A New Educational Paradigm
Identity of Vital Functions and Thinking Activity

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"It is of the greatest importance to know that the human being's ordinary powers of thought are refined powers of configuration and regeneration."[1] Rudolf Steiner

In Waldorf schools, where the approach to education is based on the work of Rudolf Steiner, teaching relates to a child's age and development. It takes account both of the laws of physical development and of the stages by which the child and young person matures in mind, soul and spirit. What is new, and important, is that functions of soul and spirit, particularly the ability to think, feel and will, are not taken to be a secondary principle arising from biochemical processes in the human body, but the primary principle that imposes order on the chaos of physical building stones, builds up the body during the growth stage, and later on provides only for healing or regeneration, and the growth processes connected with reproduction. The aim of this paper is to present the basics of this new development-related education and show their relevance to educational practice.

Elementary characteristics of thinking activity

There is no natural event in the living or non-living world that cannot be described in terms of mathematical or other laws and formulas, i.e. in thoughts. Nor is there any substance or element in nature that does not obey strict laws in combining with others, laws that can be formulated, learned and applied. This may seem self-evident, but the consequences are far-reaching. The laws can only be experienced, grasped and described in thought, that is, they are invisible. And visible nature is in every detail subject to the totality of these invisible laws. As bodies move, birds fly, or drops of water fall, we see laws coming into effect in everything that happens in this world.

Thoughts as such—irrespective of what they relate to, be it something given through the senses or not—are supersensible by nature.

What is the specific quality that gives us this medium we call "thinking?" What laws apply here? It is perfectly evident that thoughts vary greatly in quality, If I look at a bunch of snapdragons, for example, and then turn away, close my eyes and try to visualize the bunch, I no longer have the primary sensory perception but a visual image and I can begin to count the number of pink and white flowers, how tall the flowers are, how far they rise above the rim of the vase, etc. Our thinking relates directly to the world we perceive through the senses because we are able to create mental images and ideas. The greater part of our ideas is in fact based on sensory contents or impressions. When we form ideas, the content of the thought comes entirely from the world of the senses, the visible world. The idea itself is not sensory, however, but a pure thought principle.

Other thoughts are very different in quality, for they do not relate to anything perceived through the senses. Our ideals are such thoughts. Courage, faithfulness, truthfulness and love are not facts we can perceive in the world of the senses but ideal, moral values. Someone may well think: Surely I should be able to see if someone is kind, faithful, courageous or truthful? It is of course possible to see something of

these qualities in the way someone acts or behaves. But the quality as such, and what is more, its totality, is not perceptible to the senses. Anyone who is told: “You are so kind,” will want to make the statement relative and say: “I am not always kind, I should be much kinder than I am.” It is in the very nature of an ideal that we human beings seek to attain it but have never yet fully achieved it. We are, however, able to have the perfect ideal in our thoughts.

Let us consider what our thoughts relate to when we think of the bunch of flowers or an ideal such as faithfulness. Both are evidently real. Yet the quality of the reality we are dealing with is very different. The one we are able to perceive through the senses, for it is an object in the material world. The other can only be inner experience; it can be thought, being part of the world of ideas. We thus have realities given through the senses and others that exist purely in soul and spirit. Our thinking is able to take hold of both and bring them to mind. The remarkable thing is that there is nothing in the world of the senses that cannot be understood and encompassed with the help of our invisible thoughts and that there are no thoughts that cannot be made sense-perceptible reality in one way or another and thus become perceptible to the senses. This even holds true for the world of religious realities, where artists are able to reveal something of the sacred, supersensible aspect to the senses through their paintings, sculpture and music. There truly is nothing in the world that does not have something in it that follows a supersensible law. Even a car does, for it would never function if there had not been human thoughts and the will to bring these to relations. This capacity for thought that human beings have thus holds not only the potential to explore and understand all the laws of nature, but also to create new things, if we think something that is new. This is why we call the mind and spirit, or thinking, the creative element in man, for something new can indeed come about through it.

Before we go into further detail concerning the relationship between vital functions and thinking activity in the human organism, let us take a closer look at thinking. What kinds of thought are there? In the first place, we have the power of reflection, thinking on things. We join in or reflect on someone else’s thoughts. This applies to all knowledge of nature. For nature exists, we perceive it and use our thinking to understand it and reflect on how it has evolved, what it does, and how it can be developed further in line with existing laws. Considering further development, we are already thinking ahead. This is more than a continuation of reflection and goes beyond having ideas for the future in terms of consequences, for it can also be a completely new, creative thinking. Thus an idea may come as you do your housework in the morning as to where to go on holiday in the summer. You make suitable inquiries and it proves possible in February to create the conditions for a summer holiday in August, a holiday that could only take shape the way it does because you have been thinking ahead.

Older people normally live more in reflection, young people are more at home in the future, their minds set more on what their hearts desire. Human thinking thus not only encompasses the nonphysical activities and laws relating to lifeless, living and ensouled nature, but is also the shaper and master of time. To reflect on things that may have happened in the far distant past, and to think ahead to what may happen some time in the future—our thinking encompasses both. This shows it to have not only a time dimension but also one that goes beyond time, capable of bringing vast eons of time into the present.

The fact that thinking goes beyond space and time also makes us aware of another quality: the special nature of human ideals—we have already referred to faithfulness as an example. There are thoughts that can only unfold their inherent laws and take effect if we identify ourselves with them. Only then will the ideals of faithfulness, religiosity, truthfulness, freedom or brotherhood be seen to be more than shadowy thoughts and indeed great moral powers that sustain, strengthen and guide us in difficult and in good times. Ideals are the greatest sources of strength we are able to have in soul and spirit. Someone who has found his true ideal in life will be able to find his way in all kinds of situations and achieve a degree of invulnerability. Happen what may, he will always find a meaning for it and turn it to good account. Here we must ask ourselves: Has not identification in this case made the human being with the true intent of his

whole nature become the ideal himself? Doesn't a thought gain substance when we really take it in, uniting ourselves with it? Is the human I able to see itself as a vast, world encompassing thought that gains in power and reality as it consciously relates to everything there is in the world and grapples with it? It is indeed true that I am as good or as bad as my ideas of the world and myself are, for I act according to those ideas, bringing them to expression in the way I live and in what I do.

Coming to this limit of self-observation, each of us finds himself on the edge of an abyss that separates two worlds, one accessible through the senses, the other through ideas and thoughts. In his body, he feels himself to be integrated into and identical with the sense-perceptible world. In his thoughts, however, he is able to live in a world of moral ideals and intentions that is all spirit. He is aware of its effective power to the extent that he is able to unite and identify with it. Considered more carefully, therefore, thinking appears to be something that is non-physical yet able to comprehend the physical world, a web of effective related thoughts and laws that gives the world beyond the senses wholeness and meaning, being integral and supported by laws. When we begin to understand the nature of thinking, we are quite naturally guided to overcome the dualistic image of the world and perceive it to be monistic and an integral whole. Here the laws, being spiritual by nature, prove to be the primary principle, governing the world we perceive through the senses and going beyond it.

Growth and vital functions of the human organism

What does all this have to do with the life of the organism? To see this, we must first consider another fact. Idealistic or deeply religious people have a better immune system, better natural defenses, than people who are not sure of themselves and have no inner stability. This has always been known (in the days of the plague and other epidemics, people who were afraid would be taken by the disease more easily than those who had courage). Scientific study of this in psychosomatic medicine has also established this. The question is, however, how can we understand this connection between idealistic thinking and physical immunity in real terms. We all know that our cheeks are likely to be flushed and our feet grow warm when we are enthusiastic about something, for the blood then circulates more easily. We also know situations where a mother nurses the whole family who have gone down with influenza and does not catch it herself. How can this be understood? Why can an idealistic approach to life have such a positive effect on physical immunity, which is a biological process? Conversely, how does it happen that people who are mourning, in stress situations or dissatisfied with life, inclined to be critical and skeptical, are liable to find their natural defenses reduced? These questions are largely answered by Rudolf Steiner who presented the results of his researches as follows: "It is of the greatest importance to know that ordinary human powers of thought are refined powers of configuration and growth." He was saying, therefore, that our ordinary powers of thought are also the powers the organism uses to perform its vital, growth and regenerative functions. We have already tried to show that all the cosmic laws we know are involved in growth and regeneration, and Rudolf Steiner's words therefore make sense to us. For the human being is indeed organized in such a way that the natural and other laws active in him are not entirely given up to his physical functions and there is a surplus of such thought powers subject to cosmic laws. Because of these he is able to learn all his life, to work on himself and the world, and to create something new.

This is different for animals, for in them growth powers are brought to full realization in the body by the time they have reached sexual maturity. This is also why they have little or no capacity for learning later on in life. They do, however, show the fullness of wisdom in their bodies and the way they behave, so that we humans can only look in admiration at forms of existence brought to ever greater perfection. This is evident down to the last tail feather of an Arctic bird who is able to maintain a body temperature of + 40 °C when the outside temperature is -40 ° C, a bird that fits naturally into the environment where it lives. It does not need to reflect on its future development, nor doubt its present life. Wisdom is embedded in animal instincts and organs, coming to expression in species-specific behavior.

Humans on the other hand are given hands, and it is impossible to say at first sight if those hands will raise a dagger against another person in a moment or lovingly caress someone. The human organism is largely non-specialized and not fully determined. Humans are unstable even in maintaining their balance, needing to gain and retain it through constant effort. We stumble more easily and find it harder to maintain our balance when we lose concentration, being tired.

To make up for this lack of inherent wisdom we do however have abundant life in mind and spirit, with feelings and thoughts we can handle, offering rich potential. Human beings are half endowed, as it were, with wisdom that is bound up in our essential nature, so that it is our good fortune that we do not have to consciously supervise the work of our stomachs and intestines. On the other hand we have about the same amount at our disposal for mental activities. We pay for this by having a body that is less sure in its instincts and does not have inborn patterns of behavior that make it act wisely. It means, however, that we are able to develop the conscious mind further even when physical development has reached its conclusion. We may also fall ill, however, if we have thought long enough about things that are not in accord with the web of laws anchored in our bodies, i.e. that are not in accord with human nature. Every lie, every untruthfulness, goes against the wise order that governs the organism. Lack of clarity in our thinking must also have a negative effect in the long run. Constant fretting may lead to a gastric ulcer. Cares may wear you down and other problems affect liver and bile. Again and again one is oneself amazed at the extent to which the life of thought and feelings influences the organism's regenerative powers.

The growth power that has become available for independent thinking activity also relates to the potential to develop either ill health or indeed gain surplus powers of health which can then be powers of healing. These help us to understand the unusual life stories of great "saints" and great healers. Such a psychosomatic concept also permits an approach combining treatments for body, soul and spirit so that they relate to each other and form a whole.

Below, certain fundamental correspondences between thinking and vital activities will be considered. They may encourage readers to investigate this new paradigm for themselves by observing their own thinking activity and the corresponding biological processes.

Processes of becoming and of going out of existence are part of our thinking just as they are of time processes in the sphere of life. Mental images are continually getting out of date. Something we were able to see and therefore think today may have gone tomorrow or be seen to have been erroneous. Concepts, on the other hand, do not go out of date. They are the creative thinking activity of the present, with things perceived and things brought to mind conceptually reworked all the time. New elements that relate to the future and the process of becoming only come into our thinking through ideas and ideals. Our thought life thus integrates and governs past, present and future. The laws pertaining to states of aggregation also apply to the solids, fluids, gases and temperatures in our body and they provide basal functions for our thinking. The same holds true for all. other organ functions in the body. Our analytical thinking relates to the degradation processes in the digestion, critically taking things apart until everything has been thought through. We owe our ability to think synthetically and constructively to the synthesis and building-up processes in the organism. Thoughts we have no use for and errors are "sifted" and "eliminated," whilst anything we perceive to be correct is integrated into the life of thoughts. We are also able to distinguish clearly between processes of setting limits and may go as far as "allergic reactions" and others that are immediately accepted and experienced as fitting in with the rest of our thinking. Here the equivalent to physical immunocompetence can be seen at the level of thought life.

Finally let us consider how much of this also comes to expression in everyday language. We speak of “digesting” things mentally, of “fertile” ideas, of “giving birth” to new thoughts and being “reborn” in the spirit when someone sees himself in a new light as a person he did not know or recognize before.

Consequences for education

Seen in this light, physical life and thought life prove to be two areas of experience, with correspondences between them that need to be explored. In the body, natural laws and potential for thought may be said to be active in “gross” terms at substance level. Released from their work at that level, coming to experience purely in mind and spirit, the same laws function in “net” terms, as it were. We have to take on new responsibilities when we begin to perceive the connection between thought life and physical life. How can the developmental process be guided so that the growth forces which the body needs if it is to develop properly are not used too soon for mental activities? A child’s learning ability is such that growth forces are easily abused, and physical development must suffer if mental training starts too early.

Rudolf Steiner spoke of this danger in his lectures on education and on medicine at the beginning of this century. It is therefore one of the main concerns in Waldorf education to take account of this aspect of child development and base the curriculum not on abstract levels of achievement but on health aspects.

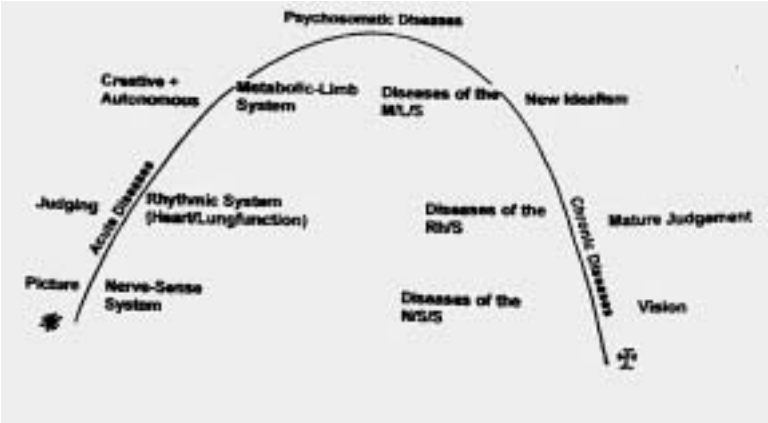
Anthroposophical pediatrics has the same basis. The aim cannot be to “magic” an illness away as quickly as possible or to suppress the disease process. Instead, the body’s disposition to develop an illness is considered to be something it needs for its development. It is therefore important to allow sufficient time for bed rest, convalescence at home and care, protecting the child from mental and psychological stress during this period. The powers the body needs to recover are the same as those used for growth and regeneration and also in human thinking. New perspectives for the prevention of disease open up against this background. One is going to do everything one can to prevent growth forces being withdrawn prematurely from the maturing organism, with intellectual development taking a one-sided course. On the other hand care will be taken to prevent mental and spiritual powers lying fallow because they are not used in learning processes appropriate to the age. Thinking powers must be utilized in a healthy way if they are to strengthen the vita! processes in the organism. This will be shown more clearly in the next section.

Organ system development in connection with maturing conscious thought

It is interesting to consider childhood development from this point of view and observe how organ systems successively go through their stages of development between birth and maturity. A beautiful harmony exists between these maturing organs and the capacity for thought as it develops at the same time.

The first organ system to come close to adult function is the nervous system with its sense organs. Basic maturation occurs in the first nine years of life, with the sense organs the first to be fully functional. The forces that develop the nervous system and sense organs are therefore the first to be freed for thinking activity, which is why children think in such a pictorial way. Everything experienced through the senses is brought to life and made the subject of rich fantasy. One can really experience the growth trends of the whole organism in this early childhood thinking, trends that shape the organs of the neurosensory system. The period ends in about the 9th or 10th year. By then the child”s pictorial thinking that takes its orientation from sensory perceptions has achieved full maturity. Children usually find it easy to remember things at this age. This relates to the fully differentiated structure of those organs which by then have lost their capacity for growth, though they are still capable of regeneration. There is no further cell division, and growth has ceased completely. Regenerative preservation of the established form dominates the

picture. This also determines the nature of children"s thinking at this age. Things their mothers, fathers or teachers have said are valid and are remembered and preserved for the time being.



Between the 12th and 16th years of life the maturing of other organ systems donates the picture. Cardiovascular system and respiration reach functional maturity and hence their characteristic frequencies - about 20 breaths and 80 pulse beats per minute when at rest. These organs need longer to achieve adult functional levels.

The development of these organs with their rhythmic functions goes hand in hand with a new quality in the thinking of young people's growing ability to make judgments. This is not a matter of developing new ideas - the image content of thinking has been developed and whilst it may be enriched it does not itself develop new qualities. The new quality involves a different way of working with existing thoughts, e.g. by making judgments. It offers new ways of moving thoughts and weighing them against each other. This activity corresponds to inhalation and exhalation, rhythmically taking something in and letting it go, first taking up an idea, examining it, and then letting it stand as one does the same with another. The two are then weighed against each other to make a judgment. If we observe children of this age group, we note that the developing power of judgment is not abstract but primarily aesthetic-if something is beautiful or ugly, good or bad, mean or not mean, if other children at school are "useless" or "OK", if the teachers are any good or not-this is the sphere where they are intensely engaged in making judgments. The feelings involved in making aesthetic judgments are closely bound up with the life of breathing and circulation. We know that for adults, too, emotions directly affect the depth and frequency of breathing and also the circulation, for we blush or grow pale.

The organs to mature after puberty are the limbs, which reach their final size between the 18th and 20th years of life, and with them the whole internal metabolism. Hormonal regulation and full functionality of reproductive organs develop. If we observe how the young people's capacity for thought develops at this time we immediately perceive two completely new qualities: on one hand a strong will to have one's own opinion. The young people feel this personal opinion or approach to life to be an element of newly gained inner stability, part of one's backbone in soul and spirit. The ability to find one's own truth and the firmness and conviction that come with truths one has found for oneself provide a kind of inner skeleton for the thinking life.

On the other hand we see youthful enthusiasm arise, a genuine ability to warm to, something in one's enthusiasm. We can see how the powers that created the metabolic organs are increasingly available for thinking activity, also providing the fiery warmth that is needed. With this, something we may call the

element of personal responsibility and decision-making capacity develops in human thinking. It is therefore absolutely right to say that young people only come of age when fully grown, and that is usually in their 21st year. A person can only be said to be fully responsible for his actions when his individual nature is fully developed in his thinking. And this is only the case once the whole organism is fully mature, not only the neurosensory system.

It should be stated at this point that it is wrong to think that the brain produces thoughts. The whole organism is able to "produce" thoughts, as it were, when it frees its growth forces, making structures available that are full of wisdom. The brain is the organ in which the liberated growth forces are reflected so that they may come to conscious awareness. The nervous system thus only brings thoughts to awareness and does not produce them. It would be interesting to track down the many neurological findings that would confirm this view. The remarkable plasticity of the cerebrum and its ability to assume new functions also come under this heading and can be understood in light of the above.[2]

As may be seen from the figure, the graph for evolution and involution of the three main organs shows remarkable symmetry. The metabolic system, the last to reach full maturity, begins to show age-related involution as early as at 40 or 50 years of age. The menopause comes then and also early signs of wear and tear in the locomotor system. Regenerative potential in the sphere of the rhythmic organs correspondingly begins to be lost at ages 50 to 60, so that people who have that kind of disposition develop cardiac arrhythmias or their first myocardial infarction, or lung conditions become chronic. Between 60 and 70 the sphere of nerves and senses also loses powers of regeneration, and the chronic diseases of old age in this sphere become more common. Yet because powers of growth metamorphose into powers of thought, physical involution goes hand in hand with growth in mind and spirit for those who age in a healthy way. New motivations arise in life, and even a new ideal for life will generally follow a mid-life crisis brought to a positive conclusion. Social judgment develops at the more mature age of 50 to 60, and above all, the ability to see things from the other person's point of view, so that one can give truly objective counsel. A more advanced age, finally, brings the ability to see things in a wider context and gain deeper understanding of life situations. If we also consider near death experiences at this point, we can see that the panoramic views experienced actually show the powers of regeneration or of thought becoming free-briefly and reversibly in near-death experiences, irreversibly so when death actually occurs. In this sense death shows itself to be a moment of greatest conscious awareness, an act of spiritual awakening in the thought organism.

Education as preventive medicine and the role of nutrition

An education geared to age-related child development, with a curriculum that takes account of this, will not burden the minds of kindergarten children with decision-making and argumentation but let the children imitate life around them, developing a wide range of bodily skills and sensory functions. At lower school age the aim would be to encourage aesthetic judgment, mainly by making lessons artistic. The development of independent critical thinking would only come in the upper school, after puberty. If development can be such that bodily and mental development go hand in hand in a healthy way, we have the best foundation for health in the second half of life. If this is not possible, pathological dispositions may be created for the second half of life. A disposition to develop metabolic disorders and rheumatic diseases, respiratory and cardiovascular conditions and senile dementia is encouraged or reduced, depending on how well one has gone along with the processes of growth and development.

If one works with the thought that powers of growth and of thought are identical for some time, many things in human life begin to have meaning. We can understand, for example, why the phase of active growth in puberty always involves a temporary drop in performance levels. The life of mind and spirit cannot perform at top level when the body is predominantly engaged in a growth process. The same applies during illnesses, especially febrile ones. In this case, everything possible should be done to give

the powers of growth and regeneration the peace they need to work on the child's body. We can also understand why a person who reaches a healthy old age can continue to grow in mind and spirit even when the body is entering into its natural phase of involution, i.e. senile decay of all organs. Loss of regenerative powers means increased mental powers, providing the individual has learned to use these powers of thought liberated from the body creatively. This is a matter of education. People who have always been in the habit of using their minds in accord with the potential that exists at a given age will continue to develop quite naturally in mind and spirit all their lives. If the powers of growth are however caught and held half-way between body and conscious thought life, as it were, not having been integrated into that thought life, they, too, may one day lead to pathological dispositions, above all uncontrolled growth tendencies.

This is also where the important role of nutrition shows itself. Plants grown in healthy conditions have powerful growth and development forces in them and therefore need more effort to digest than less robust, overbred specimens treated with plant protectives. A healthy balanced diet stimulates all the digestive processes in differentiated fashion. This not only gives physical health but also influences the activity of and disposition for creative thought.

Ehrenfried Pfeiffer once asked Rudolf Steiner why it was so difficult to overcome the materialistic thinking of our time. The answer was: "It is a matter of nutrition." Easily digestible food of limited range not only leads to a certain sluggishness of the digestive organs but also creates a tendency to be sluggish in one's thinking. Someone whose ideas are limited to what more or less imposes itself through sensory perceptions, using his mind only to make associations between sensory impressions, will not reach his creative potential. It needs extra inner effort to think actively, coming away from sensory impressions, and activated processes of digestion and growth will encourage this. It is possible to see, therefore, that caring for the body by eating the right foods, maintaining a good sleepwaking rhythm and good hygiene, will support later development in soul and spirit.

On the other hand this stimulates an active life in mind and spirit in the second half of life, providing spiritual nourishment", as it were, to support the waning powers of physical regeneration. Even in mid-life, the stability of our health depends greatly on how we think and how we educate ourselves. Body care and food are not the only determining factors. It is in fact possible to neglect nutrition for a time and even do without regular meals for extended periods when pressure of work demands this if we have sufficient enthusiasm and inner motivation for the work. In the last third of life, however, it is necessary to find a new balance between physical and mental effort, not letting one predominate at the cost of the other. Yet the older we get, the more does "spiritual nourishment" determine our health.

The more our thoughts about ourselves and the world are in accord with the laws of human development in body, soul and spirit, the healthier we shall be. The more inhuman and divorced from life our thoughts, the more will they harm the natural life situation that encompasses the life of both body and thoughts. In the final instance both exist to be essentially human. From this point of view, every illness has a dual aspect. On one hand we may ask: "How could it happen that the body suffered this particular insult, and why did its powers of regeneration prove inadequate?" Or we may ask: "What thoughts, what conscious efforts are needed to support the healing process?" This gives the dialogue between physician and patient a completely new dimension, with new opportunities to learn and to help.

Final remark

This brief look at the identity of vital functions and thinking activity needs to be complemented by considering the relationship that exists between powers of feeling and will on one hand and thinking on the other. This would have to be on another occasion, however, as it would go beyond the available time today.

Notes

[1] Steiner R, Wegman I. *Fundamentals of Therapy* (GA 27). Ir. E. Frommer, J, Josephson. London. Rudolf Steiner Press 1983. [Passage here taken from the new translation to be published by Rudolf Steiner Press in 1996].

[2] Eccles J. *How the Self Controls its Brain*. Berlin 1994.