tree or a human being. These images are static, but the speed with which they are scanned onto the screen calls

upon the child's "persistence of vision" to present the illusion of moving images.

The processes described above occur regardless of the content that is transmitted. From the cathode ray tube, electrons—fragments of matter—stream, at high velocity, toward the child, while from the child form-giving forces that restore the fragments into the semblance of wholeness stream toward the television.

From one side, the child is bombarded, while from the other, he or she is drained. We could say that the child's own etheric forces cohere the pixels into a "form," while the child's astral forces animate the form into "movement." Forces of life and soul that should be serving the child are instead drawn out to serve the image on the television screen. The speeding electrons are like an attack of inchoate will forces, while the faculties the screen draws from the child drain the child's life of feeling. It should be no surprise that EEGs reveal that a television viewer resembles someone in a state of deep sleep.

The "passive-aggressive" nature of television described above may help us to understand why it is an inherently unbalanced medium. We need only contrast this with the enlivened forces of feeling that awaken when a child's own will is engaged in artistic activity. Perhaps William Crookes' suspicion that the cathode ray tube was a medium in which deadening forces flourished is not so far-fetched after all. By its very nature, television undermines the healthy interplay of feeling and willing that arises as a child's faculty of imagination. Perhaps future studies of the effects of television will take into consideration, in one form or another, its impact on the threefold nature of a human being.

International Student Assessment and Computer Use

What Do Recent PISA Surveys Show?

Jon McAlice

The Program for International Student Assessment (PISA) is a multi-national survey made every three years (2000, 2003, 2006…) of 15-year-olds in the principal industrialized countries coordinated by the Organization for Economic Cooperation and Development (OECD).

The survey was conducted in 43 countries, including the United States, in the first assessment in 2000 and in 41 countries in the second assessment in 2003. At least 58 countries will participate in the third assessment in 2006.

Tests are typically administered to between 4,500 and 10,000 students in each nation to assess how well students near the end of compulsory education have acquired some of the knowledge and skills that are deemed essential for full participation in society.

PISA studies raise questions. Research based on data from the 2000 PISA tests, for example, raised serious questions about computer use and student learning. Thomas Fuchs and Ludger Woessmann of the CESifo economic research organization in Munich cross-referenced student responses concerning computer availability and use with corresponding test scores to create a multivariate picture of the relationship between computers and stu-

dent learning. Although descriptive and largely anecdotal, the report shows that the sweeping claims of many educational policy makers and software company representatives may well not be valid. Neither the availability of computers nor their frequent use seems to have any positive impact on student learning.

Neither Fuchs nor Woessmann is a teacher. Their interest in education springs from their concern for national productivity. Economic growth in OECD countries revolves around human capital. Are schools providing an environment that supports the development of marketable skills? A number of papers in recent years point out that computer skills are less marketable than are math and reading skills and that increased focus on computer literacy in schools throughout the world has had a negative effect on the attainment of the higher-level thinking skills most sought after in the global market.

In their study of computers and student learning, Fuchs and Woessmann looked at the availability and the use of computers in school and at home. Statistical analysis of student responses to questionnaires in relation to their test scores led the researchers to support a growing body of research questioning the efficacy of the computer as a to ol for learning. The mere availability of computers, whether at home or in the classroom, seems to have no significant effect on students' performance on the PISA tests.

The way computers are used and the frequency of use, however, did. Students who use home computers primarily to play games or for instant messaging had generally lower scores than those who used them to write e-mails, visit web-pages, or do research. This is not surprising, but results concerning the frequency of in-school computer use are somewhat more so. Students who report never using the computer in school have relatively low test scores. Those who report using the computer often, "several times a week," had even lower scores. Those with the highest scores report using the computer "a couple of times a month to a couple of times a year."

Does the frequent use of computers help youngsters prepare themselves for a working world in which computer technology is ubiquitous? Fuchs and Woessmann say no. Based on data provided by the PISA tests—tests designed to assess student preparedness for the challenges they will meet in the world—the more students use computers, the less prepared they seem to be. The intentional use of computers by students who have a goal, however, does allow them to access data that might otherwise be unavailable.

OECD reports based on data from the most recent PISA tests (2003), in which over a quarter of a million 15-year-olds in 41 separate countries participated, highlight other aspects of how schools can make a difference in preparing students for the challenges of today's world. School autonomy is close to the top of the list. Schools that manage their own budgets and have a say in hiring teachers and developing their own curricula seem to be more effective at creating a healthy learning atmosphere. Schools in which teachers use their own tests show a positive effect on student performance. A large percentage of students said that their success was due in part to the willingness of teachers to take the time to answer their questions.

The third round of the PISA tests will take place during this coming school year and will focus particularly on science literacy.

State Funds for Waldorf Schools in England

Douglas Gerwin

The British government has published its first major study on Waldorf education, including suggestions on how the state could collaborate with Waldorf schools in England. The 200-page study, commissioned by the Department for Education and Skills (DfES), was led by Professor Philip Woods of the University of West of England, Bristol and included 21 of the 23 Waldorf schools in England.

The aims of the study were five:

- to form a comprehensive "map" of Waldorf education as practiced in England
- to research and report on "best practices" in these schools
- to uncover differences and similarities between Waldorf and government-funded schools
- to explore how these different schools could collaborate
- to articulate the obstacles Waldorf schools would face if they were to forge closer links with state education

In general the report speaks favorably of Waldorf (often called "Steiner") schools in England, which at present do not receive government funding. "Overall we found areas of good practice such as the early introduction and approach to modern foreign languages, development of speaking and listening through oral work and the combination of class and subject teaching for younger children," says Professor Woods. "We also found that the emphasis given to teachers' reflective activity and heightened awareness as well as the non-hierarchical, collegial form of running schools, offers a contrast to current practice in the maintained [the British term for state-run] sector and may prove relevant for mainstream schools."

On one hand, the study found that Waldorf schools offer all of the recognized subjects mandated by Britain's "National Curriculum" as well as subjects unique to Waldorf education, such as eurythmy and an early attention to foreign languages. In this sense, there would be no need to modify the Waldorf curriculum to bring it in line with nationally required courses.

On the other hand, the study notes that the government's approach to standardized tests in the lower grades would not be an appropriate way of evaluating the success of Waldorf pupils, and alternative forms of assessment would have to be explored. The report urges the government to accept "alternative ways by which pupils leaving Steiner schools can demonstrate capability for further study and employment, building on current practice."

Published in June 2005, the report also examines the life of Waldorf teachers, noting that most of them "work for lower pay and in less favorable conditions" than teachers in state-funded schools. It urges Waldorf teachers to become better acquainted with "theory, research, policies and practices in mainstream education." According to Professor Woods, "We see a great potential benefit from mutual dialogue and professional interaction between Steiner and mainstream educators. As well as the good practices we have identified from Steiner schools, there are also areas in which Steiner schools could benefit from maintained sector practices such as management skills, organizational and administrative efficiency, classroom management, working with older secondary school children and record keeping and assessment."

However, the report warns that "transferring practices between schools of differing philosophies is neither straightforward nor in all cases appropriate and may not achieve the expected consequences because they are removed from the supportive school context in which they originate."

The report concludes with a call for further study to explore "equivalence of qualifications" among teachers in Waldorf and state-run schools.

The results of this report raise the possibility of state funds flowing for the first time to English Waldorf schools. Plans are already underway to convert the Hereford Waldorf School, which is currently housed in a converted barn, into an "Academy" of about 300 pupils aged 5 to 16. The school, located in the tiny village of Much Dewchurch in the rolling hills of western England, would be sponsored by the Steiner Waldorf Schools Fellowship (the British equivalent of the Association of Waldorf Schools of North America, or AWSNA) and financed with government money, with about 10 per cent of funding still coming from the private sector in the form of gifts. But obstacles remain in determining alternative forms of assessment and accountability before the plan can be implemented.

While state-funded Waldorf schools are not new on the European continent, the Hereford academy would be the first state-supported Waldorf school in England. In this sense the Hereford school could be seen as a test case for the collaboration between government and Waldorf education. And it would be tempting to draw this case into the discussion raging on the American continent about the future of U.S. charter schools, a growing number of which are drawing upon Waldorf curriculum and practices. It would be misleading, however, to equate the British experiment with the American charter schools, since all English pupils—in both state and independently funded schools—are already required to take government-mandated tests during their upper school and high school years if they intend to move on to higher education. These tests already have significant impact on the curriculum in the upper school years. This is not the case in the United States, where even the national SAT or ACT tests are not mandated as part of the high school curriculum, and indeed not all universities require them of their applicants.

References

"Steiner Schools in England," Research Brief No. RB645, by Philip Woods, Martin Ashley, and Glenys Woods. Copies of the full report (RR645) available from DfES Publications, P.O. Box 5050, Sherwood Park, Annesley, Nottingham NG15 0DJ, Great Britain. Copies of the research brief (RB 645) are available online at: www.dfes.gov.uk/research/

"Steiner schools: Learning from experience" http://news.bbc.co.uk/go/em/fr/-/1/hi/education/4633601.stm

available from JanniSteinerEY@aol.com

On Looping

David Mitchell

Last summer Alan Finder of *The New York Times* wrote about the benefits of "looping," a practice in which a teacher follows a class for a number of years. "Having a teacher stay with a class for more than a year—or looping, as it is known—is on the rise, according to many experts. As educational innovations go, it is remarkably simple. So are its benefits, proponents say. Teachers get to know their students, and the students' parents, extremely well. They know each child's strengths and weaknesses, and the children know the teachers' expectations and methods."[1]

Finder then lists public schools and school districts across the country that practice "looping." He notes that this practice helps "schools improve their standardized test scores."[2] He supports this claim with the suggestion that by having the same students, teachers do not have to continually assess them and can instead pay more immediate attention to their individual needs. He could have added that when these needs are met, the stress on children and teachers caused by persistent testing is no longer so prevalent.

Another reason Finder gives to support "looping" is that anxiety is reduced in the children at the beginning and end of the school year: "Research into looping suggests that it can pay substantial dividends. The school district in East Cleveland, Ohio, experimented with looping from 1993 to 1997. A class in each of four elementary schools stayed with their teachers for three years, generally from kindergarten through second grade. The teachers worked extensively with parents to reinforce lessons in school, and the classes also met for five weeks each summer.

"After three years, students in the looped classes scored an average of twenty-five percentage points higher on standardized tests in reading, language arts and math than other students in the school district, said Frederick M. Hampton, an associate professor of education at Cleveland State University who oversaw the research project."[3]

Even with these encouraging results, the East Cleveland School district stopped the program after 1997 because of new administration and complaints from some teachers that they were being required to learn the curriculum for a new grade. The school bureaucracy did not acknowledge the benefits of looping but instead focused on efficiency and maintaining the status quo.

The complete article can be found on the website of the Research Institute at www.waldorfresearchinstitute.org.

References

1. Alan Finder, *The New York Times*, "Goodbye, Class. See You in the Fall," July 11, 2005.
2. Ibid.
3. Ibid.

The Children's Food Bill

Christopher Clouder

Restrictions on TV advertising aimed at children in countries such as Sweden, Denmark, Belgium, Greece, and Norway are tougher than those upheld by the Advertising Standard Authority in the U.K. In Sweden, advertising for children younger than twelve is banned. Two years ago former Labor MP Debra Shipley introduced an unsuccessful bill that would have banned advertising food and drink during children's programs. In the last election the government promised to take action and is currently trying to tighten existing rules without new legislation.

With increased concern about children's health and obesity, however, there is growing public support for measures that restrict advertising and that discourage consumption of junk food. To this end a new bill, *The Children's Food Bill*,[1] will have its second reading in Parliament on October 28, 2005.

The Children's Food Bill seeks to protect children from unhealthy food marketing, to create a definition of good food that takes into account the presence of additives and sustainable food production, to set compulsory minimum standards for manufacturers, to improve the quality of food in schools, to ensure that all children have essential knowledge about food, and to promote healthy food to children. The bill is primarily promoted by Sustain,[2] an alliance for better food and farming that consists of more than 100 Non Govermental Organizations (NGOs). The Alliance for Childhood[3] is one of the 145 additional organizations that support *The Children's Food Bill.*

MP Mary Creagh will introduce *The Children's Food Bill* following her success with the Ballot for Private Members Bill, which requires 100 MPs to be present to achieve a "closure" vote. She has also tabled a House of Commons Children's Food Early Day Motion, EDM 378, which MPs are asked to sign to demonstrate continued cross-party support. An earlier EDM, 1256 on this matter, tabled in May, attracted 248 MP signatures. Activism and grassroots pressure in the U.K. may also help to ensure success of *The Children's Food Bill.*[3]

References

1. www.childrensfoodbill.org.uk
2. www.sustainweb.org
3. www.allianceforchildhood.org.uk

All Together Now!

Oscillations of Heart Rate and Respiration Synchronized During Poetry Recital

Stephen Keith Sagarin

Teachers—leading your students in reciting poetry may not be simply a path to improved memory, classroom harmony, and artistic expression. It may also be a path to improved health.

Researchers in Germany led 20 healthy subjects in an experiment that demonstrated a possible physiological basis for the therapeutic effects of reciting poetry, in this case the hexameter verse of *The Odyssey*. They compared spontaneous breathing, controlled breathing, and breathing during the recitation of hexameter verse with corresponding heart rhythms. Hexameter verse is verse in which a line of poetry contains 6 alterations between stressed and unstressed syllables. Researchers used a translation of *The Odyssey* that was faithful to the meter of the original Greek. Subjects walked rhythmically throughout each trial, whether or not they were reciting poetry, raising and lowering their arms to facilitate air exchange during breathing; a researcher accompanied them, leading them in recitation. Heart rate and breathing synchronized significantly better during recitation of hexameter poetry than they did spontaneously or when breathing was controlled without speech. And here we have a beautiful image of science at work—twenty people walking in a circle, speaking Homer, flapping their arms, with electronic measuring tools attached to their nostrils and chests.

Synchronization between breathing and heart rate is believed to have a healthful or salutogenetic effect, possibly increasing oxygen uptake in arterial blood, increasing blood flow in the brain, lowering blood pressure, and calming (or activating, depending on heart rate) mood. Further, psychosomatic effects may increase resistance to disease and increase flexibility with regard to maintaining balance or homeostasis among different physiological processes in the body.

Previous research on cardiac patients has demonstrated that roughly 6 breaths per minute—a significantly lower breathing rate than normal, spontaneous breathing—have the most beneficial effect. Although breathing may be controlled at roughly 6 breaths per minute without recitation or speech—by counting or using a metronome, for example—heart rate did not synchronize with breathing here as well as it did during recitation. More important, reciting hexameter verse naturally controlled breathing at around the optimal 6 breaths per minute while raising heart rate to more than 80 beats per minute, higher than for spontaneous breathing or for controlled breathing.

Other forms of artistic and religious speech—prayer, repeating a mantra—may have similar effects.

The physiology of the effect demonstrated in this experiment is not well understood and will be explored in future research.

The full article as printed in the *Journal for American Physiology* can be found at: www.waldorfresearchinstitute.org

Waldorf School Graduate Research Phase II

Arthur M. Pittis

The Research Institute for Waldorf Education is currently undertaking the second phase of its research project concerning Waldorf high school graduates. Phase II will focus on the post-high school lives of Waldorf high school graduates. This second phase, designed by Douglas Gerwin and David Mitchell, will examine a wider range of life experiences and in greater depth than did Phase I. It will survey former students with regard to college and university graduations and types and levels of degrees earned. It will also collect data on occupations and careers, personal interests and activities, relationships to studies and work, the self-perceived quality of personal relationships, and major changes in physical and emotional health.

In addition to comparative data, Phase II will collect a sampling of anecdotal comments from employers and professors about their working relations with Waldorf high school graduates. All respondents' identities will be kept in confidence. The survey will also provide an international comparison between North American and German graduates of Waldorf schools; its results will be compared to a recent study of German Waldorf school graduates.

Phase II of the survey will be conducted in an electronic, on-line format. Each graduate will be sent an individualized, coded link to the website on which the survey is posted. We estimate that the actual survey should take on average about 30 minutes to complete.

Several challenges had to be mastered in order to use an electronic format. First, a host site for the survey had to be found, and then the instrument construction software had to be mastered. Second, the survey had to be electronically constructed and tested, with glitches worked through and corrected. Now, in addition to traditional contact information, e-mail addresses for each contact have to be procured from schools. Once contact information has been gathered, e-mail addresses can be uploaded, links coded anonymously, and mailings and results more easily sent, tracked, and processed. We hope in the end to invite between five and seven hundred graduates to participate in the survey.

The previous issue of this journal contained the results of Phase I of the Research Institute's Waldorf graduates survey. That phase of the research project focused on college and university acceptances of Waldorf graduates during the past ten years, as well as alternate paths pursued by those who chose to defer college enrollment. The survey showed that not only are Waldorf high school graduates accepted by the finest schools in North America, but those choosing to defer higher education for a year are engaged in a wide array of creative and unique programs and activities. This information has already proved valuable to guidance counselors and development officers, dispelling myths and providing concrete evidence of the success of Waldorf high schools across the continent.

The support and cooperation of North American Waldorf high schools will continue to be essential to the success of this work. Introductory letters have been sent to twenty-seven high schools describing the survey and requesting thirty-six student contacts per

school—six contacts each from the graduating classes of 1994, 1996, 1998, 2000, and 2002. Also requested, in the case of younger high schools, were six additional years before 2002, and, for older high schools, five contacts per decade prior to the 1990s. As noted in the Phase I report, some schools have excellent, up-to-date records reaching back for decades while others have had to generate this information anew as a result of our request. It is heartening, however, to report that all the schools contacted appreciate the value of this project and have pledged their support and cooperation.

The electronic version of the Phase II survey will have been designed and tested by the time you read this. Also by that time we plan to have sent out invitational e-mails to graduates and will, we hope, have started to collect data. We expect the survey collection window to be open for two months, from around Christmas 2005 through mid-winter 2006. We aim to have publishable results by early summer, in time for the start of the 2006–2007 academic year. As with Phase I, these results will give us a comprehensive overview of our graduates and will provide our high school admission directors, class advisors, and college counselors with a broad picture of Waldorf graduates and the influence of Waldorf education througout life.

Remedial Mathematics Project

Lori MacKinder

The study of mathematics cultivates clear logical thinking. It is similar to lifting weights to strengthen the muscular body or cutting weeds to create a walking path. Working with math teaches problem solving and develops inner flexibility. The activities of problem solving and thinking flexibly are important tools for our adult world. We may not pull out the quadratic formula at the grocery store, but we do use the neurological pathways and the capacities we have created in working with higher mathematics each time we encounter an everyday problem.

According to one study, fewer than two students in three (63%) entering college are proficient in mathematics. More than one third of these young adults have underdeveloped problem solving skills and deficiencies in flexibility of logical thinking. The number of high school students without proficiency in math is far greater; not all students enter college. Why is the proportion of students who struggle with math so large? Who are these students and what can be done to change this? What impact might this deficiency have on students' futures?

On a typical day at a Waldorf high school you can spot instantly the students who do not like math or who are not high achievers in the subject. They can be seen dragging their feet on their way to class. Mention "word problems" and hear these students groan; refer to fractions and watch them cringe; speak of decimals and see them roll their eyes. These are the students who attend courses commonly referred to as the B-group, remedial class, lower level, slower paced math, offerings for those with learning difficulties, and even, sadly, by fellow students, as "dummy math" or "stupid math." I will call them here the "lower level." The courses these students attend usually have small class sizes, averaging around 10 students per class, and are taught at a slower pace beginning with Algebra in the 9th grade and ending with Algebra II or Trigonometry in the 11th or 12th grade. As with higher-level classes, these lower-level classes are often taught with the intention of preparing students for college. The students in these modified classes, however, are often drawn to art and humanities or choose careers not requiring a college education. In other words, these are often classes attended by normal, intelligent students who happen to struggle with mathematics.

Teaching these students in a meaningful and productive way is a challenge. Many wonderful and qualified teachers avoid teaching these lower-level classes. Perhaps this is because the same teaching methods and styles that aid learning for higher-level math students generate little understanding or enjoyment among lower-level students. Advanced groups may be filled with math-loving students who enthusiastically take on the next topic as fast as a teacher can dish it out. They are often self-teachers. Lower-level students, however, require a different style and classroom environment. In order to teach math effectively to lower-level students a teacher must acquire a fundamental understanding of who they are and what makes them different from other math students. These students possess, more or less, three distinct qualities: they are feeling-based, they are intuitive, and they are picture- image-learners.

By using the phrase "feeling-based" to describe high school math students, I am describing the center from which their reactive decisions originate. For these students, judgment, which is centered in feeling more

than in thinking or willing, predominates. Other students are influenced by their feeling lives, but these students are inundated by them. Many things—such as sleep, nutrition, exercise, conflict, stress, or menstrual cycle—affect their emotional states. These students appear to lack the ability to put aside their emotions and perceptions in order to focus on thinking. Their openness or receptivity to new material is predicated on how well they feel.

Lower-level math students often understand math by means other than pencil and paper. They typically do poorly on standardized tests. Instead, they may have greater than average verbal and visual abilities and ways of understanding that do not mesh with ordinary textbook modalities. Lower-level math students may not be able to perform rigorous steps to solve an equation, but they may quickly blurt out a correct answer to a math problem. Such students may not know where the answer came from or how they know that it is true.

This group of students may also have a knack for being in tune with their surroundings. They may sense effortlessly the state of their classroom environments, their peers' emotional states, and the moods of their teachers. Their intuitive abilities, coupled with strong personal feeling lives, affect their ability to stay focused and on-task. Their attention may easily be drawn into a conversation half a room away, to a bird flying by the window, or to a friend's emotional state. These students seem to have antennae stretching out from their bodies. They can quickly become overloaded with sense impressions and lose the ability to concentrate.

Finally, these students are picture-image-learners. More often than not they need to associate a mental picture or image with a math problem in order to understand it. Many of the students in lower-level high school math courses performed well in and enjoyed grade school mathematics. These students may have begun to struggle only when algebra was introduced in seventh grade. For many students, moving into algebra, and thus into the abstract, is a welcome change, one for which they are developmentally ready. Some students, however, cannot easily form abstract concepts. These students require scaffolding to support their visualization of advanced mathematical concepts.

According to Euripides, "Whoso neglects learning loses the past and is dead for the future." If we ignore the importance of an education for all students that is rich in mathematics, we are ignoring the gift of clear thinking and the beauty of math in all that surrounds us. For this reason it is important to understand all our students and to find a method of teaching that connects them with mathematics.

Reading, Writing, and Reading Comprehension

Paul Gierlach

My research at present concerns three areas: a framework for a monograph, suggestions for teaching reading and writing in grades 9–12, and suggestions for teachers, especially on class structure and teaching style regarding skills classes. This report addresses the first and third of these areas. Suggestions for teaching reading and writing in high school will form the core of future research.

All education concerns itself with the future. Most educational systems strive both to build up a student's character, through the content of the lessons, and to develop a moral fiber, sometimes called duty, by presenting appropriate challenges. On the surface, Waldorf education makes the same claims. It has a curriculum based on age-appropriate content, and in many lectures, for example in *Balance in Teaching*, Rudolf Steiner speaks directly about duty being inculcated in the student through hard, even unwanted, but necessary work.

Educational programs that recognize that the human being is a spiritual entity embodied in a soul that walks the earth—I am aware of none other than Waldorf education—can educate with regard for human destiny. Educational programs that are mere cultural manifestations usurp the destiny of the individual and replace it with an intention to continue the past, its values, and its duties. With an image of the human being as a spiritual ego, it is possible to educate students to become more than citizens who just obey rules. As necessary as these goals of citizenship are, they are not sufficient for spiritual beings who have incarnated for unique, individual purposes.

In *Balance in Teaching,* Rudolf Steiner says that an educator should teach in a way that a student's ego gains a proper, balanced relationship to the sheaths or bodies that accompany it from birth—the physical body, the ether body, and the astral body. When the ego becomes too attached to these bodies it becomes materialistic; when it is too little attached to these bodies it becomes fanciful and unfruitful for the evolution of the earth. Neither extreme offers a viable future, not socially and not individually.

How then can we educate students and yet leave them free as individuals? Artistically. What does that mean? In the context of reading and writing in the high school, to teach artistically echoes Aristotle's insight that human beings benefit most from what entertains and instructs. Reading and writing are certainly used to entertain and to instruct. To teach artistically is also to mirror in our education the process through which writers are creative agents in the world, writing about their active relationships to nature, culture, themselves, and others. Readers respond creatively to the rendering of those relationships. In both reading and writing, then, we have vivid pictures of the ego and its relationship to the bodies that it accompanies from birth and finds in the surrounding world of nature and humanity. Finally, to teach artistically is to free a disciplined ego so that it, and not, for example, the astral body, will be the true voice of human experience. These and other considerations will inform future research and writing.

Skills Classes

What is essential in skills classes as they are taught in the United States? Form? Which form? In any learning situation, we work best

if we work rhythmically. We will see how such rhythms and habits of reading and writing, suggested for grade 9, metamorphose through grades 10, 11 and 12. We need rhythm in our skills classes because high school students and teachers tend to become cerebral and fact-oriented. Rhythm softens boundaries and can lift us and our students out of the hardened world of fact. In the long run the content of a lesson—which is almost certainly to be forgotten—will prove to be of less importance than the rhythm we use in our lessons. This is true for all skills classes, not just those in the humanities. The most powerful rhythms deal specifically with the past, present, and future. I suggest the following class rhythm:

- Review: a reminder of the previous class's work, best made as a picture from which is drawn the concept.
- New material
- Activity: students should be given time in class to write something about that day's lesson. It helps the students do more and better homework; it alerts teachers to trouble spots. I will discuss the relationship of this to a three-day rhythm in the monograph.
- Reprise: a valuable aid to the student is a reverse-order objective statement of that day's activity. It takes two minutes. It helps those students who do not naturally organize their lives. The very act of going over one's work actively supports the idea that must be more prominent in high schools: that students benefit from reworking their assignments. And, most importantly, it awakens the feeling of responsibility in the student.

When a teacher no longer talks right up to and even beyond the end of class, students will not leave unsettled, the teacher will be more certain of what has just occurred in the class, and social relationships that depend on timely action will be strengthened.

Style

What is a teaching style? If it is narrow, it is a prophylactic. If it is too filled with itself—as is often the case with the charismatic teacher—then it is simultaneously attractive and repellent: attractive because it seems to be liberating, repellent because it is only self-liberating.

A teaching style is that device that a teacher uses to meet a class. It is a tool of the ego that should not be bound by its relationship to its other three bodies.

Students' natures make demands on us. These demands form our approach and our activity in the classroom as much as the content of our lessons—possibly more. We all have physical bodies that make demands upon us. We have temperaments. And we have astral bodies. Yet, in the end, we as teachers will succeed in relating the student's ego properly to the three other bodies—not too deeply and not too loosely—only to the extent that we ourselves are free.

Teaching Sensible Science

Gary Banks
with contributions from Michael D'Aleo, Lilli Anthon, and Barbara Richardson

What is the nature of sensory impressions, and what are the resulting relationships by which we develop an understanding of the world and of ourselves? These questions lie at the heart of comprehending a phenomenological approach to science, which we are exploring in depth in a new course for elementary school teachers of grades 5–8 in Waldorf schools.

The course was envisaged two years ago by Michael D'Aleo, high school science teacher at the Waldorf School of Saratoga Springs, researcher with the Saratoga Experiential Natural Science Research Institute (SENSRI), and co-author of *Sensible Physics Teaching*. The course arose from a conversation between Michael and Douglas Gerwin, Director of the Center for Anthroposophy. The Research Institute for Waldorf Education, SENSRI, and the Waldorf School of Saratoga Springs sponsored the first cycle of course during.

Michael's experience showed the need for a three-week course in order to allow enough time for class teachers to be confident with the methodology underlying a sense-based approach to science teaching and to explore the breadth and depth of the physical science curriculum. Each week was devoted to experimental topics for each of the three upper elementary school grades. The first week took place in March 2005, the second at the end of June, and the third over a long weekend in October. A format of this length also allowed teachers to try out the approach in their classrooms and return with fresh ideas and questions.

Gary Banks and Lylli Anthon were chosen to present experiments and lead discussions about practical aspects of the method. Lylli was also asked to lead the group in exploring ways to render experiments artistically through writing and drawing. Gary has a background in aerospace engineering sciences. He taught a class from first through eighth grade, taught high school science, and began a new first grade in 2004. In her 25-year teaching career, Lylli began by leading a class through eight grades and has taught middle school for many years. Barbara Richardson was selected to lead eurythmy because of her background in Eurythmy in the Workplace and as a class teacher. Eurythmy was added to the course as a way to further explore the nature of experience and working together and to enliven our full days of discussion and experiments.

The fifteen teachers who signed up for the course were all actively teaching in Waldorf schools in every grade from third to eighth. Many were from New York and New England, while some came from as far away as Washington, D.C., Minnesota, California, and Canada. A few already had a bent toward science, while others came more from an artistic background.

As a beginning, participants described their own relationships to science. Some recounted how they had loved science as students, often through the inspiration of an interesting teacher. Others related that they had horrible experiences of science as students, and these negative experiences left them feeling unprepared and apprehensive about teaching science. Several teachers had already taught science, and each one of these was enjoying the experiential approach to the curriculum.

Our mornings were filled with discussions of epistemological questions led by Michael D'Aleo. These sessions covered a range of topics, from the nature of sense experience and how we form concepts of our experiences to the roots of materialism in our age.

Michael's talks were punctuated by interesting examples taken from his experience as a mechanical engineer in the electronics industry. In his first presentation he told a story about an engineering graduate he had interviewed for his engineering group. Fresh out of college, the young man had performed brilliantly whenever he was asked to make a calculation. But when asked to identify the metal out of which pennies are made, he could not. When asked to identify a resistor, one of the most basic components of an electronics device, he was befuddled. After four years at one of the best engineering schools in the country, he had no connection to common elements and components of modern technology. For Michael, this illustrated a common shortcoming in science and engineering education, which tends to emphasize theoretical and mathematical models rather than actual experience.

The intention of the morning sessions was to ensure that the course participants developed a clear understanding of the distinction and rightful role of sensory impressions—observations—and conceptual relationships as the foundation for understanding any scientific experiment or even mundane experience. Our present times are filled with concepts that are presumed to have phenomenal qualities that are not, in fact, sensory based. An example of this is the common understanding that heat is an object-like entity that can be transferred between objects. Nothing is actually transferred, but we experience that when a warm object and a cool object are brought into proximity, the warm object cools and the cool object warms.

Such sensitivity to language may at first seem unnecessary. Reliance upon non-sensory, hypothesized objects as causal entities for all phenomena, however, limits students to a 19th Century view of physics and the world. Such a view can also give student and teacher the impression that the world is "not as it appears" and that they can no longer rely upon their sensory impressions and the concepts they develop. Such a view encourages alienation from a world that can never be "truly" known.

By using language that focuses on relationships between sensory impressions, students have the foundation for understanding modern field theory, which is more relationally based and no longer relies on the object-like entities of older models. Additionally, teachers and students practicing this approach build a deeper connection to the world and to other human beings by developing a more subtle sensitivity to their own sense impressions and to the activity of finding relationships.

Participants in the course remarked that, although they had received an overview of the content of the science curriculum in their Waldorf teacher training and in summer courses, they were unfamiliar with the nuances of the phenomenological approach and the use of language in forming concepts. There was a universal sense that the morning sessions led by Michael prepared the way for a deeper understanding, and it was clear that practical experience with the approach would be key to intensifying our preparation.

Unexpectedly for some, eurythmy provided a first means of deepening our method. The eurythmy sessions, occurring twice each morning, were integrated into the themes from other sessions. Doing eurythmy helped us get to know each other, brought us life forces, helped us be alert, centered us in ourselves, and helped us to find ourselves in the group. Eurythmy also prepared us to perceive and observe in a new way. One of the poems we worked with during the second week spoke to the mobility of perception we found ourselves developing.

The hand moves
And the fire's whirling
Makes different shapes.
All things change when we do.
The first word, "Ah!"
Blossoms into all words.
Each of them is true.

– From "Singing Images of Fire,"
Kukei, 8th c. Zen Master

Throughout the course, all of us, participants and presenters, were grateful for the expertise and skillful weaving of themes Barbara provided and for the true refreshment and rejuvenation we experienced through eurythmy.

The afternoon sessions were spent exploring the experiments that form the heart of the elementary school science curriculum. Each week was formed around the physics curriculum of a particular grade, starting with grade six. Gary and Lylli performed new experiments each day but waited for discussion of them until the following day, as practiced with our students. The second week also saw the addition of the chemistry curriculum of grade seven, led by Gary in evening sessions.

Many teachers face an intimidating obstacle in setting up experiments, especially in developing schools where materials may be scarce. Experiments in physics and chemistry involve unfamiliar equipment, and more complicated experiments often require special conditions and careful preparation. Safety is also a genuine concern that American schools cannot ignore. Long experiment sessions and the hands-on approach allowed participants to become more confident with this practical aspect of teaching science phenomenologically.

As we discovered in our first meetings, however, setting up and conducting experiments is not the only obstacle to teaching well. The way we form concepts with students about experiments before and during our classes ultimately determines whether or not our teaching is healthy. We are faced with the challenge of recognizing and often overcoming our habituated patterns of thinking.

A first experiment was a testimony to this. In this experience, appropriate for a grade six introduction to thermal physics, participants felt five different objects in the room and noted their thermal characteristics. The objects were a blackboard, a metal music stand, a piece of glass, a wooden desk, and a piece of carpet. We ranked them according to how hot or cold they felt, noting at the same time how some of them warmed over the course of the experiment.

After sleeping on the experience we returned for a discussion the next afternoon. We noted how we had conducted the experiment and then characterized the results. Everyone agreed that some objects felt warmer and some cooler. There was some variation in the way we ranked the order from warm to cool, but all agreed that the carpet and wooden desk felt warm and that the blackboard and piece of glass felt colder.

Difficulties arose when we tried to understand why these objects did not all feel the same. One would hardly think that so simple an experience would warrant much discussion, yet an hour and a half later we were still discussing the experiment passionately. Preconceived notions kept creeping in. One participant was finally able to articulate the problem: she believed that the objects were all at different temperatures. We pointed out that, even though it was late winter in upstate New York, all objects were in the room and therefore must have been at the same temperature. We even measured the temperature of each object with a thermometer to demonstrate this. It was shocking for her to realize that she had already superimposed a concept on the experience. Further, until she could escape the trap of her concept, she could not explore the actual experience any farther.

A great deal of frustration also arose out of this discussion—"Why don't you just tell

us the answer?" Through this we learned that the discovery of our own answer has more meaning than any answer given by an outside authority. The presenters fell into the role of being identifiers of preconceived notions—concepts—that did not connect with the experiences—percepts. The medium for this discovery was language, and in each experiment we carefully crafted the language that would help us form living, meaningful concepts. We carefully avoided model-based explanations that were not verifiable through the experiment itself. The goal of each dialogue was to reunite concepts with percepts. This took time, and the first half of our afternoons was filled with discussions of the previous day's experiences and presentation of new experiments.

Later in the first week we did a classical physics demonstration in which a thin steel wire, hung with weights at either end, passes through a solid block of ice over a period of several hours, leaving the ice in a single piece at the end. During the recapitulation of this experiment, the frustration that teachers feel at leading a dialogue with students became apparent. "How do we conduct a presentation and come to meaningful conclusions without forcing them upon our students?" One teacher bravely noted that he did this experiment during his internship when he was in training. The discussion started going awry, and the students just weren't getting it. In a moment of near panic, he blurted out, "I'll tell you what it is. It is PSI, pounds per square inch!" The mentoring teacher at the back of the room shook his head vigorously from side to side and buried his face in his hands. In retrospect, he could find humor in this situation, but at the time, it represented a crisis of soul for the presenting teacher.

Many new and even experienced teachers feel such a moment of panic and all too easily fall back on the security of the concepts they learned in school or read about in preparation for teaching a course. Science teachers in particular are expected to have a level of expertise for which many are unprepared. To live into the phenomena and to form vibrant concepts directly out of those experiences, this creates the antidote to teacher panic.

Sometimes, waking up to our habitual concepts takes a bit of a shock. At several key moments in our discussions participants kept repeating what they thought should have happened. In leading the discussion, Gary repeated dramatically, "It does not matter what you think happened or what you think should have happened. What was your experience?" A class teacher who does not have a formal scientific training but who can penetrate the phenomenological approach has the tools to provide an excellent science education in elementary school. In fact, through disciplining oneself in this practice, new discoveries can be made. There were many such moments in the training when, through our openness to the experiences, we uncovered new and unexpected aspects of the phenomena.

To stimulate greater confidence in living into the phenomenological approach, participants were invited to prepare experiments and present them, and also to lead discussions. In teacher training and in our faculties we often don't take the time to do such model teaching, and we can feel intimidated by the prospect of making a mistake or being unclear in front of our peers. Michael put us at ease by reminding us, "This is the cheapest opportunity in which to make a mistake."

Over the three week-long sessions we came to realize what is required to help a discussion about an experience proceed without being too leading or "teacherly" about it. When we have conclusions fixed too rigidly in our own presentation style, we rob students of the essential activity of their own discovery of the concept. In this context science education can either take on a deeper meaning and connect the students to their experience or become a means of merely imposing concepts without actual experience. We came to realize that how we as teachers lead a discussion

about an experiment determines whether the individuality of the child can begin to unfold. In retrospect, many participants expressed gratitude at the wisdom of carrying the "Teaching Sensible Science" course through three weeks, time sufficient for us to begin to transform our habitual ways of expressing ourselves to our students.

During the second week, we recreated and discussed many of the most challenging experiments of grade seven physics and chemistry curricula, including a lime kiln, a camera obscura, and a Voltaic pile. Throughout this week we noted how the discussions flowed more easily and how all participants became more versed in avoiding misleading language and conceptual traps.

The course presenters recommended working with some experiments between the sessions to become more proficient in this approach. Two of the course participants who teach at the same school took up this suggestion by starting a weekly half-hour study, open to the whole faculty. In these sessions, they focused on observing a particular experiment and forming meaningful concepts about it. We found this to be an inspirational example of how we can expand our work with the phenomenological method in our schools.

Lylli provided a unique presence in the course, namely as a model of what a class teacher without a formal scientific training can accomplish by using this method. Lylli conducted experiments, led discussions, and led sessions in the later part of the afternoons that resulted in a record of the experiments we had performed. Her gift was to help us understand how a teacher can develop the ability to capture the essence of the experiences.

Further, Gary Banks' contribution to the course was considerable. One participant wrote, "During our afternoon sessions and experiments, Gary was able to validate our sense experiences by guiding us with carefully formulated questions. This facilitated our grasp of appropriate thought processes. All our experiences during the experiments captured his interest, and no question was too simple or too basic. This gave us a profound sense of the key elements that have been brought forward for teaching the sciences in the sensible way—phenomenologically. His encouragement and patient guidance are models to us all, as we stand before our students each day." [1]

On Wednesday afternoon of the second week our topic was water. For this study, Michael took us to the Adirondacks. We gathered for informal conversations on the porch of his recently constructed log cabin while waiting for a soft and peaceful rainstorm to pass. Besides giving us some much-welcomed relief from the oppressive heat earlier in the week, we enjoyed forming closer connections with each other.

Following the rain, we hiked to the base of a waterfall on a clear mountain stream where we observed the patterns and currents in the water, an activity we repeated on Thursday at Saratoga State Park. On reviewing these and other observations of water, we came to see that observing water could become a metaphor for moving into the middle school, where mobility and change are constant themes. One participant's response, written after the next eurythmy session, was a short poem:

A pool in sight
Just water and light,
Swirling, whirling,
The present unfurling.

Michael left us with a wonderful question to ponder as teachers: Like water, do you have the mobility to go anywhere without being pushed anywhere?

In the third session in October, the group gathered for five days to focus on grade eight physics and chemistry. We followed a similar format to the other sessions with epistemological discussions and eurythmy in the mornings and experiment sessions in the afternoons and evenings. We sensed what a deep-

ening had occurred in the ability for the participants to suspend judgment, observe deeply, and think imaginatively about the phenomena we were exploring. The experiments involved refraction, prisms, electromagnetism, and the electromagnetic motor.

The eurythmy sessions worked with verses by Romantic poets such as Wordsworth, Shelley, and Blake, who had the remarkable ability to live deeply into an experience of nature and relate it to human soul experiences. Over two days, we created eurythmy forms in groups to lines of Shelley's *Ode to the West Wind*:

> Make me thy lyre, even as the forest is:
> What if my leaves are falling like its own?
> The tumult of thy mighty harmonies
> Will take from both a deep autumnal tone,
> Sweet though in sadness. Be thou, Spirit fierce,
> My spirit! Be thou me, impetuous one!

These final two lines speak to the solitary experience of the Consciousness Soul, that aspect of our souls that we must call on as we approach phenomena in a living, meaningful way and seek to present them to our students.

Our final activity together was to revisit a pond we had observed during the first week. In silence and alone, yet with a united intention, we stilled our thoughts and observations as we entered into this activity. With a new consciousness, we could observe the buoyancy of the ducks as they bobbed with their heads down in search of food, the apparent lifting of the pond bottom through refraction of the water, and the lively impressions of reflected images in the gently rippling water of the pond.

In this way, we came away from our three weeks of "Teaching Sensible Science" with new confidence in the phenomenological approach to teaching science in the Waldorf elementary school grades, a confidence we hope to spread to the remainder of the faculty in our schools. We left after the final week hopeful that the phenomenological approach can extend far beyond the classroom to inspire an attitude toward life based on sensory experience linked with thoughtful insight.

"Teaching Sensible Science" was conceived following discussions among the circle of AWSNA delegates in which was recognized the need to strengthen science teaching in the Waldorf school movement. A second session of the course will be presented in 2006, again in Saratoga Springs. The dates of the course are February 25–March 3, June 24–30, and October 4–9. Further inquiries about the course may be directed to one of the course presenters or to the Research Institute (researchinstitute@earthlink.net).

Michael D'Aleo, Waldorf School of Saratoga Springs:
spalight@verizon.net

Gary Banks, Pine Hill Waldorf School:
garysbanks@tds.net

Lylli Anthon, Halton Waldorf School:
oligo@bbs42.net

BarbaraR ichardson,Me rriconeagW aldorfS chool:
brichardson@centerforanthroposophy.org

Katie Schwerin and Gina Gutierrez Karp observing the boundary colors where dark and light meet.

Katie Schwerin describes the boundary colors, as Mark Wilson and others look on.

Caren Cua experiments with an electromagnetic coil while Barbara Richardson, Judie Sky, and Lylli Anthon observe.

List of participants in Teaching Sensible Science 2005. From left to right: Row 1: Amalia Pretel-Grey, Gary Banks (Presenter), Gina Gutierrez Karp; Row 2 (sitting): Hannah Gale, Sian Willsie, Melanie Reiser, Barbara Richardson (Eurythmy); Row 3 (standing): Judie Sky, Abigale Reid, Bob Amis, Katie Schwerin, Ingrid Feck, Linda Rasmussen, Caren Cua, Lylli Anthon (Presenter), Mark Wilson, Michael D'Aleo (Presenter). Not pictured: Gloria Leon

Report on the Online Waldorf Library

Marianne Alsop

OWL now receives approximately 1300 visits per month from North America and 500 per month from other countries. International visitors this summer came primarily from the Philippines, Australia, the U.K., Sweden and Japan. Several requests arrived from Guam and one from Malta. For the past 3 years the main search engine bringing people to OWL has been Yahoo but we now have more visitors who arrive through Google.

Areas of greatest public interest include the Waldorf Journal Project, back issues of the *Research Bulletin*, reports on Waldorf graduates from Sweden and from the USA, and the books online series.

Each week continues to bring questions from parents who are developing charter or magnet Waldorf-inspired schools. These parents and a few teachers often wish to remodel the Waldorf curriculum in order to make it more acceptable to local school districts.

OWL has received two requests, one from the Waldorf School of the Roaring Fork, Colorado, and the other from the Desert Marigold School, Arizona, for introductory information on Waldorf education in Spanish for new and prospective parents. I have contacted Rosario Villasana-Ruiz of the San Francisco Children's Council and Rudolf Steiner College for help with this request. She will provide OWL with an introduction in Spanish to Waldorf early childhood and elementary education.

Teacher education students and others send OWL research requests. Recent student research interests include:

- Bringing Waldorf education into mainstream educational systems
- Art education and its use in therapy
- Movement and play
- Early childhood education

OWL also supports ongoing e-mail dialogues with a teacher in Shanghai, China, and another teacher on an American Indian reservation in Wisconsin.

Summer use of OWL included many requests for high school reading lists. OWL has contacted Michaelmas Press for permission—still pending—to use an edited version of *Books for the Journey*. Summer also brought many requests for homeschooling resources as parents began to prepare their lessons for the year. Because of the volume of requests, I have developed a list of suggestions covering grades 1 to 4. Requests for curriculum assistance drop off significantly for grades 5 to 12. OWL continues to be visible at several homeschooling conferences and provides one-page newsletters for conference packets.

Other notable questions and requests include:

- Steiner's educational lectures on an audio CD (from a teacher who has a long commute);
- The name(s) of Waldorf teachers willing to write personal birthday verses for pay;
- Greek myths with female heroines only; and
- Guidelines for sex education for 6th and 7th grades.

The Online Waldorf Library can be contacted at

www.waldorflibrary.org.

Waldorf High School Senior Survey

Waldorf High School Research Project

A Survey of Waldorf Seniors—2003 and 2004

For the last two years, the Waldorf High School Research Project has been polling Waldorf seniors in the months before they graduate in order to discover how they feel about their education. The Research Institute for Waldorf Education, which recently incorporated the High School Research Project, has published the first phase of an extended study examining where Waldorf graduates go after finishing high school.[1] The poll of seniors in effect supplements this study by offering vignettes of life in the North American Waldorf high schools from the perspective of departing 12th graders.

The Planning Group of the Research Project,[2] on behalf of the Association of Waldorf Schools of North America (AWSNA), mailed a survey to all 27 Waldorf high schools with graduating senior classes in 2003 and 2004, inviting the graduates to comment on the strengths and weaknesses of their high school education, both from an academic and social perspective. Their responses were illuminating.

First, some statistical background. The Planning Group received a total of 346 responses—167 in 2003 from 16 schools and 179 in 2004 from 14 schools—representing a little less than half of the Waldorf graduates in each year.[3] Of the total number that responded, roughly 45% listed themselves as "lifers" who had attended 12 or more years of Waldorf pre-school, elementary, and high school. At the other end of the spectrum, about 25% of the respondents said they had attended only 1–4 years at Waldorf, mostly just the high school grades. In other words, the students responding represented a very broad range of experience in Waldorf education, from less than a year in high school to the full experience of early childhood, elementary grades, and high school. One student reported 17 years of continuous attendance at Waldorf!

Most of the questions in the survey were open-ended and encouraged the students to respond out of their experience in narrative form. The survey asked them, for instance, to describe their most positive academic and non-academic experiences at school. Some reached far back into memories of their elementary years for their examples—such as drawing the night sky in sixth grade astronomy, four-needle knitting in fifth grade, tossing bean bags while learning times tables in the fourth grade, or attending the Christmas plays year after year from first grade on—but many focused on their final year of high school. Main lessons and run-through classes in history were mentioned most often, but science and math (especially geometry) were also frequently highlighted, along with senior projects. Students singled out the 11th grade main lesson on Parzival in nearly every school that offered it.

Top five choices for "most positive academic experience"

1. Humanities, especially history, English
2. Sciences, especially biology, chemistry
3. Math, especially geometry
4. Senior project
5. Parzival

Not surprisingly, in non-academic subjects, sports easily accounted for the most positive experiences, followed closely by class trips and foreign exchanges, the arts generally (drama especially), work practica, and just hanging out with peers and teachers beyond the classroom setting. One Mid-Western student compared her classmates to a family that "taught me more as a person than I could have ever learned in any other school."

Top five choices for "most positive non-academic experience"

1. Sports
2. Class trips, foreign exchanges
3. Fine arts, performing arts, crafts
4. Work experience, service learning
5. Friends

In general, it was clear from the responses that the experiences carrying the most value for the seniors—both academic and non-academic—involved *movement*: whether in the form of physical activity, artistic performance, academic exploration (for instance, science field trips or lab research), service learning, or a social change of scene.

Another theme common to the most valuable experiences was that students had *chosen* them—whether they were academic electives or independent senior projects or solo "vision quests" in the desert. Even in the high school, the education of the will resonates in the students to lasting effect.

We asked the students, next, to list those subjects that had most influenced their thinking. Overwhelmingly the responses focused on main lesson classes from the 10th, 11th, and 12th grades—mostly in literature. The Parzival main lesson was mentioned again, along with courses exploring the Bible as literature, epic mythologies, Dante's *Divine Comedy*, Goethe's *Faust*, Russian literature, and the American transcendentalists. Social studies main lessons were also at the top of the list, including the history of the arts, symptomatology, economics, and the survey of architecture.

As in previous surveys of Waldorf students, this poll registered student dissatisfaction with their experience of science, though there were some notable exceptions. It was striking that of the courses most cited as having "influenced my thinking," all but two were from the humanities. Outside the humanities, only 11th grade projective geometry and 12th grade zoology/evolution made the top ten. However, many students from several different schools listed as a major influence on their thinking the integration of all of the subjects, especially the inclusion of the arts in the sciences and humanities courses. Math, too, was also noted for bringing, in the words of one student, "an artistic imaginative view of abstract ideas."

Often, though, one could detect in the students' choices of most influential subjects the determining presence of a dynamic teacher. Indeed, one student said outright, "It's not the courses that inspired me, but instead the teachers." Another commented, "All my positive experiences have corresponded to exceptional teachers."

In fact, the close relation between students and their teachers was credited as one of the strongest and most influential hallmarks of Waldorf education in general. In response to the question, "Which aspects of your education most strongly represent for you the Waldorf educational approach?" the teachers' attention to individual students was listed in all but two schools as a signature of Waldorf education. In the words of one student, "Waldorf teachers show that they care." Another defining feature of Waldorf schools was the focus on training students how—but not what—to think, especially by the emphasis on open discussion and the creation of main lesson books. "In Waldorf school we learn to think, thinking about thinking," one student observed. Eurythmy, an art form not always appreciated by high school students,

was nonetheless singled out for its curative as well as artistic merit. In the words of one student, "Eurythmy allows my body to feel free." Said another, "It brings focus into my physical movement."

Waldorf high school students are renowned for their strong opinions and for their willingness to share them. Talk to the students at the Harvard Graduate Law School who have regularly welcomed Waldorf teenagers to the annual "mock trials" in Cambridge, Massachusetts. They will tell you that Waldorf teenagers, who take the role of jurors in these sample trial cases, have a reputation not only for being open-minded and fair during the trial but afterwards for being keenly observant critics of the law students' performances as prosecutor or defense counsel. The Waldorf adolescents—practiced in the skills of observing accurately, asking questions, and evaluating truth—have come to be appreciated for their candor and keen insights.

Christine Hether made a similar discovery when she interviewed Waldorf seniors some years back in connection with her Ph.D. research into the moral development of different student populations. Not only did she find that Waldorf seniors tested at the same level of moral maturity as students in graduate school. She also noticed that of the many groups of seniors she tested with the Defining Issues Test (DIT), a quantitative measure of moral reasoning, the Waldorf students were the only group to offer unsolicited commentary at the bottom of their test sheets. About a third of them, she reported in her Ph.D. thesis, "took time to spontaneously write comments on the personal information sheet. Some suggested ways in which the DIT could be improved, and criticized the fact that not all possibilities for resolution to the dilemmas had been presented."[4]

When asked to describe how they would change or strengthen their schools, the seniors were characteristically blunt yet fair, on the whole. Their most repeated plea was for greater diversity among the student body—but also among the faculty. "We need younger teachers who actually act their age, and not fifty," one student ventured. More choices in electives and stronger offerings in science were also common themes, along with a call for teachers more thoroughly versed in the Waldorf approach and administrative structures more transparent and better organized. "The more organized a teacher or a school is," said one senior, "the more cooperation you'll get." Some students even suggested a more hierarchical governance was needed in the high school, with a single person in charge of day-to-day decisions. Others criticized their teachers for fighting among themselves or engaging in gossip.

Top suggestions for changing or improving Waldorf high schools

1. More diversity (socio-economic, ethnic)
2. More faculty fully trained in the Waldorf approach
3. More choices, academic and extra-curricular electives
4. More rigorous, varied courses in science
5. More organized, efficient, transparent school administration

A few students felt their teachers could be stricter and more demanding, especially with those students who are disruptive. Said one impatient student of his noisy peers, "Punish the idiots!" Though some students longed for a larger student body, many praised the small class size as being socially and academically advantageous to learning. Of the facilities most desired, the top contenders were a gym just for the high schoolers and a lounge just for students. One senior insisted there should be "physical exercise every day!"

As one might imagine from a student body of such divergent backgrounds, there was criticism from overtly conservative students of the perceived liberal bias of their

teachers and from self-proclaimed liberal students of the perceived conservative leanings of their teachers. Said one frustrated Southerner, "Tell the teachers to be consistent and fair, to teach with their hearts and keep an open mind. If they are conservative, tell them to keep it to themselves!"

Despite the occasional voice of disgruntlement, the surveys were remarkable for their even-handedness and their general appreciation of the education, even with its perceived shortcomings. The seniors were asked a further open-ended question: What advice would you offer to those responsible for strengthening the high schools? The seniors' responses, many heartfelt and appreciative, focused on six instructions:

Six pieces of advice from Waldorf seniors

1. Insist on a Waldorf-trained faculty [this was by far the most common and passionately argued response]
2. Listen!
3. Keep up to date, especially with technology
4. Be flexible but consistent
5. Set deadlines—and stick to them
6. Lighten up, occasionally

Beyond these instructions, the students were effusive in their encouragement—and in their sympathy for their teachers. "Math and science teachers have a difficult task of teaching artistic, creative Waldorf students how to think logically," one senior remarked. "I would say they need a special kind of training." Ultimately, said another senior, the task of any teacher is to "motivate students to aspire to things they never imagined they could attain."

Finally, the survey posed two yes-or-no questions. The first was: Would you consider becoming a Waldorf teacher? A resounding 55% answered "No"—some emphatically, often because they did not see themselves as teachers (especially if one of their parents was a Waldorf teacher) or because of the prospect of low salaries. "Definitely not," said one California senior, "I plan to be comfortably rich!" However, some of these same respondents conceded that if they were ever to change their mind about teaching, Waldorf would be the only teaching career they would consider. A significant and enthusiastic minority (20%) replied that they were already committed to this career path. "Teaching is a noble thing to do, and I believe becoming a Waldorf teacher is a possibility," said one New Englander. Another student answered, perhaps with a sigh of resignation, "I have a sinking feeling I might."

The other question was: Would you consider sending your children to a Waldorf school? Here a strong majority (75%) replied with a definite "yes," though some qualified their answer with questions about the cost of the education or their commitment to a full 12 years or more in a Waldorf school. Even some of the students who had been quite critical of aspects of their years at Waldorf voiced a clear intention to send their own children to Waldorf someday. Only 7% of the respondents answered this question with an outright "no." "It is the best education a child can receive," said one East Coaster. "I want well-rounded children who think about things on a deeper level." "Of course," said one far-seeing senior, "but I would have to talk with my wife."

References

1. Faith Baldwin, Douglas Gerwin, and David Mitchell, "Research on Waldorf Graduates," Phase I (March 2005). Available online at www.waldorfresearchinstitute.org.

2. Members of the Planning Group of the Waldorf High School Research Project: Andy Dill

(Kimberton PA), Douglas Gerwin (Amherst MA), David Mitchell (Boulder CO), Leonore Russell (Garden City NY), Betty Staley (Fair Oaks CA).

3. See Appendix at www.waldorfresearchinstitute.org.

4. Christine Hether, "Moral Reasoning of High School Seniors from Diverse Educational Settings," p. 66.

Submitted by Douglas Gerwin on behalf of the Waldorf High School Research Project at the Research Institute for Waldorf Education. For the questionaire used see the full report available on the website of the Research Institute:

www.waldorfresearchinstitute.org

High Schools Participating	Respondents 2003	Respondents 2004	Total
Austin Waldorf School	20	14	34
Chicago Waldorf School	2	15	17
East Bay Waldorf School	—	6	6
Hawthorne Valley School	—	12	12
Hazel Wolf High School	2	—	2
High Mowing School	21	3	24
Honolulu Waldorf School	—	21	21
Kimberton Waldorf School	19	—	19
Rudolf Steiner School (NY)	11	19	30
Rudolf Steiner School of Ann Arbor	3	—	3
Sacramento Waldorf School	11	19	30
San Francisco Waldorf School	23	—	23
Shining Mountain Waldorf School	16	12	28
Toronto Waldorf School	5	9	14
Vancouver Waldorf School	7	7	14
Waldorf School of Garden City	11	15	26
Waldorf School of Massachusetts Bay	—	8	8
Watershed High School	2	—	2
Washington Waldorf School	11	19	30
Youth Initiative High School	3	—	3
Total Senior Respondents	**167**	**179**	**346**

Rigor Asked for in High Schools

Stephen Keith Sagarin

Editor's note: In the following article from *The New York Times* it is once again illuminated that happiness can be experienced in work and striving, that youth continues to be generally idealistic and diligent, and that good teachers will challenge students. Teens are malleable; they will rise to challenges.

WASHINGTON (AP) – The campaign to make high school more demanding seems to be picking up support from the people who have the biggest stake in the matter: the students themselves.

Almost nine in ten students say they would work harder if their high school expected more of them, a survey finds. Less than one-third of students say their school sets high academic expectations, and most students favor ideas that might add some hassle to their life, such as more rigorous graduation standards and additional high-stakes testing.

"The good old times in high schools are being replaced by good old hard work," said Peter Hart, whose Peter D. Hart Research Associates, Inc., conducted the survey for the "State of Our Nation's Youth Report" released Tuesday. "There's a recognition among students that they have to be more ready to compete."

The nonprofit Horatio Alger Association, which provides college scholarships and mentoring to needy students, issued the annual report on youth attitudes. The findings are based on a phone survey of 1,005 students in high school last May.

Improving high schools has become an urgent topic in education, as mounting research shows many students aren't ready for college or work after graduation—if they get that far. The call for change has come from President Bush, governors, employers, and college faculty.

Now students are saying it, too.

Julie Hetcko, 16, of Lincoln, Nebraska, who will be a senior in the fall, has taken three Advanced Placement courses and is looking for other ways to prepare for college. High schools that don't offer some type of advanced coursework, she said, are holding students back.

"Times are changing," she said. "I don't think people realize how much students are trying to excel, trying to get into college. It's important that adults and parents know that it's not just a walk in the park. We want to work for our grades."

When given options for improving high schools, 95 percent of students agreed that more real-world opportunities, such as internships, would help at least somewhat. More than 90 percent also favored two other ideas: earlier counseling in high school about how to prepare for college, and more opportunities to take college-level courses for free.

Majorities of students said other changes would help, too, including increasing the availability of after-school and summer school, requiring students to pass math and English exams to graduate, and requiring four years of math and courses in biology, chemistry, and physics.

The students' call for more rigor comes as 41 percent of them said the pressure to get good grades is a major problem for them, about the same level as the last two years. One-third of students said getting good grades is very important when it comes to fitting in with their friends—a factor cited more often than having a car or being involved in sports.

More than three in four students plan to go to a four-year university. A total of 83 percent said high school is preparing them "adequately" for college, although a smaller number, 71 percent, said high school, is getting them sufficiently ready for the work world.

Most of the students surveyed were enrolled in public schools, with the rest attending private school, home school or another type of school. Students aged 13 to 19 took part.

The survey has a margin of sampling error of plus or minus 3 percentage points.

Among other findings:

- More than two in five students say at least half the students they know cheat on tests.
- More than six in ten students say they have a cell phone.
- Nine in ten students say they have at least one family member in whom they can confide.
- About half of students say they eat a meal with their family every day.
- Almost three in four students say they would admire a professional athlete less if they found out the athlete had taken illegal steroids.

– August 9, 2005. Copyright 2005 The Associated Press. All rights reserved.

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:

Violence and the Electronic Media: Their Impact on Children
– 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

Volume II, Number 2

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

Volume III, Number 1

Schooling and the Post Modern Child
– David Elkind

Developing a Culture of Leadership, Learning, and Service in Waldorf Schools
– Christopher Schaefer

The Third Space
– Henry Barnes

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

Volume III, Number 2

Educating the Whole Person for the Whole Life
– Gerald Karnow, M.D..

Understanding the Etheric Organization in the Human Being: New Insights through Anthroposophical Research
– Michaela Glöckler, M.D.

Endangered Childhood
– Joan Almon

Volume IV, Number 1

ADHD–the Challenge of our Time
– Eugene Schwartz

Helping Children: Where Research and Social Action Meet
– Joan Almon

Computers, Brains, and Children
– Stephen Talbott

Movement and Sensory Disorders in Today's Children
– Peter Stuck, M.D.

Can Waldorf Education Be Practiced in Public Schools?
– Patti Smith

Volume IV, Number 2

Human Biography and Its Genetic Instrument
– Michaela Glöckler, M.D.

Challenges and Opportunities in Evolution Education
– James Henderson

The High Stakes of Standardized Testing
– Edward Miller

Ecology–Coming into Being versus Eco-Data
– Will Brinton

Genes and Life: The Need for Quantitative Understanding
– Craig Holdrege

Volume V, Number 1

The Real Meaning of Hands-On Education
– Frank Wilson, M.D.

America's Gold Rush: Can It Be Redeemed?
– Dorit Winter

Atopy in Children of Families with an Anthroposophic Lifestyle
– Johan S. Alm, M.D, et al.

Volume V, Number 2

Balance in Teaching, Balance in Working, Balance in Living
– Roberto Trostli

Adult Education in the Light of Anthroposophy
– Michael Howard

Setting Priorities for Research; Attention-Related Disorders (ARD) Study
– Kim Payne and Bonnie River-Bento

Learning Expectations and Assessment Project (LEAP)
– Leap Project Group (Staley, Trostli, K. & B. Anderson, Easton)

Sexual Abuse in Children: Understanding, Prevention, and Treatment
– Michaela Glöckler, M.D.

Volume VI, Number 1

Confronting the Culture of Disrespect
– Langdon Winner

Where Is the Waldorf School Movement Going?
– Johannes Kirsch

Computers in Education: Why, When, How
– Lowell Monk and Valdemar Setzer

Low SES Minority Fourth-Graders' Achievement
– Jennifer Schieffer and R.T. Busse

Volume VI, Number 2

Trained to Kill
– Dave Grossman

Education of the Will as the Wellspring of Morality
– Michaela Glöckler, M.D.

Hand Movements Sculpt Intelligence
– Arthur Auer

The Online Waldorf Library Project
– Dave Alsop

Volume VII, Number 1

Creating a Sense of Wonder in Chemistry
– David Mitchell

Science as Process or Dogma? The Case of the Peppered Moth
– Craig Holdrege

Spirit Will and Ethical Individuality
– Michael Howard

Did Rudolf Steiner Want a Seven-Grade Elementary School Configuration?
– Mark Riccio

Phases and Transitions in Waldorf Education
– Harlan Gilbert

Waldorf High School Research Project: Who Is the Teenager Today?
– Douglas Gerwin

Initial Report of the Waldorf ADHD Research Project
– Kim Payne, Bonnie River-Bento, Anne Skillings

International Survey of the Status of Waldorf Schools
– Earl Ogletree

Case Study Research: The Waldorf Teacher
– Nina Ashur

Volume VII, Number 2

On Forgetting to Wear Boots
– Stephen Talbott

Organizations as Living Organisms: Developing a Seven-fold View
– Magda Lissau

Educating the Will—Part II: Developing Feeling Will in Contrast to Sense/Nerve Will
– Michael Howard

Recapitulation and the Waldorf Curriculum
– Alduino Mazzone

Volume VIII, Number 1

No Such Thing: Recovering the Quality of Rudolf Steiner's Educational Work
– Stephen Keith Sagarin

Beyond Innovation: Education and Ethos in an Era of Ceaseless Change
– 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

Teaching as Learning in a Steiner/Waldorf Setting
– Christopher Clouder

Education Towards Health Is Education Towards Freedom
– Johannes Denger

The Stranger in the Mirror: Reflections on Adolescence in the Light of Movement Education
– Jaimen McMillan

Pulling the Grass Doesn't Make It Grow Any Faster
– Gerald Huether

The New Generation of Children
– Renate Long-Breipohl

Volume IX, Number 2

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

Discovering the True Nature of Educational Assessment
– Paul Zachos

The Kindergarten Child
– Peter Lang

The Teaching of Science
– David Mitchell

Evolution of Consciousness, Rites of Passage, and the Waldorf Curriculum
– Alduino Mazzone

Volume X, Number 1

Science and the Child
– Stephen Talbott

Can Meditation Take the Place of Exercise?
– Michaela Glöckler, M.D.

Non-Verbal Education: A Necessity in the Developmental Stages
– Michaela Glöckler, M.D.

Organic Functionalism: An Important Principle of the Visual Arts in Waldorf School Crafts and Architecture
– 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 Rietmüller

Waldorf Education: Transformation Toward Wholeness
– Vladislav Rozentuller and Stephen Talbott

The Art and Science of Classroom Management
– Trevor Mepham

Spiritual Research: Casting Knowledge into Love
– 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

Soul Hygiene and Longevity for Teachers
– David Mitchell

The Emergence of the Idea of Evolution in the Time of Goethe
– Frank Teichmann

The Seer and the Scientist
– Stephen Keith Sagarin

The Four Phases of Research
– adapted from Dennis Klocek

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

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

Research Institute Proceedings

Pathways of Healthy Child Development

An Unjustified Bandwagon Effect: Education, Technological Optimism and the Implications of Brain Research
– Jane Healy

Integrating Body with Being: Health Education and Child Development
– Michaela Glöckler, M.D.

Screen, Text, and Word: How Literacy Matters
– Barry Sanders

Learning to Trust One's Senses and Gut-Level Impressions
– William Crain

The Instrument Itself: Children's Development and Television
– Joseph Chilton Pearce

Education as Healing: Aiding the Healthy Incarnation of Children
– Bruno Callegaro, M.D.

Culturally Engaged Education and the Transformative Power of Life Stories
– Cynthia Dillard

Toward Wholeness in Knowing

Toward Wholeness in Knowing: The Renewal of Thinking, Feeling, and Willing
– Douglas Sloan

Education in a New Key: The Quiet Revolution in Our Schools
– Douglas Sloan

Overcoming Mid-Body Dualism in Human Development: Identity of Vital Functions and Thinking Activity
– Michaela Glöckler, M.D.

Organology and Physiology of Learning: Aspects of an Educational Theory of the Body
– Wolfgang Schad

The Child's Tie to Nature
– William Crane

Interpersonal Intelligence in Play and Kindergarten
– Thomas Hatch (summarized from his presentation by Douglas Sloan)

Child Development and Differential School Performance: A Challenge for Teachers in School Development Program Schools
– Kimberly Kinsler and Edward Joyner

The Eye of the Needle: Drug Abuse and the Alienation of Childhood
– Felicitas Vogt

The above back issues can be obtained from:

AWSNA Publications
3911 Bannister Road
Fair Oaks, CA 95628
phone 916-961-0927
fax 916-961-0715
publications@awsna.org
www.awsna.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.

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 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 ten years, 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
Waldorf High School Research Projects
Waldorf Graduates Survey Phase I
Waldorf Graduates Survey Phase II

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
- Mathematics
- United States History
- English
- Computer and Information Technology
- Life Science and Environmental Studies
- World History – Symptomatology

Resource Development

Computers in Education, handbook for teachers
Being on Earth, a book for scientists and teachers
Online 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

Board of Directors
Douglas Sloan, President
Susan Howard, Secretary
Roberto Trostli, Treasurer
David Mitchell, Co-Director
Douglas Gerwin, Co- Director
Ann Stahl
Virginia Flynn

Administrator
Milan Daler

Supporting Members
AWSNA
Camellia Waldorf School
Camphill Special School-Beaver Run
Cape Ann Waldorf School
Chicago Waldorf School
East Bay Waldorf School
Emerson Waldorf School
Eugene Waldorf School
Green Meadow Waldorf School
Haleakala Waldorf School
Halton Waldorf School
Hartsbrook School
Hawthorne Valley School
Highland Hall Waldorf School
Honolulu Waldorf School
Kimberton Waldorf School
Les Enfants de la Terre
Merriconeag Waldorf School
Monadnock Waldorf School
Pine Hill Waldorf School
Portland Waldorf School
Rudolf Steiner Centre, Toronto
Rudolf Steiner College
Rudolf Steiner School, NY
San Francisco Waldorf School
Santa Cruz Waldorf School
Santa Fe Waldorf School
Seattle Waldorf School
Shining Mountain Waldorf School
Sound Circle Teacher Training
Summerfield Waldorf School and Farm
Toronto Waldorf School
Vancouver Waldorf School
Waldorf School of Garden City
Waldorf School of Orange County
Waldorf School of San Diego
West Coast Institute for Studies in Anthroposophy

Research Bulletin
Editor: Stephen Keith Sagarin
European Editor: Christopher Clouder
Art/cover: Hallie Wootan
Copy editing: Douglas Gerwin and David Mitchell
Proofreading: Ann Erwin
Production/layout: David Mitchell

Subscriptions
$20.00 for one year, including postage for the United States
$22.00 for one year, including postage for Canada
$25.00 for one year, including postage for Europe and South America
$27.00 for one year, including postage for Africa, Asia, and Australia/New Zealand

Groups, schools, or institutes that wish to become Supporting Members of the Research Institute are entitled to 20 copies of each issue of the *Research Bulletin*. Supporting memberships are $250 per year.

Individual copies of back issues of the *Research Bulletin* are available for $5.00 each (plus postage) from AWSNA Publications.

The Research Institute for Waldorf Education
Douglas Gerwin and David Mitchell, Co- Directors
P.O. Box 307
Wilton, NH 03086
Phone: (603) 654-2566
Fax: (603) 654-5258
e-mail: researchinstitute@earthlink.net

Our new website is now up and running.
Please visit us at:

www.waldorfresearchinstitute.org