Engaging the Sense of Well-Being
School and Classroom Design in Waldorf Schools

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In a well-designed classroom, the teacher does not have to do all the "heavy lifting." Teaching and learning can be supported by the physical and designed environment, which contributes to a clear focal point, simplifies the students' visual field, and provides an atmosphere of calm that in turn lessens anxiety and improves performance. High value goals also include students' engagement with learning and teachers' feeling valued and successful. A sense of well-being prevails in a well-designed and aesthetically appropriate classroom.

The founder of Waldorf Education, Rudolf Steiner, stated on multiple occasions that the school's physical building enables and assists our karmic connections, that it can influence a person's future life path and can be the entryway into earthly material life. In short, it "is the foundation for all pedagogical striving" (Beck, p. 49).

School and classroom design in Waldorf or Steiner schools means more than a visual or tactile experience. There is an internationally consistent family resemblance among Waldorf schools, yet each is uniquely designed to serve its specific demographic. In general, a visitor will most likely notice curtains; colorful, uncluttered walls; a tendency to rounded corners; wooden frames around windows and chalkboards; natural materials in furnishings; and will probably report a feeling of welcoming calm. Teachers strive to enliven the 'feel' of the room and as recent scholarship is beginning to substantiate, people learn and apprehend with their whole body. The younger the child, the more true this is (see publications by Gladwell, Siegel, McGinn, Claxton).

As a seasoned veteran teacher and mentor, I see teachers burning out at an alarming rate in public schools, and to some, lesser, extent in independent Waldorf schools, while a number of students also struggle. One factor is the physical constitution of the learning environment. There is an urgency to this question, as it is generally accepted that education in the U.S. is at a crisis point. Recent research shows that simple changes in the environment can raise test scores, minimize absenteeism, and positively influence interpersonal behavior. As a teacher with experience in both independent and public charter Waldorf schools, I am eager to share time-tested approaches and design principles which seem to correlate with higher teacher satisfaction and student success. However, these principles are not yet researched or recorded in easily accessible ways and the literature on Waldorf education has, so far, frequently been largely self-referential or mired in specialized terminology.

My leading research question was to investigate how Waldorf Education and contemporary public school scholarship could maintain a dialogue and be mutually helpful. How can 100 years of Waldorf practices 'translate' into a non-Waldorf setting? Underlying Waldorf pedagogy is a highly differentiated view of the senses. Steiner identifies twelve senses that unfold throughout the stages of life, as the primary or lower senses lay a foundation for the later, 'higher' senses. The development of these senses is supported by the individual's interaction with the environment.

Starting Point and End Goal of Studies

The focus of recent empirical studies has largely been on reducing anxiety and raising low test scores. The effect of the physical building has been taken for granted until very recently. One highly significant difference between Waldorf and mainstream research is the conventional reliance on quantitative analysis among academic scholars and a very different methodology among those who write about Waldorf schools, who base their observations and conclusions more on qualitative and intuitive inquiry. A study of research methodology would be valuable, but is a topic too broad for this paper. Still, both Waldorf and conventionally academic authors agree that like a walnut shell, the man-made environment "selects and coerces behavior" (Cotterell, 1984).

Orsinger (2014) is critical of conventional design principles: "Unfortunately, the physical environment of the school has become nearly invisible to teachers and families, in part because it is so familiar; basic school design has not changed in one hundred years" (p. 136). Upitis states: "School architecture profoundly influences the outcomes of education. For a century and a half, we have built schools that lack adequate natural light, comfortable furniture, inviting entryways, and green spaces" (p. ix). The author forcefully highlights the

urgency of addressing the need for thoughtful planning as the number of newly built and renovated schools will dramatically increase in the course of the early 21st century. Upitis does not mince her words: "If schools are aesthetically, pedagogically, and environmentally deficient, they will sap the life right out of everyone who enters them" (Upitis, p. ix). Waldorf-inspired architecture offers a healing and life-giving alternative.

All authors reviewed in this study, both Waldorf-oriented and those who are not, agree on the priority that form must follow function, and conclude that each building will therefore necessarily be different from all others. It is the difference in perceptual framework and conceptual understanding between mainstream and Waldorf authors which makes dialogue challenging, and it is dialogue which points out the challenges and offers opportunities for clarification.

In each case, however, the unifying principle is the close association of the pedagogy and its 'clothing' in architectural forms. As the walnut shell both encloses and reveals (and forms) the nut within, the architecture/physical building of the school also participates in the successful realization of the pedagogy and offers a broader public statement about human-centered and developmentally-oriented education.

A Matter of Urgency

Public schools, including many Waldorf charter schools, are urgently in need of care and maintenance, and many studies have proven the negative impact of a substandard physical environment on students' test scores and sense of well-being. Over half of public schools in 2013/14 were in dire need of basic maintenance (Berglund, 2016). Windowless classrooms correlate with lower test scores (Li and Sullivan, 2016). Noise (road noise, flight paths, A/C and heating) negatively impacts school performance. Extremes of temperature are linked to lower achievement. Lower air quality correlates with decreased student attendance and impacts teacher performance (Cheryan et al, 2014).

The built environment delivers a silent but powerful message, yet more than only through its state of disrepair, the visual and aesthetic environment influences students at a deeper level: views of green landscaping boost test scores (Li and Sullivan, 2016); open-plan classrooms increase anxiety in middle and high school students with lower conceptual/maturity levels (Cotterell, 1984), yet roomier classrooms, wider hallways, and the availability of space to congregate address the needs of growing middle school students (Baker, 1997). Logical, unambiguous pathways support spatial orientation; easy access to unenclosed faculty work areas decreases anxiety levels in students; a view of green space from the classroom window can optimize students' recovery from stressful experiences (Li and Sullivan, 2016).

> [In Waldorf schools] form follows function, which means that the school building informs, protects, and shapes the activity within, which is teaching and learning according to the developmental levels of the students.

In this paper, 'design' encompasses the entire classroom environment from the architecture to the placement of desks and color schemes, and 'learning' is understood to mean cognitive, emotional, social and spiritual development. Many authors differentiate structural and symbolic features of the built environment. Structural features are more like the 'factory installed hardware', such as the floorplan, building access, the shape and size of rooms; symbolic features are more like the 'after-market installed software', such as arrangement of furniture, wall décor, and wall color, window treatments, etc.

From a Taoist perspective, the important thing about a cup is the empty space within, just as is the space within any vessel. Schools are vessels wherein teaching and learning take place; the shape and form of these man-made environments will shape and form the activity of teaching and learning. The physical environment can either support or hamper and hinder the work of educators and students. It is vital to pay attention to the future citizens held by the vessel of the classroom and school – an attention motivated by the understanding that education is both product and producer of civilization.

The Goal of Waldorf Education

Waldorf schools were founded in 1919, in the aftermath of WWI to educate the whole human being in such a way as to overcome the divisiveness of nationality, race, and religion. They are non-religious and non-denominational, yet they acknowledge and nurture the inner (or spiritual) development of the children as well as their academic, social, and emotional growth.

The Waldorf curriculum is built around the unfolding of various 'layers' of the human being, and this is reflected in and supported by the metamorphosis of the physical

form of classrooms. In early childhood, the growth and mastery of the physical body is paramount; in grades 1-8, feeling, healthy habits, and a sense for beauty are in the forefront; in the high school, analytic and reflective thinking comes to the fore.

The Senses as a Portal for Learning

The most commonly held model of the avenues of perception and orientation is that of the five senses (sight, hearing, touch, taste, and smell). However, both scholarship and popular awareness now accept that a more differentiated model of the senses gives a clearer and more complete picture of the way a human being interacts with and makes sense of his/ her surroundings. In a keynote speech at IVLA 2016,[1] Constance Classen insisted that reducing pathways of perception to the "five senses" was oversimplified, reductionist, and misleading. Gladwell, Siegel, McGinn, and others agree that multiple differentiated (sensory and other) pathways reflect more accurately the pathways of learning.

Teachers are familiar with Gardner's (1983) multiple intelligences as pathways for learning (these are primarily sensory modalities): musical–rhythmic, visual-spatial, verbal-linguistic, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic, existential, and moral. In recent years an additional sense has been added: the social sense.

Steiner, around 100 years ago, developed a schema of 12 even more highly differentiated senses. As an individual human being grows, the senses also grow and refine their function, so the lower or most basic senses provide a foundation for later, or higher senses. The sense of touch, for example, metamorphoses into the sense for the 'ego' or personhood of another. Just as through the sense of touch, the child learns the boundary between self and non-self and learns what is 'real' and tangible and what is imaginary, he/she also develops a 'feel' for authenticity.

The first four, or 'lower' senses form a basis for the healthy development of the others and will metamorphose into the higher and more specifically human senses as the individual matures. The sense of touch develops into a sense for authenticity and for the personhood of another human being; the sense of life/well-being develops into the sense of awareness of thought or healthy conceptual understanding; the sense of self-movement develops into the sense of coherent speech; and the sense of balance will aid the individual in sensing his/her own place in the world and develop into the ability to retain a sense of self while assimilating and incorporating what another has to say through the sense of hearing.

THE 12 SENSES ACCORDING TO RUDOLF STEINER

HIGHER SENSES	Thought
	Word/ speech
	Hearing
	Warmth
	Sight
	Taste
	Smell
	Balance
LOWER SENSES	Self-movement
	Life/ Well-being
	Touch
METAMORPHOSIS	The sense of the ego/ personhood of the other

The Principles of Waldorf Design

Waldorf Schools bear a global family resemblance to each other. Once identified, the Waldorf look is easily recognized. Although each school is fiercely independent and autonomous, the schools also manifest a common style. Some of the key characteristics are rounded corners on windows, clearly noticeable doorways and entrances, subtly colored walls, a low occurrence of rectilinear forms, a homey atmosphere, and the preponderance of natural materials and wooden furnishings. There are likely to be curtains at the windows and curtains covering the chalkboards in the early grades, elaborate chalkboard drawings, uncluttered walls displaying children's and classical art, and a dedicated space for natural artifacts. Light usually comes from natural sources, supplemented by unobtrusive lighting when needed. The atmosphere is welcoming, comfortable and 'homey'.

1 International Visual Literacy Association conference. Montreal, October 2016.

Three main principles govern the design of Waldorf schools:

- Symmetry/ Asymmetry
- Balance
- Metamorphosis

In general, form follows function, which means that the school building informs, protects, and shapes the activity within, which is teaching and learning according to the developmental levels of the students (cognitive, affective/social, and physical, as well as the inner 'spiritual' being).

Architectural forms and spaces should arise organically from these inner functions as well as from more external considerations such as geographical location. To authentically relate to and nourish these inner dimensions of human experience, Steiner argued, a building should present an environment that will express the human being's inner being in external plastic forms. Sculptural forms with dynamism and organic movement speak better to the human psyche than do the static or geometrical forms of most previous architecture and design. Hard, psychologically opaque, or merely intellectually conceived forms can stir semiconscious feelings of alienation in their users; they are not experienced as physically or psychologically "user-friendly" (Adams, p. 28). "A more organic architecture offers greater support to the organically related, mobile, and flexible thought-processes that Waldorf teachers hope to develop in their students. 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" (Adams, p. 29).

Fences and Entrances

The first sight of a school at the beginning of every school day can make a profound impression on a child. Locked and gated multiple chain-link fences or a landscaped and fragrant passage will afford each child a different sense of place and of human scale. Orsinger (2014) states:

> An ugly, broken, old fence surrounding a school indicates that the school community does not have the power, initiative, or desire to create an attractive, welcoming boundary; and this realization suggests that there are probably far more difficult things that the school community also lacks the ability or willingness to change. The ugly, confining, broken state of such a fence confronts each child and encourages ugly, broken behavior. The fence models and elicits disrespect, lack of care, and disengagement. These fences subliminally teach of, encourage, and perpetuate broken people, broken communities, and a broken democracy. (p. 269)

On the other hand, using local materials, or 'green' building technology will signal respect and recognition of place, ecology, and community.

In the transition into the school, it is imperative to avoid confusion: Which way does the door open? Which door to use? Which door belongs to which classroom? The doorway is a threshold, and marks a transition into the learning space, a moment of consciousness as a transition from one 'state' to another. Picturing how brashly a teenager enters the classroom, how college students slide into the room, and how toddlers cling to their parent's legs shows that this threshold means something different along the developmental scale. Doorways and entrances can reflect and support transitions and prepare the student for the activity within. The vertical character of a doorway can be emphasized through various design elements. This encourages an overall sense of uprightness in the classroom and discourages too much horizontal focus.

According to Adams (2005), the doorway should be clearly marked and recognizable. The entrances to the school and the classroom should be unambiguous and set a tone for learning as well as being crucial to a sense of security and a sense of place. In a well-designed Waldorf school, the "doorways to each classroom feature organically-designed frames whose flared bases express their solid foundations. The angularly curved tops reflect the natural human experience of a curved sphere above—whether we think of this as our own

head or the sky. Both the shape of the doorway 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" (p. 30). The transition into the learning space can also be signaled by color.

Durach (date unknown) writes that doorways can offer an opportunity to experience reverence, a central principle of Waldorf education. He suggests: "We can use purely architectural methods without painting proverbs on the wall. For instance, the ceiling could be slightly inclined towards the door. We can surround the door with a form speaking to the child's feelings." Turning the handle offers a moment of conscious choice, and it could be designed in such a way that the child notices implicitly that he/she is entering a special place. Durach continues: "Moreover, the child should leave the school every day differently from the way he entered it." Children are different when they leave school at the end of the day, however small the increment, because of what they have learned and experienced that day. There is a continual ontological shift throughout the process of education which transforms the inner being of the individual. Education in this sense is not simply the process of amassing facts.

School Buildings: A Sense of Belonging

Waldorf education is one of several movements developed in the early 20th century, including Montessori and Reggio Emilia schools, which are all finely tuned to children's senses and the physical environment, as well as to a sense of welcoming community. Orsinger (2014) elaborates: Rudolf Steiner confirms that the "'Physical environment' must be understood in the widest sense imaginable. It includes not just what happens around children in the material sense, but everything that occurs in their environment, everything that can be perceived by their senses, that can work on the inner powers of children from the surrounding physical space" (p. 178). This includes a 'feel' for space, as Siegel (2010) would describe it, and also includes the tone of interaction with peers and with teachers and the inner disposition of the adults. Siegel describes the mirror neuron system, the "root of empathy," where "at the most complex level, mirror neurons help us understand the nature of culture and how our shared behaviors bind us together, mind to mind" (pp. 59-60). Waldorf, Montessori, and Reggio Emilia schools all recognize the community impulse and the fact that school and classroom design both demonstrate and effect the pedagogical approach. More than providing four walls and a roof, school buildings are in themselves a force for social change.

Floorplans: Self-Movement and Balance

As children learn to socialize and interact with their peers and build community in a classroom and in a school, the welcoming 'gesture' of the school entrance and the physical arrangement of the classrooms can make or break the success of this vital social learning.

The arrangement of the floorplan and accessibility to resources will signal a sense of purposefulness and integrity of design where form and content meet. Johnson (2010) even compared some school buildings to "windowless prisons" (p. 11). A classroom serves as a symbol of the prevailing educational philosophy. At its worst, it can be a standardized, mechanistic, non-human-centered application of Henry Ford's efficiency model with long, dark hallways and cookie cutter classrooms, filled to capacity with desks in straight lines. Beck advocates for a noticeable center or hub to the arrangement of classrooms, as an orientation point and also as a focal point to integrate the disparate elements (p. 49). This is reassuring: all is in order, there is an organizing principle at the core.

Cotterell (1984) calls attention to the need for legibility in the environmental cues (such as entrances, designated purposes for the rooms, ease of access) and cautions against an overload or 'underload' of easily interpreted cues (p. 457). Blundell Jones (1999) writes:

> The organization of a building reflects and determines social relationships, and . . . the qualities of space and light in a classroom affect the learning of children. It [makes] a positive image of the kind of world in which they wanted to live... [suggesting a] legible hierarchy of formality; . . . all rooms have individual characters, which both differentiate them from one another and prevent repetition. That the building consists of a society of rooms is as evident in the external form as it is in the plan.

The building is both a silent model and formative force for healthy and respectful social interaction.

Metamorphosis is a driving motif in the Waldorf curriculum and a key design principle. Children grow and transform throughout their school years, and so must the physical environment accompany and support them. First graders are not small twelfth graders. Werner Seyfert, among other anthroposophical architects, has worked out a progression of classroom footprints that develop according to the age of the child. Adams addresses this issue when he writes:

> The progression of rooms begins with the simply whole, unitary, 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 rounded or curved form. That which is softer, more rounded, and more unified in the preschool and early elementary years will gradually become firmer, more articulated, and more angular as students advance through their schooling. (p. 29)

Raab (1982) pleads for a 'gesture' in school architecture that will help to balance and counteract the apathetic 'couch potato' phenomenon so common in our present culture. He recognizes the need for a welcoming gesture in the entrance; a sense of "confident repose" in the body of the building; a well-balanced sturdiness in the walls; a dynamic in the floor plan which strengthens and liberates the observer, and does not make him/her uncertain and insecure; and a feeling that the ceiling and roof close off and shelter the building, at the same time connecting it to surrounding nature (p. 196). In addition, Raab writes, the proportions of a classroom are more important than the shape (square, rectangular, etc.) and in reflecting the human being should be balanced and symmetrical, without being a mathematical mirror-image (p. 199).

Durach suggests a differentiation in the grouping of the classrooms; the youngest grades (perhaps 1-3) are finding their way into the school, while the oldest (high school) are anticipating leaving. The intermediate grades (say, 4-8) are the stable heart of the school. This can be made visible in the grouping of the classrooms and the degree of symmetry within the rooms themselves (rounded, welcoming in the lower grades; more symmetrical and 'settled' in the middle; controlled asymmetry in the high school). Riedel explains: Kindergarten and younger grades classrooms are rounder in form, recollecting the archetypal nest form found in nature. As the children grow, the forms of and in the classrooms metamorphose into more angular shapes. This language of form, he maintains, affects the room occupants and can even be an agent of healing as the outer form of the room affects the bodily sensations of its occupants (pp. 43-44).

Rischke (1985) describes the importance of awareness about the degree of asymmetry in a classroom. If the room is heavily asymmetrical, the occupants will need to bring their formative forces to bear in order to achieve a sense of balance and equilibrium (p. 51). Older students are more able to do this, and it is beneficial for them to engage in this way. Younger students, however, need the support and calm of a more symmetrical room, so they can use their formative forces on their own physical bodies and on their bodily sense of well-being.

First grade brings with it a progression from the Dionysian (circle gesture) to the Apollonian (more conventional arrangement of desks facing the teacher). The children are developing from a primary need to move and be as one whole organic group before about age seven, to the need (as articulated in Waldorf pedagogy) for the guidance of a loving authority of one main adult teacher through the elementary school years. A classroom which widens itself out towards the teacher through a slight divergence of the longitudinal wall, will affect the children spatially in such a way that they open themselves to the teacher. If the ceiling ascends in the same direction, then this spatial gesture induces attention. The children look up to the teacher. Both gestures awaken the children. Classrooms generally retain a focal point towards a chalkboard and the teacher, with movable furniture and flexible room planning becoming more important in recent years. Recognizing the link between gross motor movement and brain development, several Waldorf schools are now adopting the "Movable Classroom" which allows the space and furnishings to be used for multiple purposes: large and small movements.[2]

Indications for school and classroom design are all based on Steiner's premise that spirit is always present in the material world, and that education is an incarnational process, supporting the developing child in finding his or her home and place of agency in the world.

Durach offers a link to social development, encouraged by the experience of an asymmetrical floorplan: "In the symmetrical, [the child] experiences, without effort, a static balance; in asymmetry, he produces this balance through his own activity, thus establishing a dynamic equilibrium. This interplay of the statically given and the dynamically achieved symbolizes, in architectural form, the child's

2 For a succinct description, see http://www.pinehill.org/movableclassroom

experiences in the school community: on the one hand, things come to meet him, while, on the other hand, he must contribute something to the life around him." This mirrors the developmental stages: the young child is cared for, whereas the adolescent is expected to grow into responsibility.

Durach further suggests that the basic rectangular shape of a classroom may be modified with significant effect on the children: "...if we depart from the rectangle—which is undoubtedly correct in the right place—we achieve effects that could be called dynamic." They "induce movement." This movement is not uncontrolled thrashing around, but in contrast to the 'couch potato', this movement is an inner quickening and awakening of interest and activity.

Hallways, Windows, Walls, Light, Color

Hallways support a sense of movement and balance, while long, straight hallways are de-personalized, aimless, and seemingly endless. A welcoming entrance and an easy-to-navigate floorplan can lead to a sense of being in the right place. The use of color or distinguishing architectural details can draw the eye to the entrance of a building and avoid confusing or ambiguous signals. Windowless classrooms and disorienting, undifferentiated hallways can lead to a sense of alienation and disconnection.

Sufficient light is vital, and Waldorf schools tend to differentiate between indoor and outdoor light. Cheryan et al (2014) conclude that students exposed to more daylight in their classrooms perform better than students exposed to less natural light. In a study involving more than 2,000 classrooms in California, Washington, and Colorado, students who were exposed to a larger amount of daylight in their classroom had higher math and reading test scores than students who were exposed to less daylight in their classroom (Cheryan et al, p. 2).

Walls are vessels, but should not be "prison walls." Color can help with unambiguous environmental cues, relating to function: highlighting the entrance to the classroom or the beginning of a stairway. In Waldorf schools, specific colors are indicated for each grade, and *Lazure*, a technique of layering color developed by Rudolf Steiner, allows colored walls to 'breathe' and avoid the feeling of an impenetrable boundary, giving soul space.

In public school settings, classroom interiors can be overloaded by stimulation of wall décor, as described by Tarr (2004). She describes a "cacophony of imagery" with an apparent lack of guidance or purpose in terms of display or aesthetics. She argues for empty space to allow the eyes to rest, and to allow the wall display to be more prominent. Fisher (2014) describes a study demonstrating how the more distracting the classroom's wall décor is, the more time is spent off-task.

Waldorf classrooms are decorated with simplicity, rarely displaying posters or charts. Even the chalkboards are usually covered with a curtain when not in use and chosen areas are revealed at appropriate times in the lesson. A covered chalkboard can offer the restful eye-space advocated by Fisher and Tarr. Natural materials are used whenever possible for furnishings and classroom materials, nourishing the senses of touch and life.

The Interplay of Spirit and Matter

These indications for school and classroom design are all based on Steiner's premise that spirit is always present in the material world, and that education is an incarnational process, supporting the developing child in finding his or her home and place of agency in the world. This is the pivotal point for school architecture and design. Teachers strive to 'ensoul' the classroom, because the goal of Waldorf teachers is to acknowledge the children for their own unique gifts and to help them realize their full potential as individuals. Such potential arises from the child's spiritual inner being and his or her full panoply of senses as portals for meeting and making sense of the world.

Seek the truly practical material life
But seek it so that it does not numb you to the spirit.
Seek the spirit
But seek it, not in passion for the super-sensible,
But seek it because you wish to apply it selflessly in the practical world, in the practical life.

Turn to the ancient principle:
Matter is never without spirit
And spirit is never without matter
In such a way that we say
We will do all things in the light of the spirit,
And we will so seek that light of the spirit
That it evokes warmth for us
in our practical activities.

Rudolf Steiner

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