



Puberty as the Gateway to Freedom

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Transformation of the Etheric-Astral in Puberty

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

Steiner also presents an image of the transformation of astrality. The astral body, too, is brought into a new incarnation follow-

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

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

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

centration in the heart region. The etheric and the astral meet in the region of the heart, a meeting more intensive than in any other realm of human physicality. All of the astral body's new formations are transmitted to the etheric in order to be absorbed there. "From puberty onward, with a detour through the astral, all human activity is connected with the etheric heart, the one organ that was formed out of the images of the stars, of the cosmos." These processes inform an understanding of Steiner's description of the process of the creation of future destiny: all human deeds are inscribed, by way of the astral body, into a copy of the cosmos that lies in the etheric heart. "Here the cosmos connects with its own happening and with human karma."

Steiner thus makes clear that the process of future karma-creation begins only in puberty. A human being relinquishes all her deeds to a copy of the cosmos in the heart region, and in the life after death this copy, born in the heart, expands into the cosmic ether, creating the foundation for a future life.

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

Groundbreaking Discoveries in Brain Physiology

In the last 25 years much progress has been made in the field of brain physiology, especially with regard to the architecture and

function of the brain. The decade from 1990 to 2000, in particular, could be called the Decade of the Brain. The impressive increase in knowledge is due to new technologies that make it possible, without surgery, to obtain an image of processes in the inner recesses of an active brain. Investigators put special emphasis on the late embryonic period and early childhood up to approximately the third year.

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Two simple and effective processes are shown to be responsible for the brain's ability to adapt: overproduction and destruction of neural connections. At birth, the brain is only partially formed. During the first 18 months of child development, we observe a marked increase of gray matter. By far most of that growth occurs as the result of a kind of explosive network-building between

individual brain cells—up to 30,000 connections per nerve cell. This overproduction is soon followed by the erasure of a major portion of these connections, of which only one third survive. The process guiding this destruction of connections can, for the most part, be traced to impulses from the sensory organs. One should include here all twelve senses, as described by Steiner, so as not to miss the striking formative work of the lower senses—touch, sense of life, self-movement, balance—which are acutely involved in the first years' movements of arms and legs. The brain responds by reinforcing those connections that are stimulated frequently and by extinguishing those that are little used or not used at all. The formative law here is "use it or lose it."

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

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

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

Parents, other adults, and the environment in general have a primary responsibility for healthy childhood development. At the time of puberty, the young person himself or herself becomes at least partially responsible for the reconfiguration of the frontal parts of

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

Brain research also casts a new light on

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two widely observable feelings of the young, a feeling of impotence and a feeling of omnipotence. Explosive reconfiguration of nerve connections leads at first to a situation in which young people cannot draw on learned behavior. The brain therefore calls upon different regions in an attempt to form a judgment—in particular it calls on those regions used for quick, feeling-laden decisions, “gut instincts.” Only when reconfiguration

of the frontal cortex nears completion will it increasingly be used again. The flip side of this new development of the frontal brain is the feeling that everything is possible, everything can be attained. These are feelings, familiar to all adults, between which the

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

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

Soul-Physical Connections in the Astral Body

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

with spiritual worlds? We answer: everything that comes from the metabolic-limb system, all our actions and the feelings that accompany them.

Steiner points here to a deep connection between happenings of the night and formation of the human brain. The image of a lemniscate—the symbol of infinity, a “figure eight” turned on its side—can help us understand better the processes of the astral body.

If we picture the lemniscate as a ribbon that displays its outer surface in one loop and its inner surface in the other, then the outer part can stand for the head organism and the inner part for the metabolic-limb system. Both are mediated by the crossing of the lemniscate, that is, the rhythmic system.

If we simplify the process that occurs during

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

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

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

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

First Pedagogical Consequences

At school age, capacities formed in a previous incarnation and adapted for use during early childhood now become available to a child. It is important to awaken this set of general cognitive capacities. In doing so, a teacher must naturally observe the boundaries set by a child's own physical conditions. Teachers can make children aware that differences

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here, like all bodily differences, constitute a natural condition of life. But, beginning appropriately in pre-puberty, it is especially important to help the young understand that they themselves are now the shapers and co-creators of everything they can develop in the way of higher intellectual capacities—not using these precise words, of course. Central tasks of middle school teaching may be to communicate a sense

of freedom in possibilities and also a sense of responsibility for creating these possibilities. These senses of freedom and responsibility will be developed more consciously in high school.

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