

Renewal

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A JOURNAL FOR WALDORF EDUCATION



FORGIVENESS

In the past months, we have all had to deal with the question: How does one respond to an attack? Reprisal and retribution are natural reactions to attack. Self-examination and a search for factors within ourselves that might have led to the attack are other possible responses.

Rudolf Steiner often mentioned the particular importance of the free act of forgiveness in this period of history. Developing the capacity for forgiveness, he said, is essential to our continued evolution as individual human beings and as a human community.

The following passage is by a noted student and interpreter of Rudolf Steiner.

.....

THERE ARE TWO FUNDAMENTAL CONDITIONS FOR FORGIVENESS.

THE FIRST IS THAT WE FORGET THE WRONG TO WHICH WE HAVE BEEN SUBJECTED AND THE PAIN WE HAVE EXPERIENCED.

THE SECOND IS THAT WE CONSTANTLY REMEMBER THE NEED TO BRING LOVE AND GOODNESS INTO THE WORLD AS THE ONLY WAY OF OVERCOMING THE CONSEQUENCES OF EVIL IN THE WORLD (p. 71).

WHEN WE FORGIVE AN UNJUST WRONG DONE TO US, OUR HIGHER, DIVINE SELF PERMEATES OUR LOWER, MUNDANE SELF WITH ITS SUBSTANCE. IT BEGINS TO LEAD US TO SPIRITUAL AWAKENING. IT HELPS US RECALL THE DIVINE TASKS WHICH WE HAD PLANNED FOR OURSELVES BEFORE OUR BIRTH ON EARTH, THE DIVINE TASKS WE HAVE COMPLETELY FORGOTTEN SINCE OUR BIRTH (p. 73).

From The Occult Significance of Forgiveness by Sergei Prokofieff (London: Temple Lodge Press, 1991)

CREDITS:

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FROM THE EDITOR

BY RONALD E. KOETZSCH, PH.D.



[YOUNG PEOPLE] NEED OUR REASSURANCE THAT THE WORLD—DESPITE MUCH EVIDENCE TO THE CONTRARY—IS A GOOD PLACE AND THAT THE HUMAN BEING IS THE CONSUMMATE ACHIEVEMENT OF GOD'S CREATIVE ACTIVITY ON EARTH.

Those of us on the cutting edge of the postwar generation went through adolescence in the late 1950s and early '60s. It was, relatively speaking, a placid time. While there were things to be concerned about, notably the possibility of nuclear war with the Soviet Union, it was pre-Vietnam, pre-drug-culture, pre-just-about-everything! There were sports heroes worthy of admiration, clear and generally agreed upon sexual mores, and an unobtrusive mass media based on only three television networks. We were free to navigate our internal hormonal tides with few external pressures or distractions.

Since then a succession of cultural earthquakes have changed the landscape: the intrusion of drugs into mainstream society; the sexual revolution; a frenetic consumer culture symbolized by the SUV; a quasi-pornographic mass media culture epitomized by MTV; the inundation of daily life by the electronic media (television, video, computer games, et al.); the cynical "in your face" ethos of being cool, and so on. Hence for adolescents today there are distractions, temptations, and dangers that we, their parents and teachers, probably did not have to deal with and, if we did, dealt with in a much less virulent form. Compared with that of the late '50s and early '60s, today's mass culture is a minefield. There are myriad destructive allurements that can divert today's young adults from becoming honest, thinking, decent, active, healthy, moral human beings.

However cool, sophisticated, and self-sufficient our young people may seem, they need our help in their adolescent years. They need our example in honesty, integrity, self-discipline, and in holding to ideals. They need our reassurance that the world—despite much evidence to the contrary—is a good place and that the human being is the consummate achievement of God's creative activity on Earth. And they need our time, attention, compassion, and love.

Parenting does not, alas, end with the eighth grade. It merely enters a new and in some ways more intense and demanding phase. Teenagers—as you may have noticed—tend to lose some of the cuddly charm they had as toddlers!

Waldorf Education also does not end with the eighth grade. The Waldorf high school is an intrinsic part of the education. It offers children who have been through the Waldorf grades a secondary schooling informed by the same insights and ideals. And it gives children who have attended other schools, schools that perhaps did not meet their individual needs, an approach to learning and to life that may inspire them.

Today only thirty of the roughly 150 Waldorf schools in North America have a high school, but the number is increasing each year at a steady rate. And there is a heightened interest throughout the Waldorf movement in the needs of the adolescent. In October 2001, a Waldorf high school research conference held in North Andover, Massachusetts, looked at the particular needs of high school students from a Waldorf perspective. (A report on this conference is on page 23 of this issue.) This summer, the annual North American Waldorf Teachers' Conference will focus on the education of the adolescent.

In Europe a Waldorf school is not considered a full Waldorf school until it offers education from kindergarten through the end of high school. That idea seems, happily, to be slowly taking root in North America.

Ronald E. Koetzsch

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EDITOR

RONALD E. KOETZSCH, PH.D.

MANAGING EDITOR

MARIANNE ALSOP

LAYOUT

TOM BEAUCHAMP,
WINTER GRAPHICS NORTH

COPY EDITOR

ANNE RIEGEL-KOETZSCH

PROOFREADER

CHARLES H. BLATCHFORD, PH.D.

STAFF WRITER

THOMAS POPLAWSKI

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JAMES PEWOTHERER

For information about Waldorf Education and a complete list of Waldorf schools in North America, please contact:

AWSNA

ASSOCIATION OF WALDORF SCHOOLS
OF NORTH AMERICA

3911 BANNISTER ROAD
FAIR OAKS, CA 95628-6805
U.S.A.

PHONE: (916) 961-0927 FAX: (916) 961-0715
WEB SITE: WWW.AWSNA.ORG
EMAIL: AWSNA@AWSNA.ORG

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BY DONALD BUFANO

FROM THE CHAIRMAN OF AWSNA

In reading *Renewal*, you show interest—of some level—in Waldorf Education. Recognizing your effort and wanting to build upon it, I would like to share some thoughts with you.

Today there are many compelling causes, movements, and initiatives competing for our attention and concern, and your choice to place your interest here is significant. Increasingly, we are called upon to make critical decisions about where we will direct our attention and our often limited resources—both economic and personal. We want to put them where those limits are overcome, where our investment of time, energy, money will yield greater value in an uncertain future. Many feel a renewed inner need to attend to family and community—all that is close at hand—while still recognizing our global connectedness—the need to care for all our human brothers and sisters and for the Earth itself.

The choice to learn about and participate in Waldorf Education is an investment in a healthy future. Waldorf Education is something human and universal. While each school springs from the unique character of the local community, it also shares in this universality. This is a bold statement, I know. One factor that enables me to make it is the tireless dedication of teachers and administrators, boards and parents, and others who work to create and sustain school communities. Even more inspiring is the work that the students produce and what they as human beings become. The striving and the work of those in the Waldorf community—children, adolescents, and adults—testify to the importance, effectiveness, and value of Waldorf Education.

Within the Association of Waldorf Schools we face a variety of tasks. Maintaining and improving quality educational and institutional standards are high priorities. Clearly communicating these standards is just as crucial. Accessibility, visibility, and clarity in what we stand for are important. Healthy growth and development to sustain the future are essential. Attracting talented and devoted teachers is paramount. AWSNA is addressing each of these challenges. Curriculum and organizational research and consulting, publishing and other forms of public outreach, implementation of a school accreditation process, and support of teacher training are all ongoing activities of the organization.

You can help in many ways. Learn more about Waldorf Education, what it has to offer students, and what it can bring to the larger educational arena. Support your local school. The schools are the creative centers of our work. Help your school community become the best it can be and help it share the insights of Waldorf Education within the larger community. And please remember the special work of the Association, which is to foster and promote Waldorf Education in ways that require the combined resources of the schools. Your strengthening of your local school and your holding it in your heart makes this work possible. Your support of AWSNA allows us to serve the schools and to be the voice of Waldorf Education in the public arena.

I hope you will enjoy and learn from the high-quality articles in this issue of *Renewal*. Then bring your enthusiasm and knowledge into your work with Waldorf Education. Please write if I can help you in your efforts.

THE FIRST FOUR YEARS OF CHILDHOOD

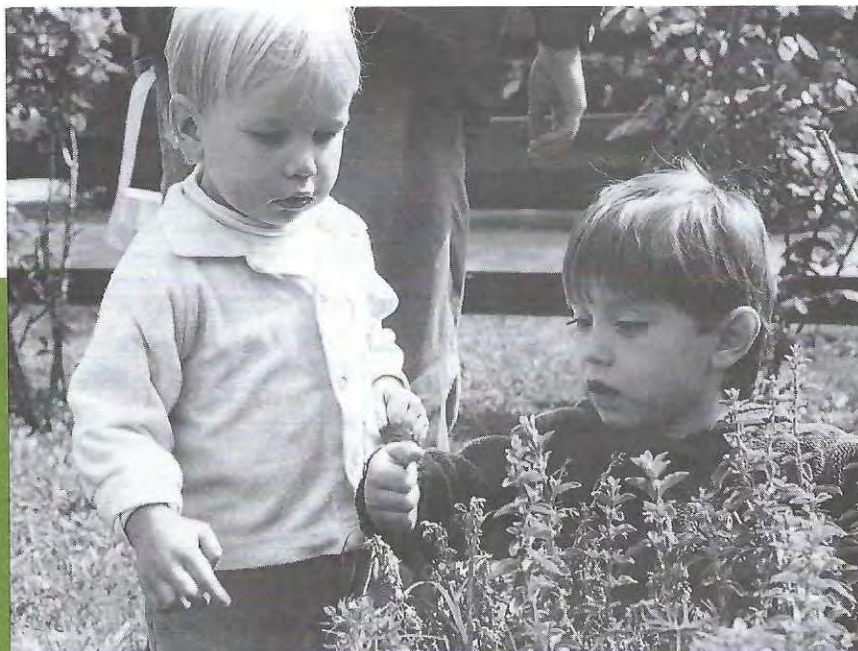
BY CAROL TOOLE

The twelfth graders at the Austin Waldorf School—to whom I am teaching a block on child development—and I stand contemplating the infant heads we have just sculpted in clay. We are all struck by the softness of form—the spherical shapes in the cheeks, nose, forehead, and chin. We note the prominence of the dome of the head and forehead, and the relative lack of the individuality that becomes more evident in the older child as features grow more angular and sharply defined. We have “birthed” these “babies,” yet we sense the inner sculptor that is at work within each human being. Even these clay renderings seem full of vitality and creative forces.

One of the students asks, “Why is it that as a young child I could gaze at a single icicle or a leaf on a branch as though I were embracing an entire world, and I would feel such joy? Why can’t I feel that way now?”

Her lament over the lost magic of childhood is expressed in the words of the poet Wordsworth, “The things which I have seen I now can see no more.” What indeed becomes of those “clouds of glory” that frame the birth of each child, and of the joy and wonder of the early years? And what can we do for our infants and young children so that this state of grace remains undisturbed as long as possible and some of it might be taken into adulthood?

THE FORCES OF VITALITY
THAT SCULPT THE BRAIN,
THAT DRIVE THE CHILD TO
OVERCOME GRAVITY AND TO
ACQUIRE SPEECH, NOW TAKE
HOLD OF EVERY OBJECT,
MOVEMENT, AND IDEA AND
SHAPE THEM INTO LIVING
PICTURES.



For the young child, the world of nature is a source of beauty and wonder.

In the first years of life the helpless infant learns to walk, speak, and think. And it is the efforts of the child herself—her first attempts and experiments—that generate the changes in the brain and in the nervous and muscular systems that make possible the eventual full development of the skill. The child begins to walk, to speak, and to think before she is fully equipped for these tasks. It is her striving that in the end enables her to master them.

IF THINKING IS TO ENCOMPASS PROBLEM SOLVING, FLEXIBILITY, CREATIVITY, AND THE MAKING OF CONNECTIONS, THEN PLAY IS THE TRUE WORK OF THE CHILD. IT IS THE ESSENTIAL PREREQUISITE TO THE FULL DEVELOPMENT OF THE THINKING CAPACITIES.

The first work of this human-being-in-training is learning to stand upright and to walk. This means he must learn to balance the large and heavy head and support his body on his legs and feet. This in turn requires that muscles develop to support the spine, that the spine acquire curvatures that provide stability, and neurons develop a fixed structure (are myelinated) so that they can deliver precise commands to the muscles. These changes occur only through the child's own struggle to take his first steps.

The child's participation in wholesome, practical daily tasks, such as gardening, lays the foundation for healthy physical and emotional development.



To foster this process, babies need daily opportunities to move freely, to explore a variety of movements. Hence, they should have a time each day on a large, safe, flat surface, such as a carpeted floor, where they can experiment with turning over, lifting the head, attempting to crawl, and so on. Recent findings show that rolling over develops the inner ear, the foundation for listening skills later on. When at last the child pulls herself up, attempting to stand and walk, she should be allowed to strive and struggle. Baby-walkers and standing swings do a disservice to infants. They prop the child into an upright position without her having to use her own muscles and to exercise her own will. They deprive her of the activity that will promote proper posture and body alignment.

Despite these steps toward independence, the child faces a new hurdle—his inability to communicate through spoken language. Here again, it is the child's grappling with sound and meaning that will further his eventual mastery. Learning to speak opens pathways between the child and the world, the child and others. This process too is long and arduous.

Before an infant's first birthday, she babbles to exercise the speech organs and seems to revel in meaningless sounds. This babbling includes sounds from all languages. In time, though, the baby will lose the ability to discern those sounds not used in her environment. This illustrates a key fact in the development of the young child—that what the child experiences actually shapes and structures the brain.

Ronald Kotulak, an expert on brain development, writes:

Sounds, sights, smells, touch—like little carpenters—all quickly change the architecture of the brain. . . . The discovery that the outside world is indeed the brain's food is truly intriguing. The brain gobbles up its external environment in bits and chunks through its sensory system. . . . The digested world is reassembled in the form of trillions of cells that are constantly growing or dying, becoming stronger or weaker, depending on the richness of the banquet.'

For this reason, parents should consider carefully the sensory "food" they want to provide for their young children. The infant and toddler are much more sensitive, receptive to, and influenced by sounds, colors, and movements than are adults. A constant state of hyperarousal or, conversely, shutting down because of overstimulation increases the activity of more primitive areas of the brain at the expense of the development of higher centers. The young child is best served by a quiet, peaceful environment, not by bright lights, crowds, the noise of public places, or the frenetic images and sounds of television, videos, and so on.



To preserve "the merriment in life" manifest in these young children so that they experience it also as adults is an important mission of the parent and educator.

In the process of learning speech, as in all processes of the child's development, the presence of loving and attentive human beings is most important. When a mother coos endearments to an infant in a cradle, her love and interest flow like warm rays of sunshine through the medley of sound.

Soon the one-year-old begins to attach meaning to what he hears. Still, each syllabic utterance of the child represents, not specific objects, but what Dr. Karl König calls a "whole landscape of experience." "Tha" means everything that is not me. "Bir" means every sound coming in through the window.

By the end of the second year, the child repeats the names of each thing as she hears it, as though gathering jewels to one day string together. Verbs are soon added, and "mama" becomes "mama come." Before long, she can express herself in full sentences—a remarkable feat. The child has acquired a vocabulary of some two thousand words and, without the benefit of verbal explanations, has learned the parts of speech—nouns, articles, prepositions, adjectives, and so on. And she can use them correctly, even if creatively, for example, "The sky is all sunrise," or "Let's swarm the money into the bag."

Whereas in learning to walk the child depends on freedom of movement, in learning to speak he depends, not on

words alone, but on human beings engaged in whole speech. The budding orator needs to hear speech that bears the undivided attention, enthusiasm, and interest of the speaker. Studies reveal that language experienced via television or other electronic media does little to increase a child's vocabulary. Such disembodied speech does not nourish the child in his learning to speak. Even the speech of real and present people, when it is curt and clipped and seeks only to convey information, does not truly nourish. Language, like food, is most satisfying when child and adults sit and share together, each fully present without distractions. To converse with a young child in a quiet environment, without television, radio, computer, or the like as a peripheral distraction, is a true and necessary gift.

Speaking and teaching rhymes to a child are also important, especially when they affirm the child's own experience.

*Baby bye, there's a fly,
Let us watch him, you and I,
How he crawls up the walls,
Yet he never ever falls.
There he goes on his toes,
Tickling little baby's nose.
If you and I had two such legs,
You and I could walk on eggs.*

She loves lively speech, even when it has no or little meaning, as in these two Old Mother Goose rhymes:

*Higglety, pigglety, my black hen,
She lays eggs for gentlemen,
Sometimes nine, sometimes ten,
Higglety pigglety, my black hen.*

and

*Handy, spandy, Jack a-Dandy
Loves plum cake and sugar candy.
He bought some at the grocer's shop
And out he came, hop, hop, hop.*

While the meaning of some Mother Goose rhymes is, to the sensitivity of modern adults, problematic, they nonetheless serve a purpose for the young child. Hearing rhymed words at the end of sentences helps the development of phonological awareness—sensitivity to sounds in words. What looks to the adult to be just word play—“Are neighbors people with burs stuck in their feet?”—is actually part of a learning and organizing process that is as vital in the development of comprehension and reading skills as the learning of letters later on.

STUDIES REVEAL THAT LANGUAGE EXPERIENCED VIA TELEVISION OR OTHER ELECTRONIC MEDIA DOES LITTLE TO INCREASE A CHILD'S VOCABULARY. SUCH DISEMBODIED SPEECH DOES NOT NOURISH THE CHILD IN HIS LEARNING TO SPEAK.

Babbling, learning the names of things, and making simple sentences are activities of the two-year-old child, but do not yet involve thinking. In the third year, as the child makes use of speech to describe his world in more intricate ways, he gains a sense of time and space, of qualities and comparisons, of order and relationships. Here again the activity contributes to the development of the capacity:

“After you're newborn, you're newborn and a half.”
“When you're the baby and I'm the mama, I'll tie your shoes for you.”
“The clouds are the sky's eyebrows.”
“Worms are spiders that crawl on their bellies.”

Her nascent language skills help the child express her experience and thereby understand it. Memory begins to manifest and through it a connection to the past. Meanwhile the child starts to experience her “self” as existing separately from other persons and from the

world. A space, albeit small, opens within where her own thoughts can live. The child has journeyed to the realm of ideas and has begun to find herself. The first struggle for independence takes place when the child demands, “Me do it myself.” The objective, divine wisdom surrounding the child begins to dim. In the name, “I,” that she soon calls herself, though—in this sacred space—the seeds for future self-development are planted.

The thinking of the young child should not be mistaken for the rational thinking of the adult. It is still deeply colored by impulse and emotion. This can be seen in the many tantrums of the two- and three-year-old, and when we give the child too many choices. “But I want *you* to tell me,” one child sobbed when faced with a question about what to wear.

As the thinking capacity struggles to awaken, the capacity for play unfolds. In play the child practices for later thinking, although play, unlike thinking, is always physically active. The forces of vitality that sculpt the brain, that drive the child to overcome gravity and to acquire speech, now take hold of every object, movement, and idea and shape them into living pictures.

A near four-year-old, upon hearing the story “Snow White and Rose Red,” asked, “Tell me the part again where I cut the dwarf's beard.” He had not only “seen” the story, but had put himself in the pictures! Another child prefaced all his actions in play with “Let's pretend,” and even said to his mother one day, “Pretend I'm your son and you're my mother.” All reality was rooted in his imagination. A cat and dog may live in the hamper; a toothbrush might be laid out for an imaginary friend.

Free imaginative play, as demonstrated by these two young boys “on their way to China,” is essential to the young child.



T. Berry Brazelton, the well-known pediatrician, maintains that “the ability to create mental pictures leads to more advanced thinking.”² If thinking is to encompass problem solving, flexibility, creativity, and the making of connections, then play is the true work of the child. It is the essential prerequisite to the full development of the thinking capacities.

Today the ability of children to play and fantasize is often lamed. Ready-made, detailed, manufactured toys, computer games, and videos of fairy tales and children’s stories deprive children of the opportunity to use and develop their imaginative powers. To the child who by nature has a very rich inner life, this external clutter hinders rather than helps.

Many well-meaning parents try to promote early development and intellectual skills with learning toys, computer programs, flash cards for tots, and so on. Ironically, this premature attempt to stimulate the child’s mind may in the long run impede its full development.

One Christmas season, a small, still-wrapped gift beneath the tree entertained my young son endlessly. In the days he waited to open it, it became for him, among other things, a screwdriver, a harmonica, and a spoon. At last the box was opened to reveal a tiny, detailed metal train. This soon disappeared into the closet, never to be played with again.

Piaget, the Swiss psychologist, warned against imposing too much on the child. “Every time we teach a child to do something, we keep him from inventing it himself,”³ he said.

All children develop according to a general pattern, but within that pattern each child also is unique and individual. Parents and teachers do well to observe that individuality as it unfolds, to trust in the child’s innate urge to learn and develop, and to let the child do so in her own manner and pace. We do not need to interfere in order to speed up or change the process. One child will wait to walk until she is ready. Another, less patient, will plow ahead with many mishaps until she succeeds. When we enjoy the child’s journey, trusting in her innate wisdom, we teach the child to trust herself. The more the child is allowed to exercise her own capacities for joy and discovery, the more this precious wisdom will be preserved for adulthood.

In time, the vital, sculpting life forces at work in the child recede into the background, and the playful, imaginative thinking of the child slumbers. Logical, abstract thinking takes its place, and the magic and joy of the early years is lost. Before the child became conscious of himself, strong



In striving to walk (and speak and think), the young child develops those capacities that support the mature skill.

forces impelled his development and gave him a deep, direct experience of life and the world. Now he must generate those forces himself and develop and live in full awareness. He must find his own way and take his place in the world. He must let his speech uplift others by its truthfulness, and he must kindle a creative fire in his thinking. The potential for this personal evolution lies dormant within him—as within each mature human being—and conscious efforts can bring it to life. As Wordsworth wrote, “Though inland far we be,” we may still “hear the mighty waters rolling evermore.”

ENDNOTES

1. Ronald Kotulak, quoted in Robin Karr-Morse and Meredith S. Wiley, *Ghosts in the Nursery* (New York: Atlantic Monthly Press, 1997), 25. Kotulak’s original article was published in *The Chicago Tribune*, 1993.
2. T. Berry Brazelton and Stanley Greenspan, “Our Window to the Future,” *Newsweek* Special Edition (Fall/Winter 2000): 35.
3. Jean Piaget, quoted in Magda Gerber, *Your Self-Confident Baby* (New York: John Wiley and Sons, 1998), 18.

BIBLIOGRAPHY

- Gerber, Magda. *Your Self-Confident Baby*. New York: John Wiley and Sons, 1998.
- Healy, Jane. *Endangered Minds*. New York: Touchstone, 1990.
- Karr-Morse, Robin and Meredith S. Wiley. *Ghosts in the Nursery*. New York: Atlantic Monthly Press, 1997.
- König, Karl. *Eternal Childhood*. North Yorkshire: Camphill Press, 1994.
- _____. *The First Three Years of the Child*. New York: Anthroposophic Press, 1969.

CAROL TOOLE received her Waldorf teacher certification in 1982. She has been a kindergarten teacher and enrollment director at the Austin Waldorf School. She currently does parent education and language arts tutoring at the school and teaches practical arts in its newly founded high school. Her two children will both be high school students in the fall.



The art of eurythmy develops and strengthens the child's etheric body.

A QUIET AND CALM HOME ATMOSPHERE; A CLEAR, REGULAR DAILY RHYTHM OF LIFE; THE EXCLUSION OF JUNK FOOD AND OF THE JUNK STIMULATION OF TELEVISION AND OTHER ELECTRONIC MEDIA; AND THE LOVING ATTENTION OF GROUNDED ADULTS TOGETHER COMPRISE "CHICKEN SOUP FOR THE ETHER BODY."

ETHERIC? ASTRAL? EGO?

AN ESOTERIC VIEW OF THE
HUMAN BEING AND ITS
VALUE IN THE EDUCATION
OF THE CHILD

BY THOMAS POPLAWSKI

Rachel Resnick was looking for a good private school for her child. She did a research tour of the private schools in her area: the Montessori, the Solomon Schechter, the lab school of a prestigious local college, the alternative "free" school, and a Waldorf school. She wound up visiting the local Waldorf school three times and, in the end, remarked to a teacher there, "This is the only *real* alternative school [I've seen]," and wanted to understand what was behind this difference.

It is not easy to present the worldview behind Waldorf Education that makes it so different. One could begin by saying that Rudolf Steiner perceived the child as a spiritual being, not merely as a "higher animal" that needs to be trained or a supercomputer whose brain needs to be properly programmed. One would have to present in more detail the "nonvisible" aspects of the child, how they relate to the physical body, how Waldorf Education takes each of these aspects of the child into consideration, and how it tries to develop each in a healthy manner.

The understanding that the human being consists of a body, a soul, and a spirit is an ancient and almost universal one. Some religious and philosophical systems see the physical body as consisting of two parts—a material,

physical body and a nonmaterial, etheric or life body. Add soul and spirit, and we have the fourfold picture of the human being that has been recognized for centuries by various cultures. Rudolf Steiner, the founder of Waldorf Education, sometimes used the Sanskrit terms of ancient India to denote these four dimensions, but more often employed the theosophical terms current in his day—physical body, etheric body, astral body (for the realm of soul), and the I (for the spirit component).

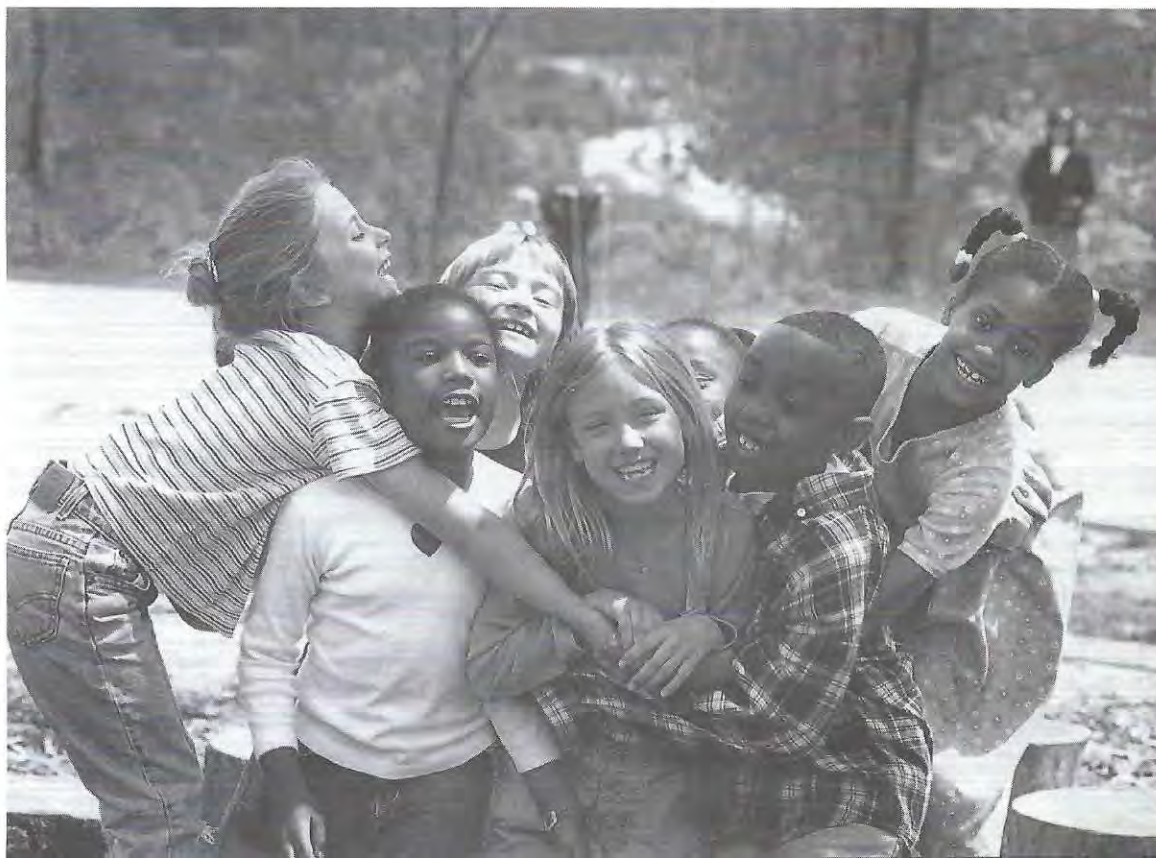
The physical body, which consists of chemical elements and which has weight and dimension, is that part of the human being that we perceive most readily with our physical senses. It can be seen, felt, smelled, and so on. In ancient India it was called the *annamaya kosha*, or “body made of food.” In the past century, Western mainstream medicine has focused almost exclusively on the physical body. This was not the case earlier in the West nor has it ever been the case in non-Western countries. Among the kingdoms of nature, only the minerals have just a physical body.

The etheric body gives form and life to the physical body. The ancient Indian Hindus called it the *pranamaya kosha*, or “body made of vital energy (*prana*).” The etheric body is the source of all health and vitality. Its forces build up and shape the human body, cause it to grow, and repair it when it is injured or sick. The etheric body is called *chi* in China and *ki* in Japan and is utilized in East Asian medicine and martial arts. For the most part dismissed as a superstition by Western science, the etheric body is gradually coming to be recognized as a real part of the human being. Alternative therapies such as acupuncture and reiki utilize the life-bearing etheric forces in the service of healing. At death, the etheric body separates from the physical body, and the latter, bereft of its life-giving forces, decomposes. Plants have etheric bodies as well as physical bodies and thus are distinct from minerals.

The astral or “star” body (or what we call the “soul”) endows the human being with the ability to move, as well as with instinct and a basic kind of thinking and consciousness. The ancient Indians used the term *manomaya kosha*, or “body made of thought.” Our feelings, thoughts, impulses of will, likes and dislikes, agonies and ecstasies, our normal waking

During the second seven-year period of life, the emotional life of the child must be protected.

BETWEEN AGES SEVEN AND FOURTEEN, THE CHILD SHOULD BE ALLOWED TO MATURE AND DEVELOP AT AN UNPRESSURED PACE, PARTICULARLY IN HIS FEELING LIFE. FOR THIS THE CHILD NEEDS TO BE PROTECTED, HELD, AND DIRECTED BY HIS PARENTS AND TEACHERS IN THEIR ROLE AS LOVING BUT FIRM AUTHORITY FIGURES.





For the young child, an environment characterized by quiet, calm, and a regular daily rhythm is a necessary context for healthy development.

consciousness—all are activities of the astral body. Often a complex maelstrom, a locus of tempest and passion, the astral body is the province of psychologists, poets, and priests. But it may also be characterized by calm awakeness and clear consciousness. Animals also have an astral body, though one much less complex than that of human beings.

The I is the spiritual core of the human being, that which sets us apart from the animals. The Latin term *ego* is problematic because psychologists and philosophers have used the word in many different ways. The I is the eternal individuality, the spiritual being who inhabits our other three bodies. This eternal I is pure and free of “egoism”—which is rather an aspect of the desirous astral body. The I represents the objective judge within us, the source of discernment, insight, and conscience. It is the center of strength that maintains us through adversity. The needs and desires of the self-centered astral body are constantly diverting us from an experience of the I and occupy most of our waking experience. Meditation and religious practice seek to make us more sensitive and responsive to the guidance of the I. The I can be understood as “pure attention,” and its activity as “mindfulness.” The various religious traditions understand the destiny of the I in various ways. According to some traditions, after death the I goes to heaven or hell, depending on how well the human being has lived. According to others, the I is later reincarnated in another human body.

At birth an infant possesses all four bodies, but each is not yet “unfolded.” In the years before adulthood, each of the bodies develops according to a basic pattern. Unlike Pallas Athena, who emerged from the head of Zeus fully mature and clothed in a suit of armor, children experience a slow and gradual incarnation of their four bodies. At birth, the physical body comes into the world and grows very rapidly. Most of the energy and

resources of the child go into supporting this physical growth. This first stage lasts for about seven years. A second seven-year period brings the child to puberty, and a third to adulthood at about the age of twenty-one.

At birth the physical body of the infant is freed from that of the mother. The other bodies, though, are not yet so independent. The etheric body of the mother is intermingled with that of the child and surrounds and protects it. Within this second womb, the amazingly rapid and complicated process of physical growth takes place. During this period, although the child is physically separate from the mother, their etheric connection is such that the mother’s life forces continue to influence the child. This connection weakens as the child grows older and more independent.

When the child is around seven years old, the life forces undertake the emergence of the second teeth, the densest and hardest part of the physical body. This sign heralds a kind of second “birth.” The etheric body of the child is now independent from that of the mother. Also, the child’s etheric body need no longer be totally involved in the growth of the physical body. It is freed to help in the development of important human capacities—particularly those of memory and thinking.

It is for this reason that in Waldorf Education intellectual, academic work begins only after age seven. The younger child can often do such work earlier, but the life forces that are needed for the complex activity of building up the physical body will be diverted from their main task, and the healthy development of the physical body may be compromised. Premature academic demands also can lead to a loss of interest in and enthusiasm for learning. Some children are unable to do the work (because they are in fact not ready for it) and may experience feelings of inferiority. The phenomenon of “school sickness,” the refusal of young children to go to school, can result from this demand for early academic performance.

In the second period of seven years, the child is ready for academic learning. A true “declaration of independence” by the child usually occurs a couple of years later, around the age of nine. In this so-called nine-year change, the child experiences for the first time a clear sense of its separate identity vis-à-vis the world and other human beings. Some of the dreaminess of early childhood is replaced by a more awake (often startlingly so) confrontation with the world—including the adults surrounding the child!

During the second seven-year period, the child is enclosed in another protective envelope, the astral or

“feeling-life” womb. While the “etheric womb” of the first seven years is provided primarily by the mother, the astral womb is the product of the emotional and moral life of all the adults around the child. This is the basis of the maxim, “It takes a village to raise a child.” During these years the child still needs protection of her life forces. What is now crucial, however, is emotional protection from being exposed too soon to the realities of adult life.

The third seven-year period (from age fourteen to age twenty-one) is the period of adolescence whose onset is marked by puberty, the changing of the voice, and the development of clear sexual characteristics. This is the time when the astral body of the human being develops. David Elkind, well-known author of *The Hurried Child* and other books, maintains that today’s preadolescent children are being pushed prematurely into the world of the adolescent. They meet emotional challenges that they are too young to handle and are being robbed of their very childhood. This can lead to later problems, primarily in the realms of relationships, sex, and drug and alcohol use.

Between ages seven and fourteen, the child should be allowed to mature and develop at an unpressured pace, particularly in his feeling life. For this the child needs to be protected, held, and directed by his parents and teachers in their role as loving but firm authority figures. The child will then feel safe to experiment in a playful and innocent fashion, instead of being thrust too early into the more complex and confusing realm of grownup love and hate, the extremes of agony and ecstasy and trauma. Media and commercialism are the most common culprits in stealing the innocence of children in stable families. In broken families, the children are afflicted as well by parental tensions and conflicts. Too early an exposure to these influences and experiences can desensitize the child and maim the later ability to tackle the complex issues of human relationships with equanimity and common sense.

With the onset of adolescence, the feeling nature is released from the physical and etheric bodies and gradually becomes able to deal with the challenges of a more complicated emotional and social life. Parents and other adults around the child need to slowly relinquish the often uncomfortable role of authority figure that they have played. Virtually all traditional cultures have recognized the spiritual reality of the maturation of the child’s astral body and have marked this in “coming of age” ceremonies. While these have largely disappeared in our culture, the Jewish bar mitzvah and Hispanic “sweet sixteen” celebrations are remnants of this tradition.

Not until age twenty-one, though, is the individual fully accepted as an adult. At about this age the I, or spiritual ego, finally incarnates, though in fact the process may take two or three years to be complete. The right to vote was for many years reserved for this time when a more objective capacity for judgment was recognized. In many states, the right to drink alcohol, a substance that displaces the ego, is also associated with this level of maturity.

This picture of the gradual incarnation of the child is one of the bases for the effectiveness of Waldorf Education. It gives Waldorf educators a deep understanding of what children really need at each stage of their development. Nursery and kindergarten teachers and class teachers in the first three grades, for example, are acutely aware of the importance of the child’s etheric body. While some rare individuals can actually see these forces (the healer and author of *Hands of Light*, Barbara Brennan, is apparently one such person), for most of us, close observation, some training, and native intuition provide sufficient sensitivity.

The etheric or life-formative body can be characterized as warm and as pulsing with a calm, steady rhythm—something like a large human heart. It is just these qualities that we seek to provide for younger children. We must surround our children with warmth, both physical and emotional. Sometimes we need to struggle with them to put on their wool hat and extra sweater. At other times we need to impose an extra layer of parental protection. Creating a cozy and protected nest at home and at school conserves and strengthens the child’s etheric forces.

Rhythm in daily life is the other factor crucial for the well-being of the etheric body. The major rhythms that need to be developed and maintained for the child are those of mealtimes and bedtime. Children should have

Having responsibility for pets (large and small) helps children develop habits of care and service.



their meals and should go to bed at roughly the same time all seven days of the week (though holiday times may invite some flexibility).

Establishing this regular daily rhythm can be difficult for parents. As adults we are much more under the influence of our own astral nature and its wants, desires, and emotional ups and downs. Our desire to be somewhere else and to be doing something else and our desire to be spontaneous and undisciplined will often conflict with maintaining a regular schedule for our children. But part of being a parent is sacrificing one's own interests for the sake of one's children. And the vagaries of the adult's astral do nothing but disrupt the needs of the child's etheric body. Its rhythms are like those of the moon and the tides and, if supported by external rhythms, will hum along quietly and smoothly. What upsets and weakens the etheric body are the astral tempests and the accompanying disruptions of daily rhythms. The effect is passed on to the physical body. The endocrine balance is upset, adrenaline is released, and the breath and the circulation of blood are disturbed.

A challenge, especially for younger parents who themselves enjoy a more active life, is to protect their children from overstimulation, particularly before the age of nine. Among the things that adults take for granted but that can overtax the child are:

- travel and visiting new places
- time spent in automobiles
- literature meant for older children (*Harry Potter*, et al.)
- crowded places such as supermarkets, department stores, and sporting events
- roller coasters and other amusements that depend on fear and excitement
- participation in competitive sports
- rock and roll, jazz, and other music meant for adults
- radio, television shows, movies, videos, and video games that are meant for adults and adolescents, not for young children

All of these influences—like the rock and roll music that, played in a greenhouse, causes the plants to shrivel and die—will weaken and dissipate a child's life forces.

A good deal of discipline and self-sacrifice are required to provide this etherically calm and protected space for a family. The desired mood can be compared to a cow's slow, even munching of grass. To persons of even temperament, this may not be difficult. For others, it will require conscious effort and the changing of established habits. The etheric body needs predictability, evenness,

and lots of rest. To provide this for their children, parents themselves need to slow down and, often, stay home or close to home a lot more. They need to carefully plan transitions from one activity to another so that they and their children will not be rushed and pressured. And they need to avoid emotional outbursts when with the children.

A wholesome diet, rather than one based on fast food and snacks, is also important. Fat is a nutrient that is most essential to the etheric body, and children should get a variety of high quality fats and oils from both animal and vegetable sources. The favorite food of children today is french fries, but oil that has been heated to high temperatures is not so desirable. Especially important are the so-called "essential fatty acids" available most plentifully in oil-rich fish, but also in dark green vegetables; seeds, including flax seeds; and nuts, particularly walnuts. Parents should not impose their own low-fat, vegan, or vegetarian diets on their children. Such restricted regimens can harm children physically and emotionally.

Some forms of attention deficit and hyperactivity syndromes respond to a therapy focusing exclusively on extra care for the etheric body of the child. This involves an improved diet that includes omega-3 essential fatty acids; the establishing and maintaining of a clear rhythm of daily and weekly family life; and setting and enforcing firm, clear limits on behavior. In order to grow and thrive, these children need a clear and predictable environment in which they can feel safe.

When a child's etheric body is not getting the care and protection it needs, the signs can include irritability, dark circles under the eyes, poor appetite, being easily agitated or overly tired, and a pale, sallow complexion. Frequent illness can also be a symptom of etheric draining. A quiet and calm home atmosphere; a clear, regular daily rhythm of life; the exclusion of junk food and of the junk stimulation of television and other electronic media; and the loving attention of grounded adults together comprise "chicken soup for the ether body." These measures can revive and strengthen the life forces in a child and in doing so can restore a healthy blush to well-rounded cheeks.

For the older child, it is the unfolding soul that needs protecting. A child of ten, or even of thirteen, is not ready to deal with the world of "drugs, sex, and rock and roll," though in many instances this world may have already been thrust upon her. The attention and vigilance required of parents to create this protection for children and early teenage children is great and also time-consuming. Parents must stand not only as role models but as authority figures in providing guidance to their children. Being an authority figure does not mean

being authoritarian. You need to stay interested in what your children are interested in and maintain an active dialogue with them and their friends. But parents need to recognize that their primary role is not to be their child's buddy, but rather to be a source of higher judgment that sets reasonable standards of behavior and follows through to see that they are observed.

In considering influences on our children's evolving soul life, we have to decide what we want to keep out and what we want to encourage. The list of things to exclude includes adult and adolescent clothing and fashions—particularly sexually suggestive attire, tattoos, body jewelry, and so on. These are obvious, but we also need to be aware of anything that is too stimulating—garish pictures of monsters and of bizarre machines, for example, and other “in-your-face” images. All forms of media need to be monitored, not just for surface content of sex, violence, and crude language, but also for their intensity or pacing. In Japan a few years back, the succession of images in a children's television program was so frenetic that it caused seizures in hundreds of children. Other research has shown that exposure to video games resets the threshold of pleasure in children so that everything else is boring to them—especially school.

The aim here is to help children retain the innocence and wholesomeness of childhood, to delay their encounter with adolescent “cool” until they are truly adolescents. Parents can effectively act as guardians at the threshold of the adult world. Other practical steps include: putting off the time when a child has a personal radio or stereo; not allowing a television or computer in the child's room (otherwise, content and amount of use cannot

be monitored); limiting television and video viewing; watching with your child when he does watch (so you can serve as a moderating influence); and being firm about his seeing only movies that are rated for his age.

On the other hand, we want to promote those things that enrich our children's feeling life and create in them an appreciation for what is true, beautiful, and good.

Waldorf Education works toward this goal consciously, but support at home is important. Encounters with nature and cultivation of the arts should be a regular part of family life. Individual music lessons (in addition to the group lessons at school) are an effective character builder. They have a much more salubrious impact on the young child than the sports and martial arts instruction that many children receive. Those latter are more appropriate for teenagers, not for preteens.

The experience and habit of serving and of caring for others can begin with children having regular chores at home—for which they are not paid! Taking care of pets also is an excellent step in this direction. Older children can be given the experience of caring for the young, the sick, the elderly, the disabled, and the poor.

Finally, each family needs a clear set of behavioral and moral standards that are made explicit, that are taught to the children, and that are modeled by the adults. Manners; civility; consideration of others; truthfulness and honesty; the treatment of all family members, friends, acquaintances, and strangers with respect; and speech that is civil and free of profanity are all part of this. There is a coarsening today in speech, behavior, and morals that can be redeemed only by conscious and concerted efforts within each family.

WITH THE ONSET OF ADOLESCENCE, THE FEELING NATURE IS RELEASED FROM THE PHYSICAL AND ETHERIC BODIES AND GRADUALLY BECOMES ABLE TO DEAL WITH THE CHALLENGES OF A MORE COMPLICATED EMOTIONAL AND SOCIAL LIFE.

Playing a musical instrument can teach teenagers self-discipline, provide creative satisfaction, and focus energies during a potentially tumultuous period of life.



Religious instruction and practice can also be important for a child, even if the parents themselves are not motivated in this direction. One antidote to the dubious offerings of popular culture is the cultivation of a sense of wonder and magic in childhood. The noted Jewish commentator on family and religious issues, Rabbi Harold Kushner, maintains that, for children, being taken to church or synagogue, experiencing the beauty of the sacred space—the light streaming through stained glass windows—and of the ritual, and taking part in the service foster an expansion of the child's being. They prepare the child to appreciate a level of reality that is unseen, that is not just about buying and having.

The celebration of seasonal rituals also promotes the development of this spiritual sensitivity. The predictable rhythm of these events itself is nourishment for the child's etheric body. Even the young child will sense that something very pure and important is going on. The child's active participation in the ritual starts to empower the nascent astral body.

When the child reaches adolescence at about the age of fourteen, the astral body or soul is now ready to experiment in the world with a greater degree of independence, to learn by trial and error, and to accept the consequences of these experiments. Teenagers still lack a fully present ego or I to guide them in an objective, balanced way. That is why they still need adults near at hand. Parents have to learn the intricate dance of moving in and out of their children's lives, allowing a measure of freedom, and then reasserting their authority as needed—and seldom getting the timing just right. Teenagers need space but they also need extremely vigilant parents.

It is ideal if a teenager has one or two major, wholesome interests (playing a sport, horseback riding, playing a musical instrument, repairing old automobiles, collecting stamps, and the like) into which abundant adolescent energies can be channeled. A physical activity or sport is good, because it can become a healthful lifelong activity as well as be an efficient outlet in the moment. If an adolescent is unable to find a focus, the excess energy can lead to behavioral and/or emotional problems. But extracurricular activities should not be overdone. Moderation and balance between activity and relaxation is as important here as in the other stages of childhood. Too many lessons, too many sports, and too many hours of part-time work have their own dangers. The topic of adolescence warrants much more discussion, but we must save that for another article.

That a human being consists of four bodies (one of which is physical and three of which are "spiritual") is an

ancient truth that has for the most part been set aside over the past century. It is, however, a concept that can be grasped and applied in our work with children. For parents, an understanding of how these four bodies manifest in the child's development can be a source of guidance throughout a child's growing-up.

Sheltering and promoting the unfolding of these spiritual bodies in the right way requires the parent to acquire a new perspective, new sensitivities, and new ways of doing things. Life today in our highly technological, commercially oriented society is largely antagonistic to a child- and family-centered way of life. Still less does it pretend to honor anything so delicate as the unfolding of the etheric and astral bodies. Raising a child with these concerns in mind and in the midst of economic and societal pressures is a daunting task. It is not possible to do a perfect job of meeting all the subtle needs of the child, and it may not be advisable even to try. Again, moderation and balance are key.

Fortunately, raising a child is not an exact science. There is a built-in forgiveness factor and hence some room for flexibility. Make more time for your children, especially as they grow older. Take frequent looks at your family and its life together. Ask whether you meet your own standards of civility, of morals, of spirituality. Finally, protect your children from losing their childhood prematurely—neither you nor they will regret it.

THOMAS POPLAWSKI, *Renewal staff writer, is a trained eurythmist and a psychotherapist. A longtime student of Anthroposophy, he writes and lectures on a variety of topics, including child rearing, education, and meditative inner work. Thomas lives in Northampton, Massachusetts, with his wife, Valerie, a kindergarten teacher at the Hartsbrook School, and their two young sons, who are students at the school.*

. . . PARENTS NEED TO RECOGNIZE THAT THEIR PRIMARY ROLE IS NOT TO BE THEIR CHILD'S BUDDY, BUT RATHER TO BE A SOURCE OF HIGHER JUDGMENT THAT SETS REASONABLE STANDARDS OF BEHAVIOR AND FOLLOWS THROUGH TO SEE THAT THEY ARE OBSERVED.

THE SCIENCE OF WALDORF EDUCATION

BY STEVE STOCKMAN



RUDOLF STEINER, THE FOUNDER OF WALDORF EDUCATION, UNDERSTOOD SOME THREE GENERATIONS AGO THE MULTIFACETED NATURE OF HUMAN INTELLIGENCE AND MADE PROVISION FOR THESE FACETS IN THE WALDORF PEDAGOGY AND CURRICULUM.

This student's warm and self-confident smile bespeaks her developing interpersonal and intrapersonal intelligences.

There's a move afoot nationally to "quantify" education. Limiting the number of students per class, requiring a certain amount of homework in the early grades, giving annual standardized tests—these responses to the problems in a troubled educational system are part of an effort to find the "science" of education and to put that science to work in the classroom.

In stark contrast to this move to standardization and quantification stands Waldorf Education, with its large classes; its fairy tales and stories; the emphasis on art and music; a reluctance to test, grade, or give homework to children until the sixth or seventh grade; and its abhorrence of standardized testing. These and other elements give Waldorf Education a calm, rhythmic, spiritual quality that is palpable. It is this unique ambiance that attracts many parents. They go to a school fair or other function; they sense their child's and their own response to the school and have a feeling, an intuition that this is something special.

Is Waldorf Education only about the "art" of education, and not the science? This is an urgent question. At critical points in their child's schooling, parents must make a

decision about the value of this education. Parents of kindergartners must decide about going into the elementary grades. In the eighth grade there is the decision about continuing in the high school. Is there a way to understand the success of Waldorf Education in terms of today's educational science? The answer is yes. Many of the principles and practices that Rudolf Steiner expressed over eighty years ago are supported by today's educational research.

The theory of "multiple intelligences" developed by Howard Gardner provides one possible framework to understand the success of Waldorf Education. Gardner, a professor at the Harvard Graduate School of Education, has received fourteen honorary degrees for his work, as well as the 1981 MacArthur Prize Fellowship.

The theory of multiple intelligences challenges the idea that there is only one kind of measurable human intelligence—what is commonly known as the IQ, or intelligence quotient. Rather, Gardner suggests that intelligence is comprised of several distinct capabilities working alone or together. He calls these capabilities "intelligences" and originally identified seven of them:

(please see box at top of next page)

THE SEVEN INTELLIGENCES

LINGUISTIC INTELLIGENCE: verbal ability, such as demonstrated in writing and speaking;

LOGICAL-MATHEMATICAL INTELLIGENCE: problem-solving skills using logic and math;

(The two intelligences listed above comprise the types of intelligence that are measured by the IQ test.)

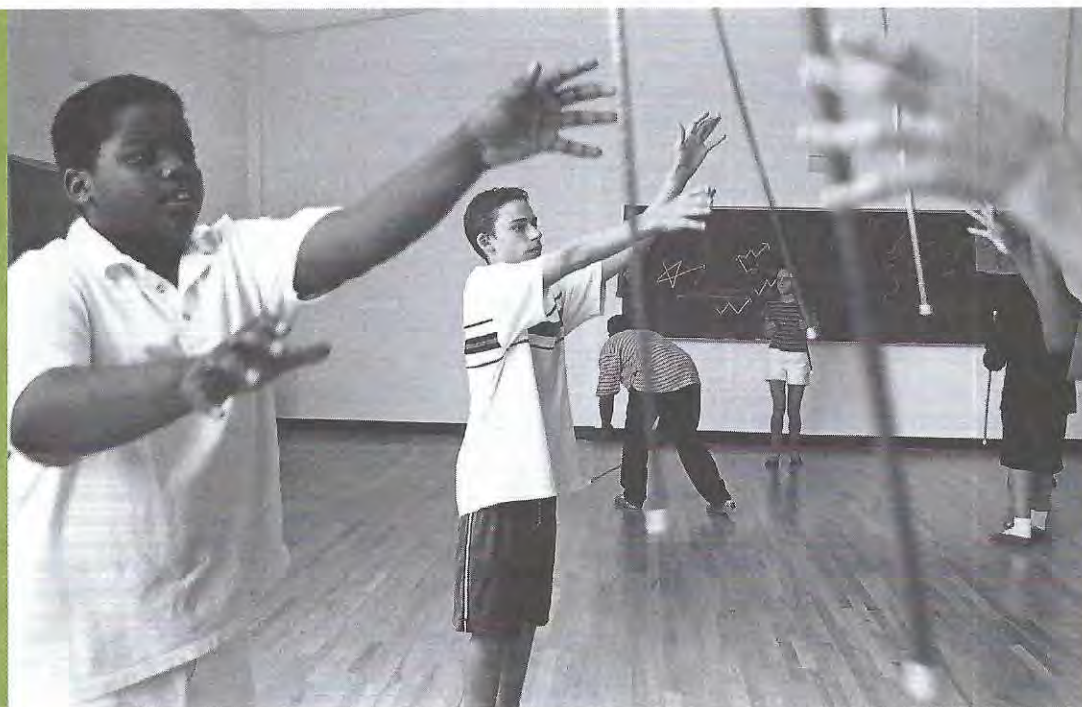
SPATIAL INTELLIGENCE: the ability to comprehend objects and images in three-dimensional space. This is used in activities such as sailing, running football plays, and sculpting;

MUSICAL INTELLIGENCE: the ability to discriminate between musical tones, sing, play an instrument, and compose music.

BODILY-KINESTHETIC INTELLIGENCE: the ability to use and control the physical body in athletics, dance, sewing, carving wood, and so on;

INTERPERSONAL INTELLIGENCE: the ability to relate to other human beings in a positive way and to understand the complexity of human relationships;

INTRAPERSONAL INTELLIGENCE: understanding of one's self.



Exercises with eurythmy rods develop interpersonal skills as well as exercising the spatial and bodily-kinesthetic intelligences.

Rudolf Steiner, the founder of Waldorf Education, understood some three generations ago the multifaceted nature of human intelligence and made provision for these facets in the Waldorf pedagogy and curriculum. He also understood and used three corollary principles, implicit in Gardner's theory, that support and highlight the importance of the theory of multiple intelligences:

1. **Each person is stronger in some intelligences than in others.** A world-class gymnast (kinesthetic, spatial intelligences) may be unable to carry a tune (musical intelligence). A successful politician (interpersonal, linguistic intelligences) may have scored in the 400s on his math SATs (logical-mathematical intelligence).
2. **If a person is taught in a way that utilizes her more developed intelligence, she will learn faster and will master the material more completely.** In dance, some learn better with verbal instruction (addressing their linguistic intelligence). Others will be confused by a spoken explanation, but will learn in the actual doing (using bodily-kinesthetic intelligence). A teacher can convey the fact that $4+4=8$ by writing on the blackboard (appealing to logical-mathematical intelligence) or by showing the class two separate piles, each of four beanbags, on a desk and pushing them together (addressing spatial intelligence).

Each individual will respond most strongly in his preferred style of learning. Thus, teaching the same material in ways that address the various intelligences, as Waldorf Education does, makes it more likely that each child will learn the material.

3. **If an individual is taught a given content in ways that engage more than one style of intelligence, the learning will be more complete.** A child taught a math concept verbally, symbolically, kinesthetically, and spatially will have more ways to store that concept and will be able to apply it in diverse situations. Using multiple styles of teaching the same material builds a deeper understanding of the material in the child, what Waldorf educators mean (in part) when they talk about teaching the “whole child.”

Since its publication in 1983, Gardner’s work has been a significant influence on mainstream education, in every area from early childhood education to seminars for adults. Yet few mainstream educators realize that Rudolf Steiner incorporated the same concepts into Waldorf Education nearly seventy years before the term “multiple intelligences” was coined. Nor do they realize that the Waldorf movement today is a successful, living demonstration of Gardner’s theory. Gardner himself does know about Waldorf pedagogy and has said that it is one approach that effectively uses the various forms of intelligence to educate children. In any case, Gardner’s work, in turn, offers convincing, scientific, yet easy-to-understand support for Waldorf Education.



This fifth grader, knitting with four needles, is exercising (mightily) his spatial and bodily-kinesthetic intelligences.

Of course, Gardner’s theory does not explain *everything* that is wonderful about Waldorf Education. Waldorf Education is also an art form, and there are many intangibles, including the imagination, inspiration, and intuition of its teachers. Waldorf schools also are enriched by a strong sense of community and by the cultural and spiritual insights and activities based on Rudolf Steiner’s teachings. This in turn strengthens the larger community.

Becoming familiar with theories that parallel Steiner’s work helps us invite more people to understand the beauty and importance of Waldorf Education. It opens us up to a dialogue with the “outside world” that can help us share Waldorf with others and allow our teaching to be touched by work that will enhance it.

So the next time somebody asks you if there is any scientific theory to explain why all this eurythmy and storytelling and throwing beanbags and painting and music can add up to a serious education, the answer is, “Yes, there is, and it is one of the most respected and comprehensive scientific approaches to education. Have you ever heard of Howard Gardner’s theory of multiple intelligences?”

STEVE STOCKMAN makes his living as a writer-director. His nearly full-time hobby is being president of the board of trustees of the Westside Waldorf School in Santa Monica, California.

9/11 AND AFTERWARD AT A MAINE WALDORF SCHOOL

BY RICHARD SASSAMAN

"IT'S ONE THING IF YOU'RE IN
A TERRIBLE SITUATION AND
YOU'RE REALLY GOOD AT
COPING WITH IT.... IT'S
ANOTHER IF YOU'RE ABLE TO
WORK TO CREATE SOMETHING
THAT'S BETTER THAN THE
DIFFICULT SITUATION YOU'RE
IN.... WALDORF EDUCATION
PREPARES STUDENTS TO DO
THAT ADDITIONAL THING."

Waldorf Education has been called "schooling the imagination," but few people could have imagined the tragic events of last September 11th. Even after Acadia School in Bar Harbor, Maine, got a warning phone call that morning from a parent, the staff wasn't sure exactly what had happened.

"I wanted to confirm it was true, what the facts were," says administrator Marie LaRosee, "but in our offices we don't have a television. We don't have a radio." Finally she sent her assistant, Kristin Bennett, out to the parking lot to listen to a car radio. "Kris came back in and told me that indeed something had happened, and it was very big," LaRosee recalls. She then left the school and headed to the town ballfields about a half-mile away, where the twenty-one children in Acadia School's first three grades were at recess with teachers Jessi Nunes and Emily Bracale.

"Marie came to the playground and asked, 'Have the children spoken to anybody? Has anybody spoken to them?'" recalls first/second-grade teacher Nunes. "Her concern was that they would have heard something, and been afraid. We decided that we wouldn't tell them, but would make sure at the end of the day that each one was picked up directly by a parent—that we should let the parents decide what, and how, any of the children should be told."

Third-grade teacher Bracale remembers, "What struck me at that moment, when Marie came up, was that at faculty meeting we were reading *The Work of the Angels in Man's Astral Body*, a lecture by Rudolf Steiner, so as a faculty we had already been considering the reality of angelic forces guiding us in our work with the children. This was a critical moment for me out on the ballfield, imagining the World Trade Center being destroyed, and having my administrator standing there telling me that I'm in charge of these children until the end of the day. I wondered if there was going to be a full-blown war by then. I said to Jessi, 'If ever there was a time to believe that angels are guiding us, it's right now.'"

LaRosee, who came to Acadia School in 2001 following eighteen years' working in Maine's public schools, explains, "What's different, I think, is that Waldorf teachers have a sense of the impact that something like this could have on a young child. In the public schools, it's not that they don't consider that, but they think about it in a different way. They just think, 'It's okay to tell them. It's the truth, and they need to know.' The attitude is just matter-of-fact. For me that doesn't make sense. It's just putting it on the plate, putting fear in children, without really knowing what their reaction will be, and without being able to deal with those reactions."

"What was so horrifying about September 11th," Jessi Nunes said a few weeks after the attacks, "was that all the safety grownups had felt was gone. So how can we make the children feel safe, when we ourselves don't feel safe?"

In the third grade on September 12th, Emily Bracale used an example close to home:

"I emphasized how in this community, and here in this school specifically, we take care of each other. One of the boys had forgotten his lunch and was in tears. I said, 'Can everybody donate some food, so he has something to eat?' Later I said, 'See how we all took care of him? That's what you need to know, that you're living in a safe, loving community.' The class didn't need to be told that. They said, 'Yes, yes, you're right! It's so good here, we love living on this island, and we love going to this school.' It was obvious to them that they're in a protective community.

"That's a different tack from the reality approach you might get in another school, where they're going to bring the television on wheels into the classroom and say, 'Look,

kids, current events! Watch the tape loop, and let's discuss it.' It's as if the news has to be assimilated instantly. We went more into personal discussions; I told some fairy tales; we did painting—so that the children could work through their own personal reactions."

"IN THE FIRST AND SECOND GRADE, THEY ARE STILL IN A WORLD OF FANTASY AND STORIES. THE [CHILDREN] DON'T NEED TO BE CONFRONTED WITH REALITY AT THIS TIME. BY ALLOWING THEM TO BUILD UP AND WORK THROUGH THEIR FANTASY WORLD AND TO COME OUT OF IT ON THEIR OWN—RATHER THAN PULLING THEM INTO THE HARSHNESS OF LIFE—WE STRENGTHEN THEM TO MEET THE REAL WORLD AND ALL THAT'S GOOD AND BAD IN IT."

"It happened in the time of Michaelmas, which is about slaying dragons and using fire for goodness and light as the season grows darker," Nunes says. "On September 12th, I told the class a story about being afraid. I made it up as I went along, a story about something really scary happening. Then I asked

them what they had heard about the day before.

"I let them ask me questions, and we talked about what we all were afraid of. They were afraid of spiders, shadows, trees outside at night when you can't tell they're trees, and we talked about those things. They didn't tell me that they were afraid of bombs, fire, war, or anthrax.



"We overthink what we think children are asking for," Nunes believes. "They're asking for something that meets them where they are, in their world. In the first and second grade, they are still in the world of fantasy and stories. They don't need to be confronted with reality at this time. By allowing them to build up and work through their fantasy world and to come out of it on their own—rather than pulling them into the harshness of life—we strengthen them to meet the real world and all that's good and bad in it."

Nunes, who grew up on Long Island, was strongly affected by the destruction in New York City. She recalls that in the days following September 11th, "I started to shy away from the heart of the Waldorf first-grade curriculum, the fairy tales. I definitely stayed away from fairy tales that contained any retribution for evil."

"But then," she says, "I realized they really needed to hear such stories, because the point of what we're doing is to show them there are choices. In the fairy tales, even if they are gory and disgusting to grown-ups, the children are hearing something very different. They are learning what happens when you don't live an honorable life, and that will help them make right choices later when confronted with something bad or evil."

Children are just as literal as adults, Nunes believes, "but they don't have the base of experience adults have. Out in the world now, everybody is talking about retribution and how the evildoers have to pay for this, but the children hear it much more simply. They're hearing these stories for themselves, as a foundation for their own moral development."

In Acadia School's Acorns and Oaks circle, Barbarina Heyerdahl works with expectant mothers and mothers with new babies. Heyerdahl, who attended the Rudolf Steiner School in New York City for thirteen years, also leads adult workshops and seminars explaining Waldorf Education.

Talking about the uncertainties raised by the events of last September, she says, "I often paraphrase, and sometimes expand, a talk Jack Petrash [an experienced class teacher at the Washington Waldorf School] has given, describing how one of the few things we can safely assume about the future is that it will be more complex than the present. And the problems will be bigger. So how can we prepare children for a future that we can safely assume is going to be challenging but whose specifics we can't anticipate?"

"One big problem with an information- or specific skills-based education is that it may no longer be relevant by the time the children who receive it become adults. People will need to be creative thinkers, able not only to creatively analyze problems, but also to synthesize solutions. They're going to have to be very observant and be able to put together what they observe in innovative ways."

"Jack talks as well about the importance of having a sophisticated emotional life and also a good understanding of one's self as an individual; about having an interest in and an ability to empathize with others; and an interest in building bridges with others, even if they have views diametrically opposed to your own."

Even more importantly, Heyerdahl feels, "The goal is not just to have children who are resilient, who can deal with whatever comes at them in the future, which is undoubtedly going to be complex and challenging. We also want them to be proactive in helping to design a better future."

"It's one thing if you're in a terrible situation and you're really good at coping with it," she says. "It's another if you're able to work to create something that's better than the difficult situation you're in. My sense is that Waldorf Education prepares students to do that additional thing."

Of the weeks following September 11th, third-grade teacher Emily Bracale says, "I thought a lot about the range of the Waldorf curriculum in the eight years of the elementary school. The students are going to get a very complete view of human history. I thought of the social studies and history classes coming up, and just planted a seed: I said it's not that [September 11th] is an abnormal event. Over the course of human history there have always been wars, and people have always been doing nasty things to each other. That's why we're always learning how to do good, how to be brave, and how to be courageous."

"This is where I see a huge difference between my previous work in the public schools and what I'm required, or asked, or invited to bring to this class. Here, I really do put forth ideals. I'm saying to my students, 'Yes, there are problems in the world, but there have always been problems in the world. How can you learn to be a problem solver? And how can you solve your own problems unless you can work with, and resolve conflicts with, your classmates?'"

"The word 'affirming' really is key," Bracale says, "because I'm not denying there are problems. I'm *affirming* that there are good things. Rather than going with the grim reality-check mode of 'Well, here are the facts, kids, better grow up and learn to bear it,' I'm trying to come in with enthusiasm and give them the sense they can have a lot of hope for their future, that there's no doubt at all they will have an interesting future."

RICHARD SASSAMAN is a writer living in Bar Harbor, Maine. He is the author of the local history, *Bar Harbor Police Beat* (1994). His freelance journalism has appeared in some fifty magazines and newspapers ranging from *Air & Space/Smithsonian* to *Whole Earth Review*, and including *American Heritage*, the *Christian Science Monitor*, *Modern Maturity*, and *Sports Illustrated*. Richard became a founding parent of Acadia School in 1996. His wife, Susan, has served the school as development director and chair of the board and currently teaches the preschool, called the *Morning Garden*. Their son, Ezra, is in Jessi Nunes's class.

TAKING ADOLESCENTS SERIOUSLY:

A REPORT ON THE 2001 WALDORF HIGH SCHOOL RESEARCH CONFERENCE

BY RONALD E. KOETZSCH, PH.D.

OF THE ROUGHLY 150 WALDORF SCHOOLS IN NORTH AMERICA TODAY, only about thirty have high schools. However, a decade ago the number was just ten, and now the start of each new school year finds at least two or three fledgling Waldorf high schools trying their wings. This reflects a growing sense of urgency among Waldorf educators and parents about the education of our children when they reach adolescence.

Increased interest in Waldorf secondary school education was behind a conference held in North Andover, Massachusetts, in October 2001. This Waldorf high school research conference was held at a Franciscan retreat center amid the at-once radiant and fading colors of a New England autumn. About ninety participants came from schools and Waldorf communities around North America. These included Waldorf high school teachers and administrators, anthroposophically oriented medical doctors and psychotherapists, eurythmists, and a priest of the Christian Community. The keynote speaker was Dr. Michaela Glöckler, head of the Medical Section of the School of Spiritual Science at the Goetheanum in Dornach, Switzerland.

The conference was conceived and organized by the Planning Group of the Waldorf High School Research Project, an official standing committee of AWSNA. Founded in 1999, the committee meets four times a year and includes Andy Dill of Kimberton, Pennsylvania; Douglas Gerwin of Wilton, New Hampshire; Antje Ghaznavi of Toronto, Ontario; David Mitchell of Boulder, Colorado; and Betty Staley of Fair Oaks, California. In the last two years, the Planning Group has sponsored a number of research colloquia in specialty areas such as chemistry, computer studies, history, the life sciences (environmental studies), mathematics, and movement. This conference was its first major interdisciplinary conference. The work of the group has been generously funded by the Fetzer Institute, the Glenmede Trust, the Michael Foundation, the Waldorf Research Institute, the Shared Gifting Group of the Mid-States Program, and the Waldorf Schools Fund, as well as private donors to the Rudolf Steiner Foundation.

The aim of the conference was to examine Waldorf high school education in North America today in the context of the real personal and educational needs of adolescents. Two years prior to the conference, the committee commissioned about twenty-five Waldorf experts in a variety of fields to explore innovations in the Waldorf high school curriculum and pedagogy. The result is an extraordinary set of research papers addressing aspects of secondary education in a vital and inspired way.

In his paper "Idealism and Humanity," for example, Paul Gierlach describes a seven-year investigation (carried out at the Honolulu and Saratoga Springs, New York, Waldorf high schools) into teaching a ninth-grade history main lesson in an innovative way. Rather than listening to a teacher's presentation of historical dates and data, students in small groups design an ideal society. At the end of the block, each group makes a presentation to an audience of classmates, parents, and teachers. Gierlach's paper includes an assessment of the impact the block has had on students over the years and the long-term lessons that students have carried well beyond their high school.

In "World Music as a Source of Improvisation and Composition," Cat & Wil Greenstreet report on their work with students at the Austin Waldorf High School. Students are exposed to various types of music from around the world, which then form the basis for individual and group exercises in improvisation and performance. Surveys of students taken over four years indicate a very positive effect on the broadening of their musical tastes and interests, awareness and appreciation of cultures other than their own, on their sustained interest in playing a musical instrument, and on their ability to discriminate between different kinds of popular music.



A high school student's rendering of an Old Master's sketch of a human head.

"Digital Arts in the High School," by Dick Oliver, teacher at the High Mowing School in Wilton, New Hampshire, investigates the practical and spiritual effects of an arts-based approach to advanced technology education in the high school. It urges the reader to go beyond the concept of the isolated computer lab. The first part of the paper contrasts the archetypal roles of artist and critic in human life and education and examines the relationship of human beings to digital technology. The second part, entitled "A Digital Arts Curriculum," suggests how to integrate traditional visual and performing arts with digital editing, always keeping in mind the goal of supporting in the student the healthy, balanced development of both artist and critic. Specific topics and projects are suggested, including scriptwriting, ray-traced and hand-drawn animation, audio recording, photographic composition, and digital cinematography.

Other research paper titles include "Research on Study Skills" by David Mitchell; "The Problem of Teaching about Evil" by Eric Philpott; and "Creating a Culture of Awareness: Developing Communications Skills for Waldorf High School Students" by Betty Staley.

Some of the papers were presented at the conference. Valerie Baadh had the participants up and moving as she demonstrated how she uses spacial dynamics™ and ballroom dance to help students develop grace and coordination. The sight of certain pairs of teachers doing idiosyncratic versions of the "Castle Walk" the length of the Franciscan library will not soon fade from the memory of those who witnessed the event!



Drawing from a high school student's main lesson book on the Renaissance.



A circle field from a high school geometry lesson.

These research papers are an exciting intellectual smorgasbord that will interest Waldorf class teachers and parents, not just Waldorf secondary teachers. They are available as individual monographs or as a collection on CD from AWSNA Publications.

Each of the three full days of the conference began with a plenum session. The focus of the morning session on these days was on one of three aspects of the human being: physiological, psychological, and spiritual. The questions asked were:

What changes do we see happening in, for example, the psychological realm of the adolescent?

What compromises the healthy development of this aspect?

What can we as teachers do to promote the healthy development of the psychological dimension of the adolescent's being?

In the first part of each morning plenum the moderator solicited observations and insights from the participants, drawing on their considerable experience and wisdom. This attempt to encourage more participation and to promote sharing of research among the teachers, doctors, and counselors present was very successful and enlivened and enriched the conference. In the second part of the morning sessions, Dr. Glöckler gave her views on the topic of the day and also addressed issues that had been raised earlier.

Later in the day, smaller special-interest groups met and dealt with issues and innovations in a variety of fields: extracurricular activities, movement and sports, drama, English language and literature, mathematics, computer science, and so on.

Here too the underlying question was: What are the needs of the adolescent today and how can these needs be met?

I was invited to the conference as a journalistic fly-on-the-wall and, as avocational humorist, to give spice to the morning and evening announcements. Several things about the conferees and about their work together made a deep impression on me:

- Their dedication and enthusiasm. Often I found myself shaking my head in amazement and respect and thinking, "These people work with adolescents 6-8 hours a day, and they like it!"
- Their commitment to the underlying principles of Waldorf Education and to the deepest insights of Anthroposophy.
- Their openness to innovations in content and teaching that really serve the needs of adolescents.
- The underlying sense that the task of the Waldorf high school teacher is ultimately a spiritual one. Of course they teach mathematics and history and English, and so on, and they help prepare students for college and a career. But ultimately they are helping the student become a human being in the full and highest sense of the term: a free, creative, thinking being capable of acts of selfless love.

It was not incongruous that the conference was held at a Franciscan retreat center. At the closing plenum, in fact, Dr. Glöckler read a prayer attributed to the saint:

*Lord, make me an instrument of Thy peace;
Where there is hatred, let me sow charity;
Where there is injury, pardon;
Where there is error, truth;
Where there is doubt, faith;
Where there is despair, hope;
Where there is darkness, light; and
Where there is sadness, joy.*

*O, Divine Master,
Grant that I may not so much seek to be consoled, as to console;
To be understood as to understand;
To be loved as to love;
For it is in giving that we receive;
It is in pardoning that we are pardoned;
And it is in dying to ourselves that we are born to eternal life.*

Amen.

The Waldorf High School Research Project has organized the annual AWSNA Teachers' Conference for 2002. This will take place in Kimberton, Pennsylvania, June 22-26, 2002. Its title is "Ascending the Developmental Staircase." The subtitle, recognizing the fact that the education of the adolescent begins years before adolescence, is "A Conference on Adolescence for [Teachers of] K-12."

BOOKS *in Brief*

THE RIDDLE OF AMERICA

EDITED BY JOHN WULSIN

AWSNA Publications (Fair Oaks, Calif.), 2001
348 pages \$30.00

This is an anthology of articles by writers who are seeking to understand the geography, history, culture, and destiny of America from a spiritual perspective. Almost all of the writers are Anthroposophists (many of them are Waldorf teachers as well) and use Rudolf Steiner's insights to illuminate the meaning of this broad, beautiful, and inscrutable land.

The thirty-five articles are arranged in sections that deal with mythology; geography; music, art, and literature; immigration; education; and "more riddles." The article titles include:

"Awakening Spiritual Consciousness through Legend: The Legend of Huitzilopochtli" by David Mitchell;

"North of the Border" (about Canada) by Philip Thatcher;

"What is American in American Art? A Summary Survey of Two Centuries" by David Adams;

"Emerson's Epistemology with Glances at Rudolf Steiner" by Gertrude Reif Hughes;

"Choosing America as a Place for Incarnation or Immigration in the 21st Century" by Virginia Sease; and

"Multiculturalism and Waldorf Education in America" by Linda Williams.

This book offers profound and original insights into the past, present, and future of America. It is a volume that again and again will stimulate and challenge the reader.



STEPPING BACKWARD INTO SPACE:

BY ANNE GREER

A RITE OF PASSAGE AT A WALDORF HIGH SCHOOL

All traditional cultures have marked the passage from childhood into adolescence with an initiation or rite of passage. Tests of courage and endurance, the receiving of special knowledge and skills, the taking of a new name, and rituals and celebrations are common elements in these rites. Through them, each young person, as an individual and as a member of a cohort, experiences the end of one period of life and the beginning of another and is welcomed into the existing community of mature persons.

In our modern, secular society most rites of passage have disappeared or have been trivialized. Getting a perfect score on a computer game or wearing a first bare-midriff outfit is not a rite of passage. But young people still need to experience in a clear, even ritualized, manner their passage from childhood into the early stages, at least, of adulthood. They need a chance to prove themselves worthy, and to be accepted into the community.

Recognizing these needs, many Waldorf schools have incorporated into school life a rite of passage for older students. This article describes an initiation for ninth graders at the Toronto Waldorf School, an event that takes place each year as part of the Michaelmas celebration. Michaelmas, observed on September 29, honors Michael, the archangel who presides over this period in history and who battles the forces of evil represented by the dragon.

Ed.

In the predawn darkness of late September, a drum begins to beat. Strong young voices chant, echoing through the campground:

*The earth, the air, the fire, the water,
Return, return, return, return.
Aiyai, aiyai, aiyai, aiyai,
Aiyo, aiyo, aiyo, aiyo.*

In their tents the ninth-grade students await with nervous anticipation the summons from the twelfth graders who are circling and singing outside. The night before, around the campfire, the older students had told the ninth graders something about what it means to be initiated—to say goodbye to the past, to be tested and tried, and, if found worthy, to be accepted into a new fellowship, in particular that of the Toronto Waldorf High School. The younger students had been told to be dressed warmly for the morning call, and most had slept in their clothes. Still, many shiver in the chill air as they crawl from their tents.

As each emerges, he or she is met by a twelfth-grade “guardian,” who has been discreetly observing and getting to know the younger student since school started three weeks ago. The guardians, standing behind their charges, light candles and, carrying blankets for the younger students, lead them through the darkness. They stop at a spot on a cliff that overhangs the river, for an hour-long silent vigil. The drum continues to sound an accompanying rhythm.

As the first light of day reveals the currents and mists below and wakens the birds to song, the drum suddenly stops. The group of over fifty young people returns silently to the campsite and stands quietly in a circle around a newly kindled fire. A large bowl of water is passed around, and each student drinks from it. Smoke from a sage smudge wafts through the air. A handful of earth carried in the cupped hands of a senior is rubbed and crumbled by each ninth-grader in turn. The older students recite words from the initiation rites of more than a dozen cultures—from ancient Egypt, Greece, and Persia, from the world’s religions, as well as passages from Shakespeare, Einstein, and Hannah Arendt. Then, both classes together say the morning verse that is recited at the beginning of each day in the upper classes of Waldorf schools.

On this morning, standing in the outdoors, enveloped in a mood of quiet contemplation, with the first warming rays of the sun gleaming through the scarlet and gold of the turning leaves, the students perhaps see a new meaning in the verse: (see inset)

The first part of the ceremony ends with a minute of quiet reflection.

Laughter and hunger then take over, and the older and younger students run together to the next campsite, where they are welcomed to an outdoor breakfast served by the eleventh-grade class. The slightly envious tenth graders, left out of things until now, look on from a distance. Next year it will be their turn to cook breakfast. This year, they take care of the wood supply for the four group campsites and plan the huge bonfire they will build for tonight.

After breakfast and cleanup, the three younger classes are off for a walk and lunch in the nearest village. The seniors

stay and prepare a long and exciting day of trials, both serious and comic, to test the ninth graders. That afternoon, while the whole high school, numbering about 130, looks on, each ninth grader will undergo four trials—of earth, air, fire and water.



Initiation rites usually involve acts of courage. Sometimes a little encouragement is necessary.

I LOOK INTO
THE WORLD,
WHEREIN THERE
SHINES THE SUN,
WHEREIN THERE
GLEAM THE STARS,

WHEREIN THERE LIE THE STONES.
THE PLANTS THEY LIVE AND GROW,
THE BEASTS THEY FEEL AND LIVE,
AND HUMAN BEINGS TO SPIRIT GIVE
A DWELLING IN THE SOUL.

I LOOK INTO THE SOUL
THAT DWELLS WITHIN ME:
GOD’S SPIRIT LIVES AND MOVES
IN LIGHT OF SUN AND SOUL,
IN HEIGHTS OF WORLDS WITHOUT,
IN DEPTHS OF SOUL WITHIN.
SPIRIT OF GOD, TO THEE I SEEKING TURN,
THAT STRENGTH AND GRACE AND SKILL
FOR LEARNING AND FOR WORK
IN ME MAY LIVE AND GROW.

In the earth trial, each student crawls blindfolded over muddy terrain calling out one half of a word and searching for a partner with the other half. “Cat,” calls out one muddy boy, while a girl at the other end of the field responds with “nip, nip.” But with all the students shouting at once, it takes a while until the two find each other and are rewarded by having their blindfolds removed. In the air trial, each student must move from one end of a field to the other, keeping a feather aloft by blowing, returning to the starting place each time the feather falls to the ground. The fire trial involves leaping over the flames of a campfire, not a large fire but, as all fires, unpredictable.

Finally, there is the water trial. The older students, under the supervision of their teachers, have spent several hours carefully preparing for this test, which involves a brief dip in the lake. They have built a platform that projects over the lake a few feet above the water; have made sure the water is neither too deep nor too shallow, and have searched for any potential dangers on the lake bottom. As the blindfolded ninth graders are led to the spot, still guessing as to the nature of the trial, several twelfth graders wearing wet suits are waiting in the water.

Still blindfolded, each young person is led to the edge of the platform, is turned around, and invited to step off backwards.

Some step off with hardly a hesitation, others ask for, and are given, a gentle push. Each loud splash is followed by a moment of expectant silence. Then a victorious and proud smile appears above the water, and, to the cheers of the assembly, the student tugs off the blindfold and regains the shore a few feet away.

In the evening everyone but the seniors gathers around an enormous pile of logs built by the tenth graders for a bonfire. One of the teachers speaks about the meaning of

Michaelmas and relates the biography of a person who showed courage in the face of great danger. Then, some distance away, a light appears and grows steadily brighter. The students of the twelfth grade, each carrying a flaming torch, approach in a line along the path. They are singing William Blake's "Jerusalem":

*Bring me my bow of burning gold!
Bring me my arrows of desire!
Bring me my spear! O clouds unfold!
Bring me my chariot of fire!*

*I will not cease from mental fight
Nor will my sword sleep in my hand,
Till we have built Jerusalem
In England's green and pleasant land.*

They form a circle around the waiting wood and, after a final chorus, together touch their torches to the pile and step back. The wood ignites, the flames grow, and sparks ascend into the dark night. The heat is so intense that the spell is broken by laughter and scuffling as blankets and logs are moved back. But after a few minutes, once again the students are pensive and quiet.

When the time seems right, one of the twelfth graders begins the naming ceremony. She calls forth the young woman from grade nine who has been her special charge. "I name you Shining Lake," she says, "because I have seen that you are deep and still, but your eyes sparkle with fun. Take this stone from the water's edge to remind you of this day." In turn, each receives a new name and a small gift from nature, as they officially become part of the high school.

Then there is singing. Someone begins a fiddle tune for dancing. Several boys leap over the dying fire. Stories are told. Slowly, tired, yet deeply satisfied, students in small groups, arms around each others' waists or shoulders, begin to wander away to the warmth of sleeping bags. Some are reluctant to let go of this magic time. They crowd into a sweat lodge constructed earlier by a few of the older students, where soulful exchanges continue until the predawn hours of another day.

Whatever are the thoughts of the students as they converse quietly in their tents or drift into sleep, those thoughts probably include:

- *What do I mean when I say, "I look into the world"?*
- *What is this "I" that looks into the world but at the same time sees itself looking into the world?*

Puzzles, complexities, riddles are the stuff of life. Another group of young beings has said goodbye to the simplicity of childhood and is well launched on the exciting, tumultuous journey ahead, taking with them the courage they will need as they travel.

ANNE GREER has recently retired from full-time teaching at the Toronto Waldorf School and now lives in Nova Scotia. She is an occasional guest teacher of main lessons in other Waldorf high schools. What she misses most about full-time teaching is camping trips like the one described in this article.

BOOKS

in Brief

COVERING HOME LESSONS ON THE ART OF FATHERING FROM THE GAME OF BASEBALL

BY JACK PETRASH

Robins Lane Press (Beltsville, Md.), 2000
114 pages \$19.95

Longtime Waldorf class teacher and Waldorf teacher trainer Jack Petrash has written a charming book on the art of fathering. In *Covering Home*, Jack takes principles from the game of baseball, mixes in the fruits of his own life experience and adds a dash of anthroposophical Waldorf wisdom. The result is an invaluable trove of inspired, practical, and useful advice for fathers to use in raising their sons and daughters.

A few of the chapter heads will convey the simple wisdom of this book:

If You Want the Season of a Lifetime, Prepare for It

Without spring training, the first half of the season would be a calamity.

Understand the Pace of the Game and Manage Accordingly

Like baseball, childhood has its early, middle, and late innings. Each period requires its own strategy to meet its particular needs. Here's what they are and how to manage them.

Good Habits Last All Season Long, So Establish Them Early and Practice Them Often

Establishing good habits from the outset can make all the difference. Yet it will take a long and determined effort to sustain the discipline throughout the entire season of childhood. Difficult? Maybe, but not impossible.

THE ART OF THINKING:

HELPING STUDENTS DEVELOP COMPLEX AND HOLISTIC THINKING SKILLS

COMPLEX THINKING:

THE GERM THEORY OF DISEASE

As thinkers we have a tendency to simplify matters. Just because a train of thought is logical and clear does not mean it does justice to the phenomena. In fact, when the succession of thoughts becomes exceedingly precise and consistent in itself, we can be sure that we're losing sight of the richness of the phenomena we're trying to illuminate. Especially in the ninth and tenth grades, when students should be gaining confidence and discipline in their thinking abilities, we as teachers can live with a certain degree of oversimplification, since we're training "thought muscles." But in the eleventh and twelfth grades we can begin to challenge the students more.

By taking different points of view to consider any given phenomenon or problem, students learn that the world is complex and that we need to adapt ourselves to this complexity. Otherwise, we'll end up with schematic notions, or, even worse, caricatures of reality. I believe Rudolf Steiner had this task in mind when, in speaking about the biology curriculum in the eleventh grade, he said that the teacher should emphasize mutual dependency or reciprocal causation (*Wechselursachenverhältnis*) and go beyond what we call today linear causality (from a meeting with teachers, June 21, 1922).*

I'd like to illustrate complex thinking by considering the germ theory of disease, which I often discuss in an eleventh-grade biology block. This is an especially good topic because it not only challenges the students' minds and opinions, but also gives them a picture of how science actually works. Again, I avoid a general discussion of the topic and use instead historical examples that can capture the students' interest.

Cholera is a deadly disease that spreads in epidemics. People who become ill with cholera suffer severe diarrhea and vomiting. Losing such large quantities of bodily fluids over a short period of time—hours to a couple of days—leads to dehydration and, if nothing changes, death. Nineteenth-century Europe witnessed numerous cholera epidemics.

In 1854 a cholera epidemic befell the city and environs of Munich, Germany. Max von Pettenkofer, a medical doctor and professor at the university in Munich, was asked to investigate the epidemic. He began by making a precise map of the outbreak. Pettenkofer found that parts of the city were being ravaged while others were spared. Areas near or along creeks, rivers, and canals as well as low-lying areas near water were especially hard hit. On

PART TWO

Part one of this article appeared in the Fall-Winter 2001 issue of Renewal. In part two, the author focuses on the development of both complex thinking and holistic thinking, drawing on fascinating examples from the fields of biology and zoology. Ed.

BY CRAIG HOLDREGE

... ONE OF THE MOST IMPORTANT TASKS OF WALDORF EDUCATION IS TO REACH THIS LEVEL OF UNDERSTANDING IN THE ELEVENTH AND TWELFTH GRADES. IT WAS FOR THIS REASON THAT IN DEVELOPING THE CURRICULUM WITH THE TEACHERS OF THE FIRST WALDORF SCHOOL, STEINER SUGGESTED THAT MANY OF THE TWELFTH-GRADE MAIN LESSON BLOCKS HAVE THE CHARACTER OF AN OVERVIEW. WE CAN BUILD ON THE KNOWLEDGE GAINED IN PREVIOUS YEARS AND PULL IT TOGETHER TO SEE OVERRIDING TRENDS—IN HISTORY, THE EVOLUTION OF CONSCIOUSNESS; IN CHEMISTRY, THE DIFFERENT KINDS OF SUBSTANCES AND TRANSFORMATIONS THAT CHARACTERIZE THE DIFFERENT KINGDOMS OF NATURE; IN BIOLOGY, THE OVERVIEW OF THE MAJOR PHYLA AND CLASSES OF PLANTS AND ANIMALS, AND SO ON.

hills and near watersheds, the incidence of cholera was much lower. He also discovered that where the soil was porous there was more cholera than in areas with poor drainage, where the water ran off more on the surface rather than seeping into the ground.

Pettenkofer noticed that the cholera areas were often poor and filthy. The air was filled with the horrible stench from open sewage pits and outhouses. On hearing this, students often exclaim, "How gross!" They don't realize that American and European cities began to have central sewage systems beginning only in the late nineteenth century. The sewage pits were usually not sealed, and the contents seeped into the soil. Wells were often contaminated with sewage. Pettenkofer was soon convinced that the intermixing of excrement and water was a major factor in the cholera epidemic.

Pettenkofer didn't believe, however, that cholera was simply being passed from one person to another. He observed that in many cases only some members of a family became ill, and that doctors and other caregivers, who regularly came into bodily contact with ill people, usually did not become ill. Evidently, each person has a physiological disposition or constitution that makes him or her more or less susceptible to the disease. Pettenkofer concluded that the proximity to water, lack of proper sanitation, and predisposing poor health were together responsible for outbreaks of cholera. He worked hard to change these conditions and is considered one of the fathers of public health and hygiene. Through his efforts, Munich became one of the first cities to install centralized sewage and water systems. Everywhere that sanitation was increased, cholera ceased to be a problem.

Another German medical doctor and scientist, Robert Koch, was also working to find what caused cholera. Koch traveled to Egypt and India to investigate outbreaks of cholera in the early 1880s. He performed autopsies on the bodies of people who had died of cholera. In every case he discovered comma-shaped bacteria in the intestinal walls. He never found these bacteria in healthy people.

Since intestinal dysfunction brings about the severe diarrhea in cholera, the question arises: Do these bacteria cause the disease? Is Koch's discovery a proof of the germ theory of disease? Since all the students "know"

(recall the problem I described at the beginning of part one of this article) that "germs"—bacteria and viruses—cause disease, most students think the answer is "yes." But with prodding, the students can recognize there is still a question. Koch's finding the bacteria in the corpses doesn't mean the bacteria caused the disease. Not only that, I've had students say that the bacteria might be an effect of the disease: because people are sick, bacteria can thrive in them. We don't really know—and Robert Koch didn't either.

Koch was an extremely careful and conscientious scientist. He was not prone to making overblown claims and wanted facts to be his judge. Koch learned how to grow bacteria in laboratory cultures. This was a momentous step forward in the history of bacteriology; most techniques for growing bacteria were discovered and perfected by Koch and his

assistants. When Koch investigated an illness in which bacteria were present, he took infected tissue and grew the bacteria in cultures. He then took the bacteria and injected animals—mice, rats, guinea pigs, rabbits—with them. The animals usually died of symptoms similar to those of the human disease. He would then isolate bacteria from the dead animals, culture them and inject other animals, again with fatal consequences. He repeated this process of isolation, culturing, and injecting again and again. (Usually at this point some students will be rightfully appalled by the suffering inflicted on the animals used in such research. A lively

discussion can ensue about the pros and cons of experimenting with animals in medical research. The study of history here again brings us to contemporary issues.) To his mind, Koch showed through this procedure that bacteria were the cause of such diseases as anthrax and tetanus. It is interesting that when Koch, in 1883, followed the same procedure with the comma-shaped cholera bacteria, the animals did not become ill or die. This was a riddle.

Although he did not have evidence from animal experiments, Koch did have ample indirect evidence from humans. He had observed, for example, in India that people were drinking from the same water in which they bathed, washed clothes, and in which children defecated. He concluded that the bacteria—which are excreted in large amounts in the diarrhea of the sick—are spread



A dairy cow, as any other animal, can be understood analytically, in terms of its separate attributes, or holistically, as a complete being.

from person to person, which causes an epidemic. Such evidence seemed compelling to Koch, and he believed that the comma-shaped bacteria were the cause of cholera despite the failure of his classical animal-experimentation means of proof.

Pettenkofer and Koch became outspoken adversaries with respect to the question of the causation of cholera.

Pettenkofer, while not denying the existence of the bacteria, did not believe that they were the sole cause of the cholera. He was so convinced of his opinion—which was based on years of work and experience—that he decided to do an experiment on himself. He would drink a culture of the bacteria to bring an end to what he considered to be an irrational fear of bacteria. He had a fresh culture of cholera bacteria sent to him. It contained about a billion bacteria. Before ingesting it, he drank bicarbonate solution to neutralize the acid in the stomach that normally kills bacteria. He didn't want any critics saying afterwards that he hadn't done a thorough experiment.

So Pettenkofer drank a culture of cholera bacteria. The next day he awoke and felt fine and was happy to speak with reporters—who had expected to find him dead. Three days later he had strong diarrhea, but it soon subsided and he never fell ill. (Soon thereafter one of his assistants repeated the experiment with similar results, except that he became feverish.)

A lively classroom discussion usually follows this description.

"Wasn't Pettenkofer stupid?"

"But he survived!"

"He was just lucky!"

When things calm down, we can begin to sort out the situation. What did Pettenkofer prove? He showed that the cholera bacteria are not the sole cause of cholera; if they were, he would have died. Did he prove that the bacteria have nothing to do with cholera? No. Rather, his experiment was a proof of his idea that the individual constitution is a very important factor in contracting the disease. It seems that both Koch and Pettenkofer were partially right and partially wrong. Together, the facts they pointed to provided a correct picture of infectious diseases: they are transmitted by the bacteria (or viruses),

but whether the person becomes ill or not is dependent on his or her susceptibility. Only the interplay of these two factors—germ and constitution—mediated by the environment gives rise to an infectious disease.

I go on to discuss with the students that we must be very careful when using the word "cause" in biology. I present other examples, sometimes quoting excerpts from scientific articles that use the word "cause." The students are now more critical and wakeful listeners and usually see for themselves that what is called a cause is usually only a partial cause.

Closer investigation always shows that biological phenomena are caused by the interaction of multiple

factors. For this reason, I make a radical suggestion to the students: to ban the word "cause" from the biological and medical vocabulary. Its imprecise usage fosters a great deal of unclarity. We would do well to substitute the word "condition" for the word "cause." We can say that bacteria present a necessary condition for the outbreak of cholera, but alone they are not sufficient to do so. A weak constitution is also a necessary condition. All the necessary conditions taken together can be said to cause the disease. When the students have understood this, they have entered the school of complex thinking. They see that we need more refined concepts to grasp the world adequately.



Every aspect of the physiology and anatomy of the great blue heron serves its ability to fly.

Complex thinking is not satisfied with simple answers. It always seeks to find the boundaries of theories and explanations in order to delve deeper into the matter. In the best sense of the word, complex thinking is critical. But it is also comprehensive and flexible in the continual search for new vantage points from which to illuminate a problem.

There are many study blocks in the eleventh and twelfth grades that are well-suited to cultivate complex thinking, though this does not mean it can be practiced in every subject. I think, for example, of the history of atomism in eleventh-grade chemistry, where students can learn about the evolution of atomic models and go beyond the billiard ball pictures they carry in their minds; and of the projective geometry block, in which students confront

concepts like infinity and duality (polarity) that stretch their minds in a wonderful way. At Hawthorne Valley School, we instituted an ecology block in the eleventh grade. Ecology is the scientific discipline that should (but unfortunately often doesn't) make complex thinking fundamental to its teaching, since ecology has everywhere to do with complex, changing relations. Most ecological problems are the stark testament of our inability to think complexly—or, one could also say, ecologically.

HOLISTIC THINKING:

THE COMPLETE PICTURE OF THE AMPHIBIAN AND THE REPTILE

The flexibility of thought we exercise in complex thinking is a prerequisite to understanding living phenomena. But it is not enough. I sometimes begin the twelfth-grade zoology block by showing the students a picture of an animal they know, say a cow, and then ask them how they would scientifically explain a cow. The question catches them a bit off guard. But someone usually comes up with a comment such as, "The cow has horns to protect itself." Once this kind of answer has fallen, a cascade follows. The cow has a tail to kill insects; it has wide-set eyes to see its enemies; it has big molars to grind grass; it has hooves to stand for long periods of time; it has a four-chambered stomach to digest grass, and so on. We go through many characteristics and explain each one by finding some function that it fulfills. This kind of explanation is relatively satisfying.

Whether they know it or not, the students have applied a popular form of Darwinian thought to the cow. I tell them how in Darwinian theory today researchers look at the different traits of an organism and consider them to be survival strategies. The "reason to be" for any given characteristic is that it allowed the cow to survive. On this theory, each characteristic arises separately and by chance, but because it is supportive of the animal's survival and its ability to reproduce, it is maintained in evolution.

When we've painted this picture, I ask the students to look at what the cow has become conceptually for them. The answer is: an agglomeration of separate characteristics. The cow as a cohering, whole organism that has these

characteristics has disappeared. But don't we want to understand the cow? The students can see a dilemma. We need to analyze in order to come to any kind of understanding; otherwise we remain in dreamy generalities. But if we lose the whole animal in this process, then what have we gained? The question is, can we learn to move beyond analysis and discover how the seemingly separate parts of an organism are in fact related to each other within the context of the whole creature? This, in fact, is the underlying task of the twelfth-grade zoology block.

It's an intriguing fact that while Darwinism has led to an increasingly atomized view of organisms, Charles Darwin himself was keenly aware of the "exquisite adaptation of one part of the organization to another part" (*Origin of Species*, chap. 3, p. 114). The wings of a bird are of course

wonderfully adapted to flight. But the capacity to fly is also expressed in its bone and muscle structures, in its lungs and circulatory system, in its senses and nerves—in short, in every detail of the bird's anatomy, physiology, and behavior. All of these features are, moreover, in continual interaction and dependent upon each other.

For example, a bird has large flight muscles on its breast. The breast-bone, correspondingly, becomes the largest bone in the body to support these muscles. The circulatory system is, in turn, built such that these muscles receive large amounts of blood during flight. The further you investigate the more you come to see how every part is inextricably

entwined with every other part. Goethe formulated this relation succinctly:

*All its parts have a direct effect on one another, a relationship to one another, thereby constantly renewing the circle of life; thus we are justified in considering every animal physiologically perfect. . . . Nothing can be added to one part without subtracting from another, and vice versa. ***

This wisdom-filled relation of the parts of an organism to each other is known in the science of comparative morphology as the law of compensation, or the law of the correlation of parts (after Cuvier).

It is one thing to establish the fact that organisms are fully integrated beings; it is another matter to understand



The frog, as an amphibian, can absorb water through its skin.

in a concrete case how everything in an organism hangs together. A true science of the wholeness of organisms is still in its infancy because it puts new demands on our thinking capacity. Holistic thinking demands that we immerse ourselves in details and then move from detail to detail, but with an eye toward the whole organism that expresses itself in every part.

Some of my most rewarding moments of teaching occur when I succeed in taking this approach with students. Why? First, because we are involved in a process of real discovery. I tell the students that we're searching for an understanding of animals and plants that they won't find in textbooks. Together we may find relations that have not yet been discovered. Secondly, because those moments of insight are deeply satisfying, "aha" experiences. In them, we have touched something essential. The animal or plant has begun to reveal its deeper nature.

The twelfth-grade zoology block provides an example. While amphibians (frogs, toads, newts, and salamanders) all lay their eggs in water, reptiles (lizards, snakes, turtles, and crocodiles) lay their eggs on land. This fundamental difference between these two groups of vertebrates is mirrored in their overall anatomy, physiology, and behavior. The eggs of amphibians are protected by a jelly-like mass and float weightless in water. The growing embryos take oxygen out of the water and nourishment from the yolk-rich egg. In contrast, the eggs of reptiles are covered with a dry, paper-like shell (crocodiles' eggs are hard and calcified like those of birds). Within the shell the embryo floats in its own egg-made fluid within the so-called amniotic cavity. The protection and buoyancy the amphibian embryo receives from its watery environment, the reptile creates internally through an additional embryonic organ. Even when an animal such as a reptile lays its eggs on land, its life begins in water—but in its own self-produced amniotic fluid.

The comparatively isolated reptile egg, resting in sand, soil, or leaves, has another "problem" compared to the amphibian egg. In the amphibian embryo, gases and waste products diffuse in and through the medium of the surrounding water. The reptile compensates for this lack of connection to its immediate surroundings by creating an additional internal organ—the allantois. This blood-rich organ functions as an embryonic lung as well as a bladder that collects urine.

The more immediate relation of amphibians to a watery environment extends into their further development. Amphibians go through a fish-like stage as larvae (tadpoles). They breathe through gills and swim limbless, propelled by a tail fin. They then experience a striking metamorphosis into adults. They lose their gills and develop lungs, limbs develop, and, in the case of toads and frogs, the tail is completely absorbed. Only after this metamorphosis can an amphibian leave its natal pond and venture onto land. Some amphibians remain their whole lives in water.

Amphibians have moist and permeable skin. In fact, they breathe more through their skin than they do through their lungs. The skin not only lets gases in and out, but also moisture. For this reason, amphibians remain bound to a moist environment even if, as is the case with many frogs and toads, they spend most of their adult lives out of water. When subject to dry air, a frog or toad will lose large amounts of its body moisture content. When it

comes into contact with water again, the body quickly replenishes fluid loss by drawing water in through its skin by osmosis. A dehydrated frog need not drink with its mouth; it can just stick a foot in water and suck up all the water it needs!

Every year in spring the amphibian's strong relation to water comes into play when the adult returns to the pond where its

life began. The female lays its eggs, which are immediately fertilized—the water once again acting as a medium—by the male's sperm.

Just as the amphibian's connection to water shows itself in its anatomy, physiology, and behavior, so does the reptile's origin in a self-contained egg on land find expression in its other characteristics. In contrast to the amphibian, the reptile hatches from its egg as a small version of the adult. It already has a thick, cornified, and dry skin. The skin is virtually water-impermeable. Just as the reptile egg becomes independent from an external watery environment, carrying its own fluid, so does the adult reptile's skin allow it to detach itself from the need for direct and ongoing contact to water. For this reason reptiles can live in very arid climates by conserving body fluids for long periods of time and producing very concentrated urine to minimize water loss. Their whole physiology is built around the independence from water.



Even though these turtles are at home in water, they will, as reptiles, lay their eggs on land.

Of course, many reptiles are water-dwelling—marine turtles, crocodiles and alligators, water snakes, and so on. They nonetheless lay their eggs on land and have thick, impermeable skins. In this way they are so-called primary land animals that then seek the water after hatching. Through their skin they remain in a sense detached from water within water, unlike amphibians.

The reptile's skin is not only impermeable to water but also to gases. Correspondingly, its lungs develop more pockets and a greater surface area to take in the inhaled air. Lung development is always correlated with the development of the circulatory system. In reptiles the heart has four chambers through which arterial and venous blood, coming from the lungs on the one hand and the rest of the body on the other, remain completely (in crocodiles) or mostly (in other reptiles) separate. In contrast, amphibians have three-chambered hearts in which the blood coming from the lungs and from the rest of the body is mixed together. Again we see the quality of interpenetration in amphibians and increasing separation and differentiation of internal organs in reptiles.

Through such considerations, the students see how each group of animals is a unified whole. They see how the amphibian's life and structure are imbued with an intimate and open relation to water; not only in general terms, but in all details of reproductive behavior, embryonic development, skin, breathing, and circulation. The reptile has closed itself off from the immediate interdependency with the watery world, and every facet of its being speaks of this separation and the corresponding development of inner functions and structures. The understanding of each group is heightened by the contrast to the other. This is why I often work with comparisons, so that the unique features of each animal stand out much more distinctly.

Coming to this kind of understanding demands that we not only register the characteristics, but that we actively recreate them in our imaginations. We need to form a saturated inner picture, say, of the amphibian embryo floating in water, surrounded by a clear jelly that mediates the exchange of substances and gases through the water. When we have built up this picture and then consider the amphibian's skin—thin, moist, and permeable—we see the same quality in another characteristic. This is holistic thinking.

Holistic thinking is so difficult because in our society we learn on the one hand to hold facts at a distance and on the other hand to use our imaginations in making pictures that have no relation to the external world. We don't bring the two together. Coleridge distinguished between fancy, which involves arbitrary picture making, and true imagination, which engages the world. In holistic thinking we need true imagination. We enter into a given phenomenon with our active imaginations and form pictures; we move to the next feature and build a new picture. In this sustained, wakeful process the wholeness of the creature can light up. This light can then illuminate further characteristics as one deepens the study of the organism.

The wonderful thing about this process is that otherwise isolated details become interesting, because they help shed more light on the organism as a whole. For example, only when I'd begun to grasp the underlying difference between amphibians and reptiles, did the way they make

poisons begin to speak, that is, to tell me something about the animals themselves. There are very poisonous tropical frogs that secrete their poisons through glands that are distributed over their whole skin. When you pick them up and have a small wound on the hand, the poison can get into your blood and poison you. In contrast, the reptiles have

poison glands concentrated in the roof of the mouth and must actively bite you and penetrate your skin with their fangs, through which the poison is injected into you. This is the same contrast we have seen before, but now showing a new nuance.

To my mind, one of the most important tasks of Waldorf Education is to reach this level of understanding in the eleventh and twelfth grades. It was for this reason that in developing the curriculum with the teachers of the first Waldorf school, Steiner suggested that many of the twelfth-grade main lesson blocks have the character of an overview. We can build on the knowledge gained in previous years and pull it together to see overriding trends—in history, the evolution of consciousness; in chemistry, the different kinds of substances and transformations that characterize the different kingdoms of nature; in biology, the overview of the major phyla and classes of plants and animals, and so on.



A king snake, a cold-blooded reptile almost seven feet long, raises its body temperature by basking in the sun.

Nothing is more important than to help the students school their abilities to see relations and connections, to see how things fit together in the world. This is precisely the capacity that humanity needs in order to find creative solutions to the myriad problems human beings have created, problems that lead to a dissolution, rather than to a building-up of the world.

* See Rudolf Steiner, *Faculty Meetings with Rudolf Steiner*, vols. 1 and 2 (Hudson, N.Y.: Anthroposophic Press, 1998). (These meetings were held between 1919 and 1924.)

** Johann Wolfgang von Goethe, *Scientific Studies*, ed. Douglas Miller (Princeton: Princeton University Press, 1995), 121.

SHORT BIBLIOGRAPHY

(A complete bibliography can be requested at info@natureinstitute.org. A number of Craig Holdrege's whole-organism biology studies can be found at www.natureinstitute.org)

- Darwin, Charles. 1979. *Origin of Species*. London: Penguin Books. (Originally published in 1859.)
- Evans, Alfred. 1973. "Pettenkofer Revisited." *Yale Journal of Biology and Medicine* Vol. 36, pp. 161-176.
- Goethe, Johann Wolfgang von. 1995. *Scientific Studies*. Edited by Douglas Miller. Princeton: Princeton University Press.
- Howard-Jones, Norman. 1984. "Robert Koch and the Cholera Vibrio: A Centenary." *British Journal of Medicine* Vol. 288, pp. 379-381.
- Knight, David. 1961. *Robert Koch*. New York: Franklin Watts.
- Ogawa, Mariko. 2000. "Uneasy Bedfellows: Science and Politics in the Refutation of Koch's Bacterial Theory of Cholera." *Bulletin of the History of Medicine* Vol. 74, pp. 671-707.
- Wieninger, Karl. 1987. *Max von Pettenkofer*. Munich, Germany: Heinrich Hugendubel Verlag.

CRAIG HOLDREGE is the director of the Nature Institute, located in rural Harlemville, New York. The Nature Institute is dedicated to research and educational activities applying phenomena-centered, holistic methods. Craig has been a biology teacher in Waldorf high schools for the past twenty years. Currently, he teaches part-time at the Hawthorne Valley School. He is also involved in teacher training and gives lectures on a phenomena-centered approach to science. Craig is the author of *Genetics and the Manipulation of Life: The Forgotten Factor of Context* (Hudson, N.Y.: Lindisfarne Press, 1996).



These bearded dragons, as reptiles, have thick impermeable skin.

BOOKS *in Brief*

THE GENIUS OF PLAY: CELEBRATING THE SPIRIT OF CHILDHOOD

BY SALLY JENKINSON

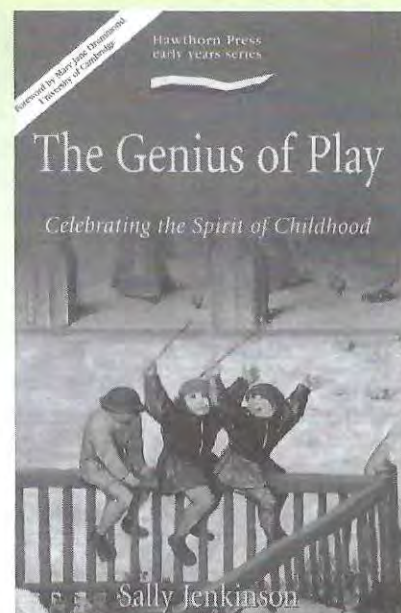
Hawthorn Press (Stroud, Gloucestershire), 2001
181 pages \$19.95

This book is a paean to what Rudolf Steiner called "the work of the child"—play. In the play of the child is the seed for adult capacities—for warm, fruitful social interaction; for experiencing and sensing in others a range of emotions; for imagination; and for creative problem solving.

The author, a Waldorf early childhood educator in England, cites current research to support this view of play. She also gives much practical advice to parents and early childhood teachers who want to support and encourage healthful play among children: what kinds of props and supplies are necessary (tables, chairs, blankets, and so on); what kinds of themes to introduce; and more.

The book is blessed by a striking and colorful cover (a detail of the painting *Kinderspiele* by Pieter Breugel) and by many excellent color photos of children at play.

The Genius of Play is available in North America through the Anthroposophic Press at (800) 856-8664.



PRACTICAL BEAUTY:

BY DAVID ADAMS

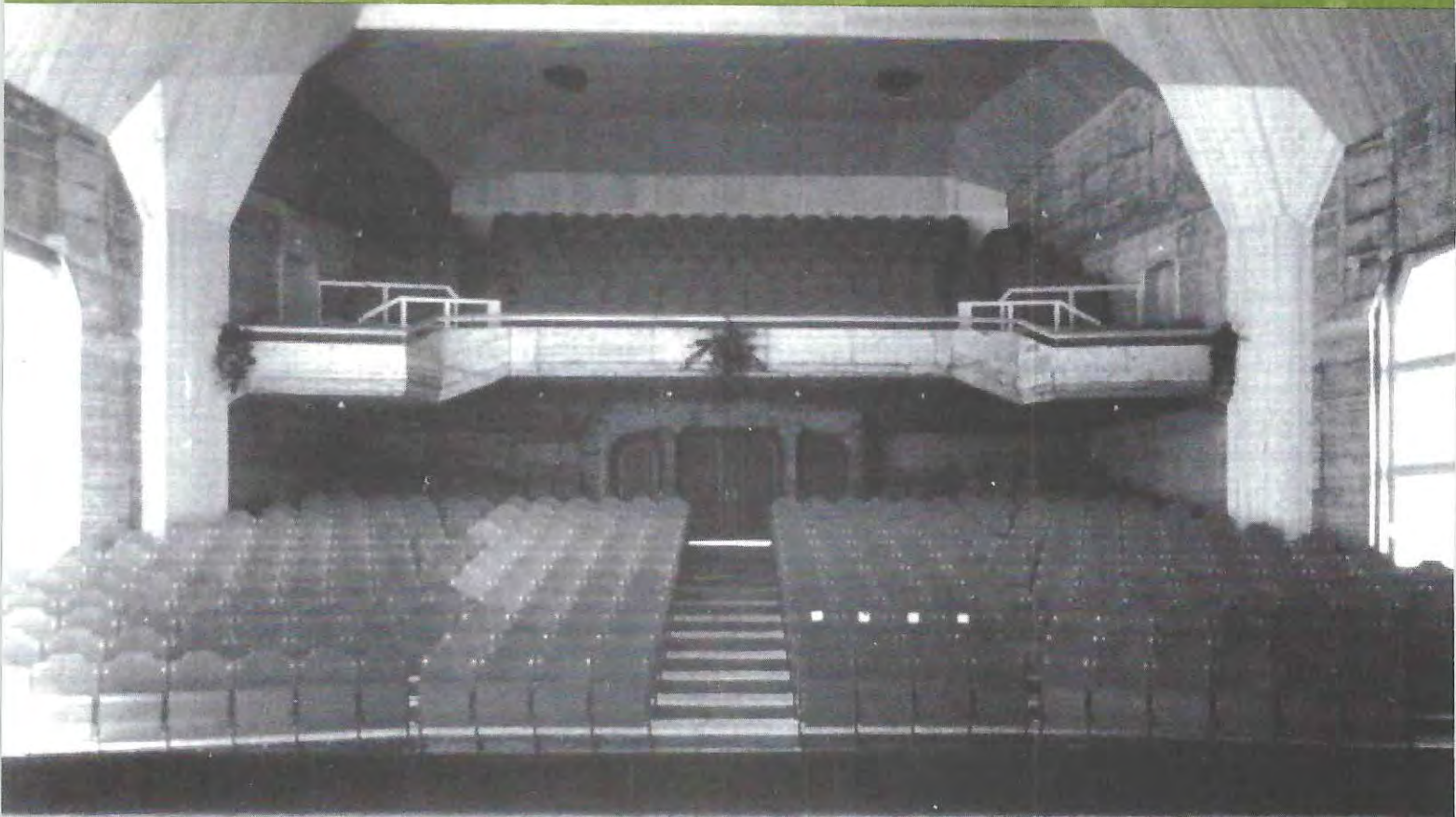


Figure 6. Auditorium of the Rudolf Steiner School, Ittigen (Bern), Switzerland

ORGANIC FUNCTIONALISM IN WALDORF SCHOOL ARCHITECTURE

It is widely acknowledged that architecture has a functional aspect, involving structural, practical, and physical factors. For example, a particular planned building must have so-and-so many square feet of space, will be built of wood or reinforced concrete, will have to withstand heavy rains and perhaps extreme cold, must have adequate spaces and facilities for the purposes for which the building will be used, and so on. The building design must incorporate these functions.

Rudolf Steiner—who himself designed seventeen buildings and gave more than seventy lectures on architecture—maintained that the best architecture does not arise only from considerations of such structural and physical functions, but also from a recognition that a building also affects our emotional, psychological, mental, moral, and spiritual natures. We

might call these aspects the “inner functions” of architecture, complementing its “outer functions.”

To authentically relate to and nourish these inner

dimensions of human experience, argued Steiner, a building should be designed with “living forms” that create “an environment that will express the human being’s inner nature in forms.”¹ Architectural forms and spaces should arise organically from both inner and outer functions. Sculptural forms with dynamism and organic movement better speak to

the human psyche than do the static or geometrical forms of most previous architecture and design. Hard or intellectually conceived forms can stir semiconscious feelings of alienation in their users; they are not experienced as physically or psychologically “user-friendly.”

PART TWO

Part one of this article appeared in the Fall-Winter 2001 issue of Renewal. It dealt with how the principle of practical beauty, or “organic functionalism,” can be applied in the arts and crafts. In part two, David Adams examines how this same principle can be applied in architecture, particularly school architecture.

In a school building, organic forms are particularly important since they support the organically related, mobile, and flexible thought-processes that Waldorf teachers strive to foster in their students. It creates a particularly harmonious connection between educational practice and educational setting when the surrounding architecture is designed from the same principles of "organic functionalism" that are taught in the crafts classes (as described in the previous issue of *Renewal*).

What might these ideas mean in detail when applied to the design of a Waldorf school building? First of all, it is important that the artistically based instruction of the teacher is supported by classroom spaces which are also artistically modeled (and for which a standard rectangular room is the least suitable). But, most essentially, the application of these ideas would involve progressive changes in the floor plans, ceiling designs, and overall shapes of classrooms as students advance through the grades and through different developmental phases (figure 1). The very classroom environment can then function as a supportive accompaniment to the maturational and educational development of the students.

The progression of the classrooms begins with the simple, whole, unitary, embracing, and roundish spaces of the kindergarten and preschool, reflecting and welcoming the children's experience of the world during those years.

Not only the entire room, but the windows, doors, ceiling, and furnishings can have a related curved or rounded form (figure 2).

That which is softer, more rounded, and unified in the preschool and early elementary years will gradually become firmer, more articulated, and more angular as students advance through their schooling. Classroom murals or pictures as well as wall coloring should also change through the grades, as described by Steiner.² For example, the walls of the first-grade classroom would be painted in warmer, reddish colors and feature images from fairy tales. In contrast, the walls of the sixth-grade room

would be painted in cooler, bluish colors and feature images of the individual human being, especially a human being in nature ("a man standing in a landscape in sunshine or rain; or a small lake with a man rowing on it"). Being surrounded during each school day by such pedagogically appropriate wall paintings can be an antidote to the less helpful influences of television, film, and advertising images to which most students today are subjected.³ In a similar way, all the elements of a building's design—lighting, doorways, corridors, stairwells, materials, arrangement of spaces, and so on—can be shaped out of an awareness of their role within the educational functions of the structure.

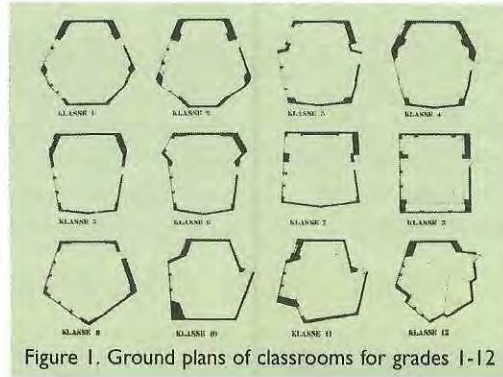


Figure 1. Ground plans of classrooms for grades 1-12

Figure 2. Ceiling plans for classrooms 1-4.

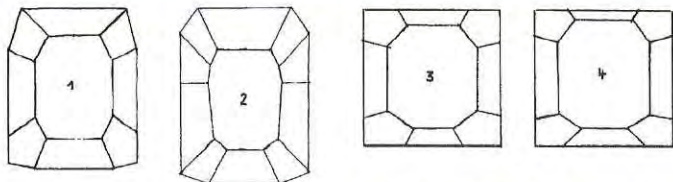


Figure 3. Rudolf Steiner School, Ittigen



Figure 5. Front of Rudolf Steiner School, Ittigen



Although I could profitably discuss some of Steiner's own building designs to make clear what his design principles might mean in architectural practice, the Rudolf Steiner School in Ittigen, Switzerland, provides a good example of how a building as a whole can manifest these design principles.⁴ Located just outside Bern, the school building was completed in 1977 and was the design product of architects Arthur Bieri and Gerhard Egger, working closely with Eckhart Dönges, a sculpture and eurythmy teacher at the school. The three-level building is carefully related to its surrounding environment—on the one hand, to the alpine mountain vistas on all sides (figure 3) and, on the other, to a traditional, broad-roofed Swiss farm-

house that stands nearby on the same property (figure 4). The school building is threefold in overall conception, with a center section flanked by two long wings. This configuration expresses the essential function of the building: a nurturing, motherly gesture of protection as the two "arms" of the school building embrace the broad plaza in front of the school where children (and parents) often gather. This same gesture is repeated in a sculptural motif over the central doorway (figure 5) as well as in the framing for the auditorium stage and the railing for the rear balcony, where orchestra or choir are frequently positioned during school assemblies and performances (figure 6).

Figure 8. Entrance lobby with stairs



Figure 7. Carved door handles



Unlike many featureless, rectangular modern buildings, the Rudolf Steiner School in Ittigen clearly announces its main entrance in bold, projecting forms and clearly identifies its front and rear sides. The rounded contours and fluidly sculpted stairs of this entrance invite the visitor to move upward and into the school. Even the door handles support the welcoming function. Spaces for the hand to fit comfortably inside are carved out of each wooden door, and

the right-hand indentation is cut and articulated somewhat more sharply than the left-hand one. This is an expression of the fact that most people are right-handed and, thus, more awake on their right side. The handles on the inside of the door are shaped like large, simple buttons, making it visually obvious that one pushes them to open the door, even as the forms on the outside express that they must be grasped and pulled. The organic visual design directly tells the user the function of the door with no need for "push" or "pull" signs (figure 7).

In the entrance lobby, tall, substantial columns clearly and reassuringly support the somewhat low—child-scale—ceiling. They also provide an architectural image of the "wakeful uprightness" that we hope students will adopt as they make the transition

from the outdoors to their classrooms (figure 8). On the stairways, a set of dynamically interpenetrating forms encourages the students to keep moving up or down the stairs. The doorways to each classroom feature organically designed frames whose flared bases express their solid



Figure 4. Farmhouse on the grounds of Rudolf Steiner School, Ittigen



Figure 10. Eurythmy room

foundations. The angularly curved tops reflect the natural human experience of a curved sphere above—that of our own head or of the sky (figure 9). Both the shape of the doorways and the type of wood used change as students progress through the classrooms of different grades, moving from rounded to more angular and wakeful forms.

The classrooms are arranged within the building in accordance with an awareness of the qualities of different spatial directions. Rooms for the more earth-related lessons (such as the sciences, gardening, physical education, woodworking, and metalwork) are located on the ground floor. Classrooms for grades one through twelve are located on the main (second) floor, moving from east to west. The spaces for more aesthetic or refined subjects, such as music, eurythmy, painting, and sculpture, are located on the top floor. A eurythmy room shows how the essence of an art—in this case its graceful, rhythmic movements—can be echoed in the overall design, while the element of uprightness is maintained and reinforced by sculptural pilasters along the side walls (figure 10). The room has radiant heating provided by a network of water pipes beneath the flooring. This system provides an even, cozy heat, particularly for the feet.

The Ittigen building is an inspiring and exemplary school design, built to provide an artistic and vital environment that arises from and supports the activities of students and teachers. It demonstrates that architecture can

make an important and positive contribution to the process of education when every element of design is given a functionally appropriate, individual form or structural gesture.

ENDNOTES

1. Rudolf Steiner, *Ways to a New Style in Architecture* (London: Anthroposophical Publishing Company and New York: Anthroposophic Press, 1927), 11; also published in Christian Thal-Jantzen, ed., *Architecture as a Synthesis of the Arts*, trans. Johanna Collins et al. (London: Rudolf Steiner Press, 1999), 72.

2. Steiner's recommendations are repeated in Hedwig Hauck, *Handwork and Handicrafts*, Part I (Forest Row, England: Steiner Schools Fellowship, 1968), 74-78; and can also be found in Part II of E.A. Karl Stockmeyer, *Rudolf Steiner's Curriculum for Waldorf Schools*, trans. R. Everett-Zade (Forest Row, England: Steiner Schools Fellowship, various editions).

3. For more on murals, see Rex Raab, "Isn't It Time to Move Forward?" *Steiner Education* 31, 1 (January 1997): 5-7.

4. For more information in English on Steiner's architecture, see Hagen Biesantz, et al., *The Goetheanum: Rudolf Steiner's Architectural Impulse*, trans. Jean Schmid (London: Rudolf Steiner Press, 1979); Rex Raab, Arne Klingborg, and Åke Fant, *Eloquent Concrete* (London: Rudolf Steiner Press, 1979); Wolfgang Pehnt, *Rudolf Steiner: Goetheanum, Dornach* (Berlin: Ernst and Sohn, 1991); Kenneth Bayes, *Living*

Architecture (Hudson, N.Y.: Anthroposophic Press and Floris Books, 1994); as well as the references in note 1 and in note 6 of the first part of this article on crafts.

DAVID ADAMS teaches history of art at Sierra College in Grass Valley, California. He previously taught at several state universities and art schools as well as several Waldorf schools. David is also director of the Center for Architectural & Design Research in Penn Valley, California.

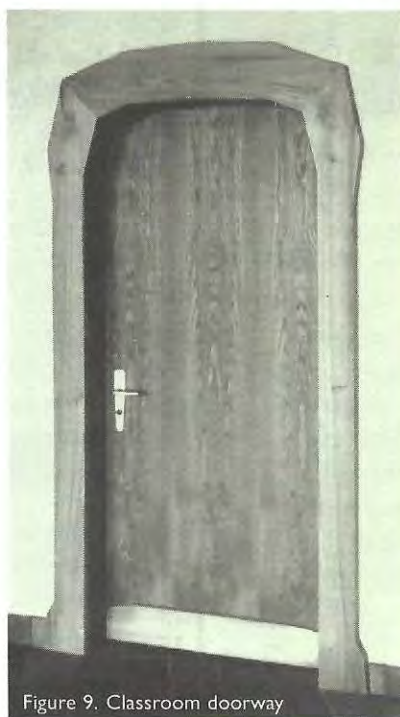


Figure 9. Classroom doorway

CHANGE IS IN THE AIR,

WALDORF AND ANTHROPOSOPHICAL INITIATIVES IN JAPAN



Ingun Schneider stands before a placard announcing one of her lectures in Japan.

and that there is a strong and growing interest in both Waldorf Education and Anthroposophy.

At the Tokyo Steiner Schule we take part in the third graders' lunchtime and are treated like honored guests. The students have added desks and chairs for us in their circle, and one of the boys leads us to our places. As lunch begins, each child unties the *furoshiki*, or decorative square cloth, which is wrapped around his *o-bento*, or lunchbox. Each lunch is a little work of art, with *o-nigiri*, or patties of cooked rice (usually pressed into a triangular shape) wrapped in sheet seaweed, and pieces of cooked vegetables, pickled white radish, fish, egg, meat, and so on. During the first ten minutes of eating, the children eat quietly. When the child in charge of the clock plays the chimes signaling the end of the silent eating time, several children start to talk softly.

The class teacher is Haruhi Goto, a graduate of the two-year teacher education program at Rudolf Steiner College in Fair Oaks, California. She tells me that she has cultivated quiet mealtimes since the first grade and that now the children choose to eat quietly for the first ten minutes. Some of the children use their chopsticks awkwardly. Apparently even many young adults in Japan today have difficulty using chopsticks, and few parents teach their children the proper method.

After lunch I join several children in a game of *o-hajiki*—a traditional game of aiming and collecting flat glass “marbles.”

During my childhood I lived in Japan between the ages of eight and fifteen. Last autumn, accompanied by my husband, I returned to that country for an eight-week tour. I visited many Waldorf preschools, kindergartens, schools, and study groups. I observed in classrooms, gave lectures and workshops, consulted with parents and teachers. We experienced at every point the warmth and hospitality of the Japanese people and the refinement of this ancient culture. We experienced also that there is a crisis in Japanese education and family life,

Later in the day I meet two second graders with their mothers and siblings; they run up to me and take turns playing the English hand-clapping game I had taught them and their friends during recess earlier that day.

My husband and I travel by high-speed train to several nearby cities and towns to visit groups of people who are studying Anthroposophy and/or Waldorf Education. Some of these groups have been active for years. Many of those involved have studied at anthroposophical institutions in Europe or North America for three or four years or more. They are deeply committed to their continuing studies, their own inner development, and to bringing Anthroposophy and its practical applications into Japanese culture.

The Waldorf preschool/kindergarten in Toyohashi—a city down the coast from Tokyo—is the most popular preschool in the city. Two hundred fifty people attend my two-hour Friday morning lecture at a rented hall. The talk deals with the sensory and movement development of children, with practical suggestions for parents and teachers on supporting that development. The questions show the concerns parents and teachers have about children in Japan



today. Teachers bring up the issues of child abuse (almost unknown a generation ago), the increase in families going through divorce, and children who refuse to go to school—often because of bullying.

After the lecture one mother asks me to emphasize the importance of setting limits. Most mothers focus on catering to their child's every want and whim and set few behavioral boundaries for their young children. Hence, many preschool and elementary school children talk out in class, treat parents and teachers with little respect, do not wait their turn, yell when displeased, push other children around, and refuse to do what is asked of them. Apparently decorum is better in junior high and high school, since there a student's behavior is a factor in gaining admission to the prestigious universities.

When I lived in Japan in the 1950s, very young children were indulged by parents and other family members. Now this indulgence lasts much longer and includes letting children do what they please. One mother described how three

EARTH, FIRE & WATER:

BY INGUN SCHNEIDER

five-to-six-year-old boys were sitting together, each intent on his own electronic game. A fourth boy came running up and asked to play with them. The others told him to go away. He ran to his mother, who then asked the mothers of the three boys to suggest to their children that they all play together. These mothers told her that she should buy her son the same electronic game! These three boys were engaged in the parallel play appropriate for much younger children, and their tendency not to connect to each other is worrisome.

The Steiner School in Kyotanabe—a small city between the ancient capitals of Nara and Kyoto—started in the school year that began in April 2001, with over 100 students in eight grades. Two of the teachers had had a Waldorf “Saturday school” for seven years in the town, and it is mostly these Saturday students who make up the student body of the new school. The school building is a new, wooden, two-story structure, combining Japanese and anthroposophical elements. Glass sliding doors lead into each classroom from covered outside wooden corridors. Before entering the school, students and teachers take their shoes off at the first-floor landing,

place them on shoe shelves, and slip their feet into their inside shoes. Separate slippers are in place inside the bathroom door, to be worn when in the bathroom. The view from the Kyotanabe school is of verdant hills, some houses, and of a neighbor’s vegetable garden. The school hopes to add a second building soon and to rent the parking lot next door for more playground space.



Students at Hibiki-no-Mura, an anthroposophical community, prepare to celebrate Michaelmas.

Here, as at the other schools, parents meet in regular study groups. The group that is studying difficult children arranges a separate meeting with me. We spend the first half hour playing games that serve to integrate the senses relating to touch, balance, and to one’s own movement and sense of life. These include clapping, finger, and string games. I want to show the parents that traditional childhood games and crafts, as well as daily activities in the home such as sweeping and cooking, are the best support for the healthy development of today’s children.

I also mention that the traditional Japanese diet—based on rice, seafood, and pickled and cooked vegetables (even for breakfast)—is better for children than the American-influenced eating patterns that have crept into Japanese home life. Many children today have cold, sweetened cereals and milk for breakfast. I believe that wheat and highly processed milk are not easily digested by Japanese children and may be related to the increase in eczema and asthma.

We also visit Hibiki-no-Mura, an anthroposophical community on the northern island of Hokkaido. The community was founded about five years ago by Yuko Omura. For the seven years previous, she directed the Nature and Arts Program for Japanese (a program she founded) at Rudolf Steiner College. The community, located in the coastal city of Daté, now runs a biodynamic farm, a kindergarten, and an elementary school with four combined grades and about thirty children. Adult education activities include an arts and Anthroposophy program, a Waldorf teacher education program, and summer introductory courses in Anthroposophy and Waldorf Education. Our twelve-day stay includes lectures and practical activities with the teacher education students and with the teachers at the



school, classroom observation, sightseeing, and a lovely all-school Michaelmas pageant. The area is rich in hot springs, and we get to enjoy many of them.

My conversations with parents and teachers reflect that child rearing, family life, and education are in a dramatic transition in Japan. Parents feel that many of the old practices treat children in ways that are restrictive and don't take their individuality into consideration, but they are unsure what to use in their place. This often leads to a loose, laissez-faire approach that serves no one. Children are not sure how to behave; teachers have to deal with increasing misbehavior; and parents are often at odds with their own mothers and fathers (the grandparents) on the issue of how the children are being raised.

The Japanese are going through the transition from a traditional group-oriented culture to one in which the individual is primary. Some parents expressed concern about children being self-centered and poorly integrated with the rest of the family. They wonder if this is because more children now have their own rooms and can have a level of privacy (and isolation) that was unknown in Japan until recently. Traditionally, family activities—taking meals, enjoying leisure time, even sleeping—have taken place in a single main room shared by all.

In recent years, a growing number of children have been refusing to go to school. Some junior high and high school students go to school but refuse to speak. Responding to these alarming trends, the government education authorities are easing the traditional heavy educational burden. School

weeks are being shortened, homework reduced, and academic standards lowered. Some parents protest, saying that today, with the economy in decline, it is important that Japanese children be able to compete. Some who can afford it put their children into private, more academically competitive schools.

Life in Japan is busy and lived at a fast pace. Sleep deprivation is an issue for both adults and children. Children's days typically include long commutes to school, many hours of classes, after-school "cramming" school, music lessons, sports, and so on.

Because of these various trends, there is growing interest in Waldorf Education. Parents are happy to find an education that emphasizes rhythm, peacefulness, gentle socialization without competition, subtle nourishment for the senses through natural materials, arts, music, creative play, and unhurried academics.

Japan is a nation in which each of the four elements is present in a powerful way: water in the surrounding seas, in the rivers, lakes, and flooded rice fields; air in the typhoons that blow through with fierce winds in late summer and early autumn; fire in the still active volcanoes and in the geothermal heat that creates the hot springs; and earth in the earthquakes that shake the ground beneath one's feet. I foresee that in the future Waldorf Education will flourish there.

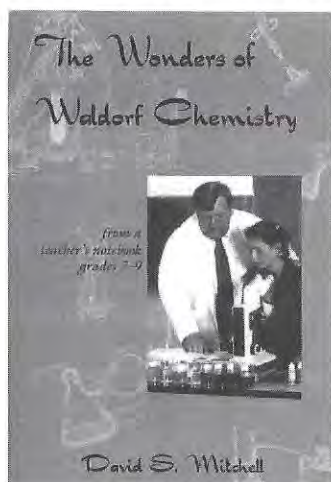
INGUN SCHNEIDER is a former Waldorf class teacher. She is now coordinator of the Remedial Education Program at Rudolf Steiner College in Fair Oaks, California. Ingun is also active as a lecturer and consultant specializing in learning and behavioral problems of children.

Space is a limited resource in Japan. These children at an urban Waldorf school ride their unicycles in an underground playground.



BOOK REVIEW

THE WONDERS OF WALDORF CHEMISTRY:



FROM A
TEACHER'S
NOTEBOOK,
GRADES 7-9

BY DAVID S. MITCHELL

AWSNA Publications
Fair Oaks, Calif., 2000
271 pages \$20.00

REVIEWED BY
ARTHUR AUER, M.ED.

As a Waldorf class
teacher "two times

around," I have twice taught chemistry to seventh and eighth graders. Each time, I struggled to understand and apply the many suggestions of the Waldorf chemistry books available at the time. Not trained in the sciences, I found it a challenge to translate the often theoretical descriptions into practical lessons with the limited equipment I had. My efforts were successful, but it was a monumental effort to sort out all the materials and all the possible ways of using them and then to have to infuse my lesson with an artistic element.

Here, at last, is a book that gets to the heart of the matter, that deals with essential concepts of chemistry in a profound way, and yet offers easy to apply, practical advice. David Mitchell's *The Wonders of Waldorf Chemistry* is a clearly written description of how to go about inspiring students to become absorbed in the marvels of chemistry. There are, in fact, sections entitled "Creating Wonder" and "Enthusiasm." In the preface, John Petering, a science teacher in Sacramento, who has closely collaborated with David Mitchell over the years, points out why this particular book is so immediately understandable and accessible to teachers involved at the ground level of classroom science. He characterizes the work aptly as a "harvest from the notebooks of a teacher with a breadth of experience . . . [who] has taught chemistry in these three classes over a dozen times at the request of class teachers."

The book offers a rich but manageable array of the essential topics and experiments for teachers to choose and freely adapt at the seventh-, eighth-, and ninth-grade

levels. It begins with valuable perspectives on how children develop scientific thinking stage by stage, the process of learning, and classroom pedagogy. The book provides critical guidelines for teachers preparing themselves for a real phenomenon-based science in the service of the healthy mental and spiritual growth of their students. For example, the author gives valuable reminders: *Put questions . . . then pause . . . at least five whole seconds before expecting an answer. . . . Don't answer your own question—draw it out of your students. . . . Use activities to allow students to discover the concept.*

The book is, above all, a "hands-on" manual containing a wealth of practical insights and tips on chemistry (equipment, supplies, safety, disposal of chemicals, and so forth), numerous experiments for each grade, and even text material readily adaptable for main lesson books. For example, the chapter entitled "Combustion" (for seventh-grade teaching) vividly describes and explains twenty-eight demonstrations on the subject. Demonstration #17 starts with the words: *The students are amazed to see a fire start with no match but just powder and liquid!*

The Wonders of Waldorf Chemistry not only proves to be a substantial and valuable science book, but actualizes what might be called "hard science with a human touch." Besides the many insights into child development, the book also includes biographies of great chemists, a history of chemistry, a delightful selection of poems, aphorisms, literary excerpts, and even humor to help teachers cope with adolescents. An artistic element pervades the book and demonstrates how the arts can enhance the sciences and help to make them human and even at times humorous.

*Beware the carbon atom, my class,
The molecules that form, the vapors that come to pass.
Beware the mixtures which rumble and grow.
Observe them in detail and note where they go.*

(From a skit written by seventh graders and David Mitchell for an all-school assembly)

The book is meant primarily for Waldorf class teachers. Waldorf parents also may find it interesting, providing as it does an experience of chemistry that is perhaps different from what they received in their own education.

ARTHUR AUER is the coordinator of the year-round program and internships of the Waldorf Teacher Training Program at Antioch New England Graduate School in New Hampshire. He was a class teacher at Pine Hill Waldorf School in Wilton, New Hampshire, for twenty years.

EX OPERIBUS RUDOLF STEINER

ON ADOLESCENCE

TEENAGE LOUTISHNESS

At the beginning of puberty there is in both boys and girls something that often baffles parents and teachers, something that contradicts the child's previous character—loutish behavior, especially among the boys. This is caused by the feelings of the astral body [the human soul, the locus of our instincts, passions, likes, and dislikes—which at this time is beginning to be fully unfolded]. The astral body is struggling to experience a right relationship to the physical body and through it to the whole environment. This inner struggle to discover a relationship between the subjective and objective world is unavoidable. It expresses itself as a denial of what the young person developed as a child. We sometimes do not recognize the teenager. They are very different from what they used to be (p. 74).

ADOLESCENT IDEALISM

Between the ages of thirteen and fifteen, boys and girls begin to incline toward ideals, toward something in life that is beyond the physical, sense-perceptible world. Even in the teenager's obnoxious behavior, we can see this inclination toward supersensible, ideal life, toward a higher purpose. This is a deeply seated conviction in the human being—life must have a meaning, a purpose—and in the young adolescent it first comes out (p. 121).

SELF-CONFIDENT TEENAGE GIRLS VERSUS WITHDRAWN TEENAGE BOYS

In girls between thirteen and twenty, the ego is strongly influenced by what goes on in the astral body. In boys, the process is essentially different. Their astral bodies do not absorb their egos in the same way. The ego remains in these years without the strong influence of the astral body. Hence boys are less forward. . . . They have a certain reserve, a tendency to withdraw from life, a love of withdrawing into themselves.

In contrast, the girl's ego is absorbed, more or less, by the astral body, and she lives less strongly in her inner being. Her ego-permeated astral body strongly affects her outward behavior, though. Hence, girls developing in a healthy, correct way at this time have a courageous, firm demeanor. They accentuate their personalities, are self-assured, and do not withdraw into themselves. It is natural for them to confront the world freely and unashamedly and to show their worth. Taken to an extreme, this impulse can lead to coquetry, vanity, the display of their inner soul life, self-adornment with jewelry . . . and a certain superciliousness (p. 76).

DISCOVERING THE TEACHER'S FEET OF CLAY

When the students reach puberty, the teachers must relate to them so that each may choose a hero "whose path to Olympus can be emulated." It is no longer up to the teacher to represent the ideal for the children, and he must recognize this and act accordingly. Until now, the teacher has been the authority who told the children what to do. Now the children readily perceive the teacher's weaknesses and shortcomings. And the teacher, if his interest in the students is honest and not egotistical, will teach with these possible feelings of the students in mind. This will result in a free relationship between teacher and students (p. 134).

ALL QUOTATIONS ARE EXCERPTS FROM RUDOLF STEINER, *EDUCATION FOR ADOLESCENTS* (HUDSON, N.Y.: ANTHROPOSOPHIC PRESS, 1996). THE EIGHT LECTURES IN THIS BOOK WERE GIVEN TO TEACHERS OF THE STUTTGART WALDORF SCHOOL, JUNE 12-19, 1921.