

THREE-FOLD MAN

THREE-FOLDNESS IN THE HUMAN ORGANISM

When one observes the shape of the human body, one can distinguish three main areas of the body: the head (caput), the chest (thorax) and the belly (abdomen). In addition, there are four limbs: two arms and two legs. Together they form the human body.

1) HEAD REGION WITH THE CENTRAL NERVOUS SYSTEM ("UPPER POLE")

Let us first look at the **head**. There are a few characteristics of the head one can observe. The head is essentially round; it is like a marble. The shape of the head is determined by the shape of the skull, which is by itself round and immobile. The various bones of the skull are still movable and, to a certain extent, flexible at birth and for the first months thereafter, before they consolidate and form the hardened and immobile skull of adulthood.

Furthermore, at birth the fontanelles exist (anterior and posterior), which make it easier for the newborn to pass through the tight birth canal. The normal position for birth is for the baby to come out head first. Because of these fontanelles and the still movable and flexible bones, the head can adjust to the shape of the birth canal and thus pass through with the least resistance.

The skull is the bony structure which is situated more on the periphery of the head. The bony tissue surrounds the main organs, which it protects and supports: the brain, the central nervous system. Thus, in the head region the hard, bony structures are on the **outside**, with the main organs **inside**. One will see later that in the limbs one will find the opposite: there the bones, the skeleton is **inside**, with the main organs, namely the muscles around it, on the **outside**.

Therefore, when one knocks on the head or palpates it, one can hear and feel that the head is as such **hard** and **immobile**.

One will find only a few joints in the head region, namely (a) one pair which unites the jaw (*mandibula*) to the skull and (b) the joints of the spinal column (atlas and the axis) which unite

the skull with the spinal column. Through (a), one could say, that the human has the *mandibula* as a kind of limb linked to the skull, and through (b), one can move one's immobile skull in various directions in relation to one's spine and trunk.

When one looks at the face especially, one can observe two eyes, two ears, two nose openings, and when one looks into the mouth one can see the various kinds of teeth on each side as well. When one opens the skull, one can see the left and the right large and small hemispheres. Thus, one can observe in the head region, that what one finds on the left side is also present on the right side: there is a strong **symmetry**.

The central nervous system and the brain are surrounded by cerebral spinal fluid (CSF). Outside the skull, on average the brain weighs approximately 1500 gram (women have about 100 grams less brain tissue than men do). Inside the skull, the brain "floats" so to speak (law of Archimedes), and weighs less than 28 grams. The brain becomes almost weightless within the skull. Now one can understand why the main arterial blood supply of the brain (Circle of Willis), which is located between the bony basis of the skull and the brain, is not occluded by the weight of the brain itself: instead of pressing with a weight of approximately 1500 grams upon the Circle of Willis, which would stop the blood flow or inhibit it significantly, a weight less than 20 grams (the average weight of a regular letter) does not have any compromising effects.

The brain is located within the skull in such a way that it is practically immobile. If the brain is being moved within the skull (*commotio cerebri*), one quickly loses consciousness. The whole anatomy of the skull is constructed so, that it protects the brain from motion. The brain is at rest at all times. Thus, the principle of **immobility** is strongly represented here.

Living tissue and living cells in the organism have the possibility of adjusting to changes in the environment (within certain limits of course) and of cell division (*mitosis*). If one takes a wound of the skin as an example, one can observe that through mitosis of the cells in the skin (*dermis*) surrounding the lesion, the wound is covered with new tissue and the wound is gradually closed. These two possibilities of adaptation and mitosis are prerequisites for healing and survival of the organism.

At birth, and up to about three years thereafter, brain cells (neurons) also have the possibility of adaptation and mitosis. But gradually, during the third year after birth, when the child starts to say "I am", the neurons gradually almost completely lose their ability to adapt and for mitosis. Still, during adult life, through physical and mental exercise, one can build more synapses between neurons, but formation of new neurons is practically impossible.

Furthermore, adaptation to changes in the environment becomes extremely difficult for neurons. One can stop the blood supply to a limb for at least an hour-and-a-half without serious consequences. This fact is put to use for operating on limbs. The blood supply is discontinued to prevent significant blood loss. The central nervous system and the brain are extremely susceptible to changes in the blood supply. Therefore, many mechanisms exist in the body to make sure that the blood flow to the brain is optimal. Should the blood flow to the brain be disconnected for a few seconds, we would lose consciousness. If the blood flow to, or the oxygenation of the brain was interrupted for three to four minutes, the neurons would be significantly stressed, and after five to six minutes irreversible damage and ultimately cell death would occur.

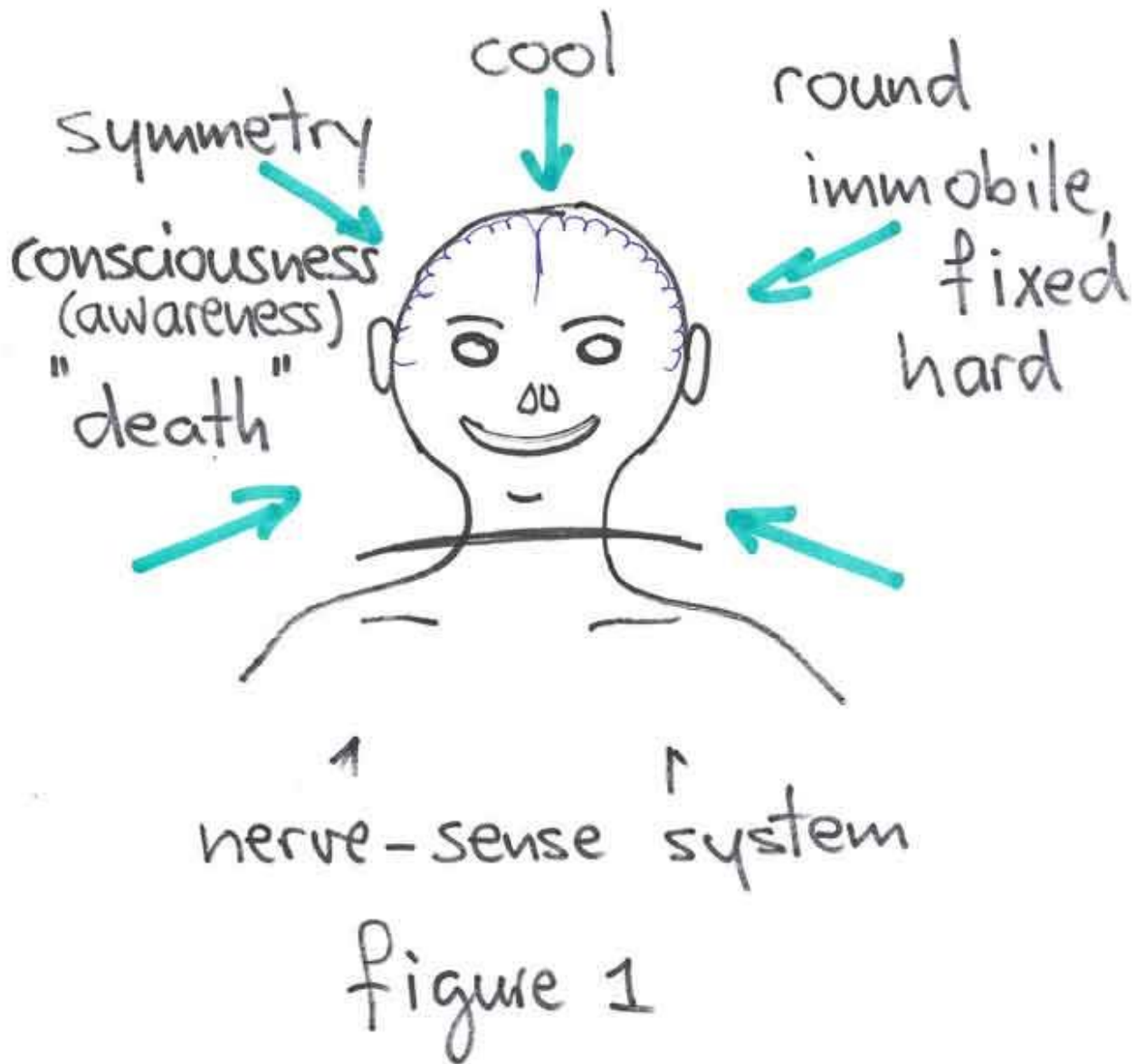
Thus, one could say, that the neurons in the brain are always "delicately balancing between life and death", because they have practically lost what all other cells in the body still possess: adaptation and mitosis, or life. Therefore, one could say that in the skull, one predominantly finds the process, the principle of **death**.

When one measures how much warmth is radiated from the body, one will find that one loses a significant amount of warmth from the head, especially from the forehead. That is why one usually does not cover one's head. One likes to "keep one's head cool" in order to function well. If the temperature of the head rises, as in the case of fever or heat stroke, one might enter into a state of delirium or unconsciousness. Therefore, one could say that **coldness** is another principle found in the head region.

From the brain, the nerves run down into the trunk and limbs of the body. Interestingly, more than 90% of all nerves leaving the brain *cross-over* to the opposite side of the body. Symmetry

and "crossing-over" are pre-requisites for the foundation of consciousness, provided by the astral body and self-consciousness, provided by the "I" or Ego (see the Chapter on the Four-Fold Man).

Thus, if one summarizes what the characteristics of the **head** region are, one could list the following principles: **hardness**, **immobility**, **symmetry**, **coldness**, **consciousness** (awareness) and **"death"** (see figure 1).



Explanatory drawing by Robert Gorter

2) ABDOMINAL REGION WITH THE METABOLIC-LIMB SYSTEM (LOWER POLE)

Now, let us look at the **abdomen**. The abdominal cavity is situated under the diaphragm. It harbors the metabolic system, including the gastro-intestinal tract with the intestines, liver, pancreas and spleen, and other organ systems like the urogenital system with its kidneys, bladder and the genitals.

Firstly, the abdomen is soft, flexible and most inner organs can be palpated from the outside. During a physical examination, the doctor or other health care provider can palpate the various organs like the liver, spleen, intestines, kidneys, uterus, etc. It is impossible to palpate the brains from outside (the eyeballs are an exception, if one considers that the most important parts of the eye, namely the *retina* and the *sclerae*, are part of the brain).

In an observation of the locations of the various organs, one notices that there is no symmetry to be found in the abdomen: the stomach is slightly located to the left, the liver with its gall bladder is located explicitly to the right, the spleen to the left and the pancreas is somewhat in the middle but with the caput shifted to the right. The intestinal tract "meanders", so to speak, through the abdominal cavity. The position of the stomach, the duodenum and the ileum is determined – in part – by the position of the person and the food content of the gastro-intestinal tract. The large intestine (colon) is most fixed in its position.

Another phenomenon is the constant peristalsis of the gastro-intestinal tract and the ureters of the urinary tract. The small and large intestines, the bile ducts, the pancreatic duct and the ureters all exhibit peristalsis almost permanently, somewhat dependent on food intake. One can often hear bowel sounds a few meters away from a person and certainly always with a stethoscope. If one does not hear any bowel sounds, it is usually a sign of bowel obstruction (ileus), which can be a life-threatening situation (think of the contrast to the skull where there is absolute quietness and immobility).

Thus one can observe the principles of **asymmetry**, **flexibility**, and **movement** in the abdominal region (see figure 2).

However, regarding the principle of asymmetry in the abdominal cavity, there is seemingly one exception: the urogenital system! How is it possible that there is symmetry where asymmetry is the rule?

When one looks at the kidneys, which are located retro-peritoneally and right under the diaphragm, one can see very clearly that there are two symmetrically located mirroring bean-shaped organs, the kidneys (although the right kidney is slightly lower than the left kidney, because of the adjacent liver, which gives the kidney less space right under the diaphragm and pushes the kidney somewhat downwards).

Furthermore, the genitals express a predominantly symmetrical anatomy. The ovaries or testicles are two organs, which have a symmetrical location in women in the pelvis (*ovaries*) or in men, extra-abdominally in the *scrotum* (testicles). The ovaries have "internalized", so to speak, the moon-rhythm of 28 days; the testicles have "externalized" a 24-hour rhythm.

And when one looks at the anatomy and the embryological development of the uterus or shaft of the penis, one can see that they were formed out of two symmetrical halves, which fused together. How is this possible?

Returning to embryology, one can observe the following development:

All vertebrae, very early on in their embryonic life, develop seven pairs of brachial arches (and pouches) out of which several structures are formed. In fishes, for instance, they form the jaws and the gills. In mammals and in humans, they form, among other things, the mandibula, the three middle ear bones, and a main part of the larynx. The brachial arches are located in the head region, where the head region thus borders the region of the thorax. In this area, where the arches are developed, at birth, we find the entrance of the digestive tract (the mouth with its own structures, like the tongue), and the entrance of the respiratory tract (nose with its own

structures).

In a very early stage of human (mammal) embryonic development (at the stage of four *sommites*), cells from the sixth and seventh pairs of brachial arches separate themselves from the arches and migrate downwards towards the developing abdominal cavity. In the primitive abdominal cavity, these cells form the beginning of the formation of the primordial kidneys. Out of these primordial kidneys the final, highly developed kidneys, as we know them in the newborn, are developed. But these brachial arches belong to the head region and are built symmetrically (see figure 2). Therefore, the kidneys in the abdomen are built symmetrically: they "belong" to the head, so to speak! As soon as these cells from the sixth and seventh pairs of brachial arches have arrived in the abdominal cavity-to-be, the growing diaphragm closes off the abdominal cavity from the developing thorax. A further development can be observed when we follow the development of the primordial kidneys. From these primordial kidneys the genitals are developed. In the same way that cells separate themselves from the brachial arches, we can see cells separate themselves from the primordial kidneys and move further down to what will become the pelvic region. Here, these cells initiate the formation and development of the ovaries or testicles and the other parts of the reproductive organs (see figure 2). Therefore, the reproductive organs are also built symmetrically. Thus, one could say that the kidneys and the genitals are symmetrical because they "belong to", they are "part of" the head region. They are "guests" in the abdomen. In Anthroposophical medicine therefore, illnesses of the kidneys are often treated as if they were part of the head region.

Blood has the highest temperature in the abdomen and therefore one can say that another characteristic of this region is **warmth**.

Returning to the gastro-intestinal tract: it is remarkable how well the gastro-intestinal tract can adjust to changes in the environment. Just imagine how much, how irregularly and at what frequencies, and exactly what (most) people put in their stomachs! To give some examples: various artificial food stuffs with artificial colorings, taste-enhancers, preservatives; poisons such as alcohol; various medications which are alien to the organism; etc. And the liver is there to detoxify the blood which flows from the gastro-intestinal tract to the liver. The liver is a very potent organ which has a huge capacity to adjust and integrate with our organism what comes

from the outside world through the oral uptake into the body.

Approximately every seven to ten days the whole inner layer of the gastro-intestinal tract, the mucosa, is renewed. This is a sign of remarkable forces of regeneration. This is done through continuous cell division (mitosis). These forces of regeneration are to be found everywhere in the inner organs of the gastro-intestinal tract, especially in the liver. Later in the course attention will be paid to each major organ or organ system in the body and their characteristics.

In addition, reproduction takes place in the abdominal cavity. Therefore the conclusion that the abdominal cavity has an abundance of **life**, is justified.

There is another quality of the metabolic system which is important to mention here, and that is the process of destruction, dissolving, diluting. An important function of the metabolic system is digestion, with resultant anabolism and catabolism at cellular level.

If one observes what happens in the digestive tract during digestion, one can summarize it in the following way:

The digestive tract starts with the mouth and its surrounding tissues, like the lips and the cheeks. The first organ which the ingested food meets is the teeth. The teeth function in the breaking down of the food. Through chewing the form, the shape of the food is destroyed and is dissolved in saliva. (This process of digestion will be discussed in later chapters, in the context of the twelve senses, nutrition and the potentizing of medicinal plants and minerals). One is very conscious of what one is chewing: one notices the smell, the taste, the consistency, the temperature, etc. When the food is sufficiently chewed and mixed, dissolved in the saliva, one can swallow. Under normal circumstances, awareness of the food ends after swallowing. It "disappears" through the esophagus into the stomach. It is a sign of health when one has no awareness of what happens to the food and of the digestive process until one has the urge to go to the bathroom.

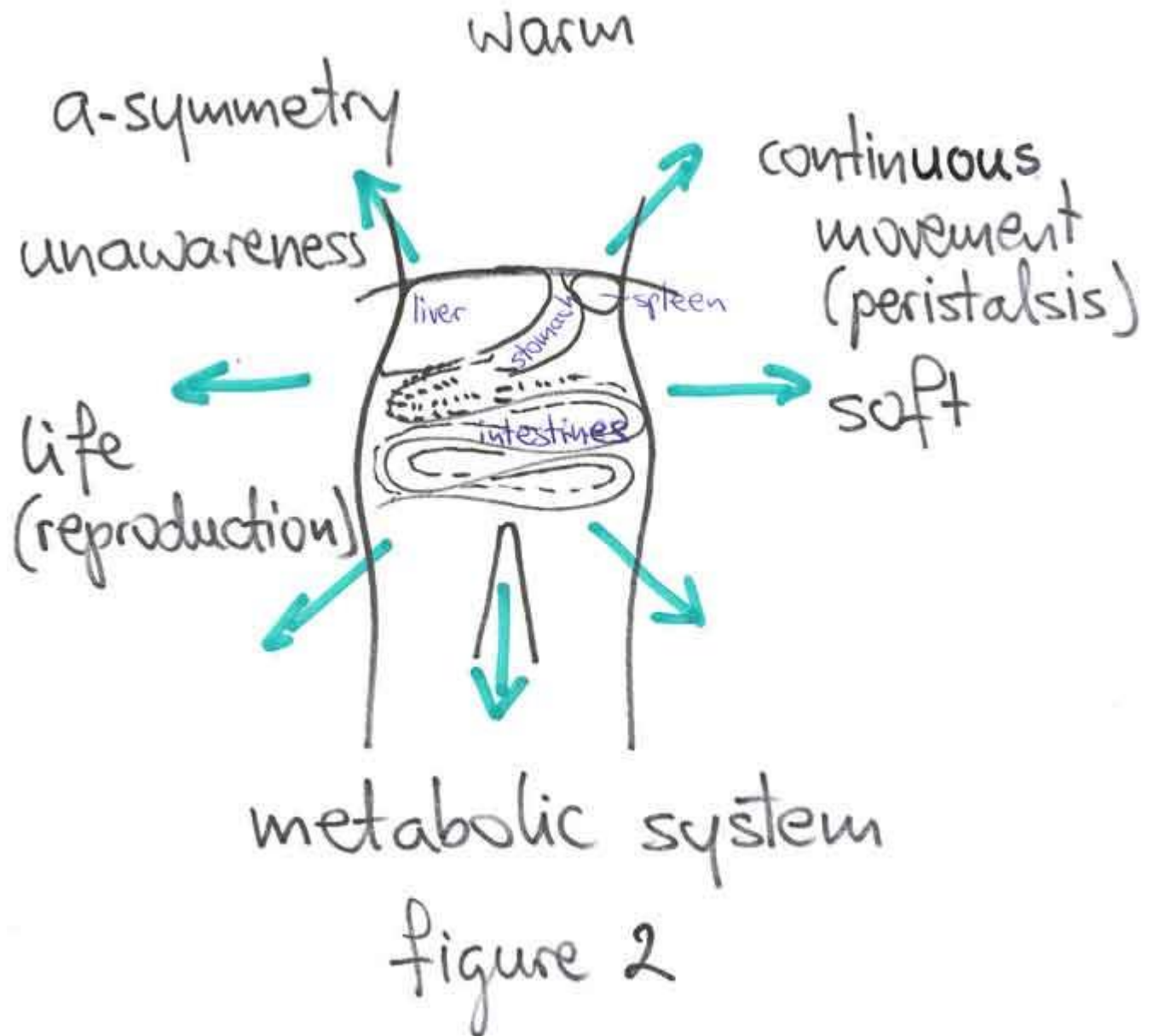
But through science, we know that below the diaphragm, in the digestive tract, the food is further dissolved and broken down. Through the gastric fluids, the bile and the various enzymes from the

pancreas and the glands inside the intestines, a further dissolving and breaking down takes place. Finally, the destruction brings forth amino acids, glucose and minute droplets of fat, which are absorbed through the mucosa of the intestinal tract. Thus, throughout life, there is a tremendous, never-ending destruction and dissolving process going in the digestive tract, and one might thus say that other important characteristics of the abdominal region are the **dissolving** and acute **destructive processes**.

Polar to the destructive, catabolic forces in the intestinal tract are the synthesizing, anabolic processes in the liver. All the blood flowing from the intestinal tract (with the exception of a few centimeters of the distal part of the rectum), carries the reabsorbed amino acids, glucose and fat droplets to the liver. Here proteins, glycogen and many other substances, essential for the maintenance of the organism as a whole, are synthesized (see figure 2).

In what sense are limbs parts of the metabolic system? Limbs are, from an anatomical point of view, not part of the abdomen. When one observes the four limbs, one can notice that they are "made" or "conceived", so to speak, for movement. Look at the numerous larger and smaller joints, at the whole anatomy of the limbs, and one might conclude that they are made to make us active beings in the physical world. Our muscles overcome gravity and enable one to be active as an individual.

In addition, when one is active, when one uses one's muscles, warmth is produced. One might also say that acting, doing, willing "lives" in the warmth element. (This will be discussed further in the section on the skeleton). The limbs are therefore considered to be part of the metabolic system.



Explanatory drawing by Robert Gorter

THE POLARITY BETWEEN THE REGIONS OF THE HEAD AND THE ABDOMEN

When one takes a look at the two regions of the head and the abdomen, it becomes evident that there is a clear polarity:

Head (Upper Pole): hard, immobile, inflexible, fixed, symmetrical, cool, "dead", harboring the central nervous system.

Abdomen (Lower Pole): soft, mobile, movement (peristalsis), asymmetrical, warm, "living", harboring the metabolic system (see figure 1 & 2).

3) THORAX WITH THE RHYTHMIC SYSTEM

Situated between the head and the abdomen one finds the chest (thorax). What can one say about the thorax region and its function and characteristics?

In the thorax, one finds as the main organs the lungs and the heart, and in addition, the thymus gland as an important part of the immune system.

When one examines the anatomy of the lungs, one can see that they are built rather symmetrically, but that the left lung, with two lobes, is smaller than the right lung, which has three lobes. The left lung is smaller in order to accommodate the heart, which is also built rather symmetrically. But in the heart, there is a shift to the left. The location of the heart is shifted to the left and the heart itself has a larger and more developed left ventricle than it does a right ventricle.

One could say that the degree of symmetry in the organs of the thorax, and in their location, falls somewhere between that of the head (strict symmetry) and that of the abdomen (asymmetry).

To gain an understanding of the functioning of the heart and the lungs, one should have a look at some of the work of Johann Wolfgang Goethe, who lived in Germany from 1749 to 1832. He was a writer and poet, a statesman and a scientist. He wrote, amongst other things, *Faust*, a drama, which portrays Faust as a typically striving modern man and scientist, who sells his soul to the devil in order to be a better scientist and gain control over his surroundings (initially to serve his fellow men). Goethe became world-famous due to *Faust*. At least once a year the complete *Faust* is performed at the Goetheanum, Dornach, Switzerland, and the performance takes almost a full week.

Goethe himself felt that his best works were his scientific writings. Later in this course, more attention will be paid to these writings.

One of the discoveries made by Goethe was the phenomenon of **metamorphosis**. Everywhere he looked in nature, he found that any given form always develops out of a previous existence. The

flowering plant is usually described in elementary botanical texts as if it were an external assemblage of different parts. Leaves, sepals, petals, stamens, etc., which are separate and independent of each other. There is no hint of any necessary relationship between them. This is the "analytical" image of the plant as it appears to the intellectual mind in the cognitive mode typical of daily consciousness. Linnaeus produced a system for organizing plants into species, genera, etc., on the basis of comparing the parts of a plant as they occur in the different specimens. In contrast to this, Goethe saw the plant holistically. He discovered another dimension to the plant, an intensive aspect, in which these different organs are intimately related. In fact, he discovered that they are really all in essence one and the same organ. All different parts or organs of the plant are metamorphoses of the leaf. A flowering plant is a continuity of form. "A plant is nothing but leaf !".

Another example of metamorphosis is the way in which the egg of a butterfly which in turn becomes a caterpillar, which in turn becomes a cocoon or chrysalis, and which again in turn becomes a butterfly:

**Behold the plant,
it is the butterfly
fettered to the earth.
Behold the butterfly,
it is the plant
freed by the cosmos.**

(Rudolf Steiner, in "Man as Symphony of the Creative Word")

The plant: the butterfly fettered to the earth. The butterfly: the plant freed from the earth by the cosmos. If one looks at the butterfly, indeed at any insect, from the stage of the egg to the point when it is fluttering away, it is analogous to the process whereby the plant is raised up into the air, fashioned in the air by the cosmos. If one looks at the plant as such, it is conversely like the butterfly fettered to what is below. The egg is claimed by the earth. The caterpillar is metamorphosed in a process analogous with leaf-formation. What is contracted in the plant has its butterfly counterpart in chrysalis-formation. And then what unfolds in the butterfly as such, has its counterpart in the plant in the development of the blossom.

Another example of metamorphosis is that of amphibians: egg, tadpole, frog.

Another discovery of Goethe was the "*Urphenomenon*". One may translate that as "**primal phenomenon**". He discovered that there are certain phenomena in nature which are simply there and which can only be understood by accepting them as "given". For instance, that the sky is blue during the day and that the sunrise or sunset is yellow-orange-red. Goethe's light and color theories will be discussed at a later point, when we deal with Goetheanistic Science in relation to *art therapy*.

Goethe also made the observation that water, when touched by the wind, will develop waves. When walking on the beach, one can observe ripples in the sand, caused by the movement of the water of the ocean, or ripples in the sand dunes, caused by wind blowing over the sand. Similarly, on the banks of a creek or river, if the water does not flow too fast, the sand is drawn along with the flow of the water. Or when one watches the string of a string instrument touched by the moving bow, one sees that the strings form waves between the fixed points. Everywhere in nature one can observe that when something which is at rest is touched by something which moves (relatively speaking), one can observe the same primordial phenomenon: a **rhythm**. A rhythm appears whenever **immobility** and **mobility** (rest and movement) meet. A *new* principle is born out of this polarity. Rhythm is very much a *process*, a *function*. Rhythm is always *becoming*.

In physical geography, a dune is a hill of sand built either by wind or water flow. Dunes occur in different forms and sizes, formed by interaction with the flow of air or water. Most kinds of dunes are longer on the windward side where the sand is pushed up the dune and have a shorter "slip face" in the lee of the wind. The valley or trough between dunes is called a slack. A "dune field" is an area covered by extensive sand dunes. Large dune fields are known as ergs.

Some coastal areas have one or more sets of dunes running parallel to the shoreline directly inland from the beach. In most cases the dunes are important in protecting the land against potential ravages by storm waves from the sea. Although the most widely distributed dunes are those associated with coastal regions, the largest complexes of dunes are found inland in dry regions and associated with ancient lake or sea beds, and deserts, like the Sahara.

Dunes also form under the action of water flow (fluvial processes), and on sand or gravel beds of rivers, estuaries and the sea-bed.

The modern word "dune" came into English from French circa 1790. In ancient times, words cognate to "dune" probably had the meaning of a built-up hill or citadel fortification.



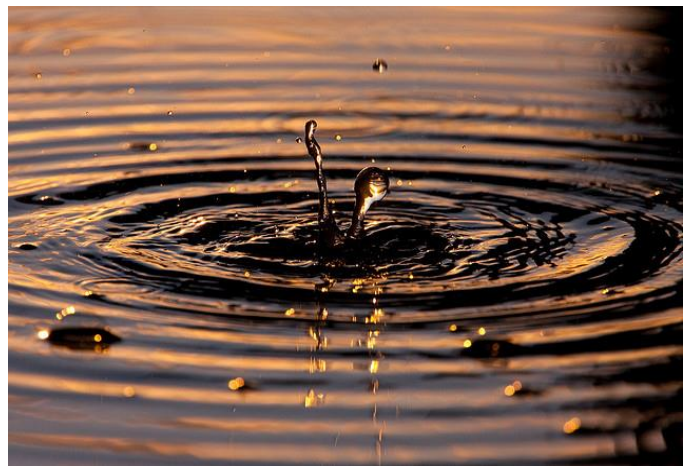
In these pictures the effect of the moving air (wind) on the resting sand depicts a rhythmical phenomenon - see the rhythmical waves in the sand.

In fluid dynamics, wind waves or, more precisely, wind-generated waves are surface waves that occur on the free surface of oceans, seas, lakes, rivers, and canals or even on small puddles and ponds. They usually result from the wind blowing over a vast enough stretch of fluid surface. Waves in the oceans can travel thousands of miles before reaching land. Wind waves range in size from small ripples to huge waves over 30 m high.

When directly generated and affected by local winds, a wind wave system is called a wind sea. After the wind ceases to blow, wind waves are called swells. More generally, a swell consists of wind-generated waves that are not—or are hardly—affected by the local wind at that time. They have been generated elsewhere or some time ago. Wind waves in the ocean are called ocean surface waves.

Wind waves have a certain amount of randomness: subsequent waves differ in height, duration, and shape with limited predictability. They can be described as a stochastic process, in combination with the physics governing their generation, growth, propagation and decay—as well as governing the interdependence between flow quantities such as: the water surface movements, flow velocities and water pressure. The key statistics of wind waves (both seas and swells) in evolving sea states can be predicted with wind wave models.

Tsunamis are a specific type of wave not caused by wind but by geological effects. In deep water, tsunamis are not visible because they are small in height and very long in wavelength. They may grow to devastating proportions at the coast due to reduced water depth.



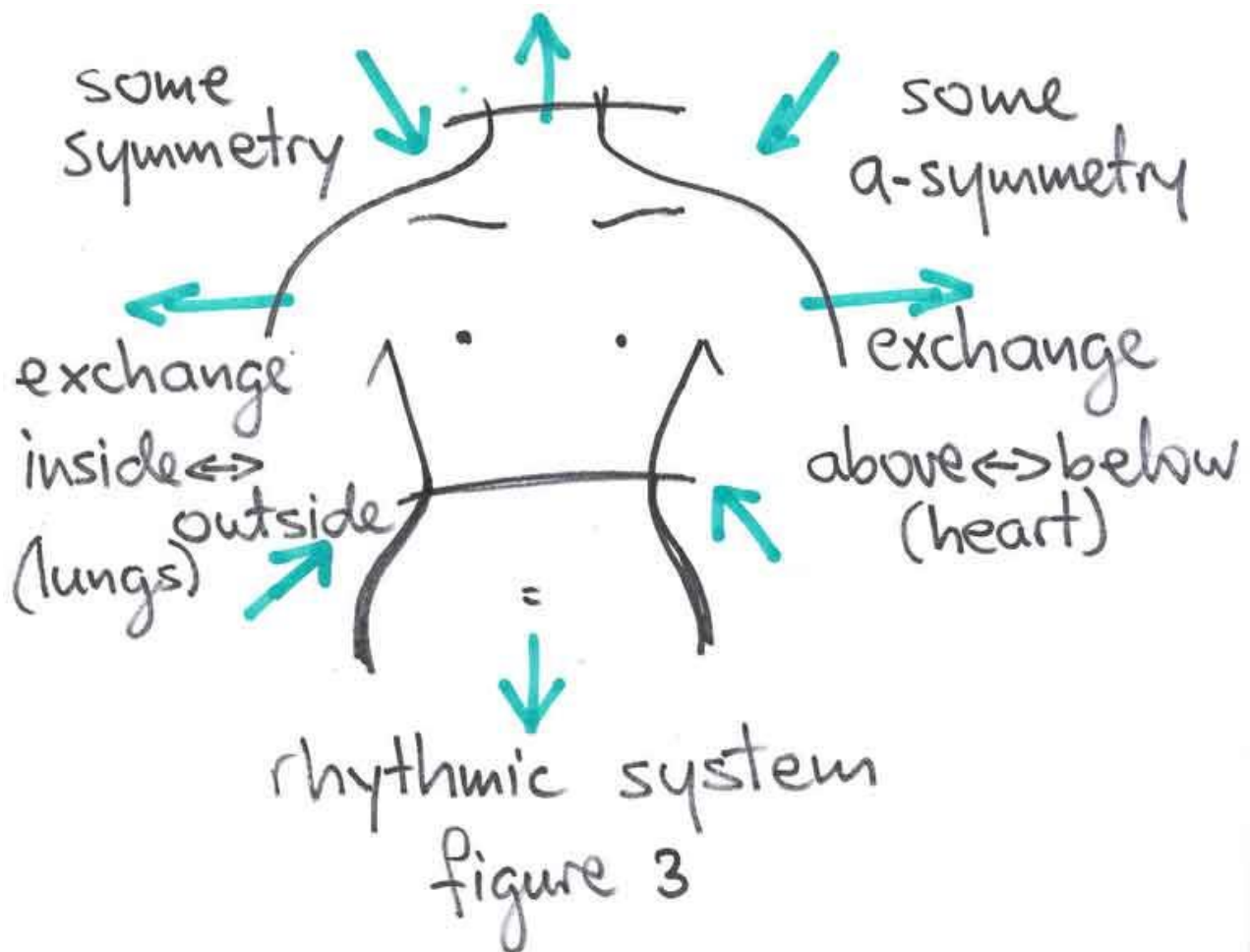
In these pictures, the effect of moving water (a drop falling) on the tranquil surface of the water depicts appearing waves as a rhythmical phenomenon.



Who does not recognize these cloud formations in these two pictures when wind moves and touches the much slower or not-moving clouds and brings about a rhythmical phenomenon?

When one observes the thorax, one might say that it is placed between the poles of the head (immobility) and of the abdomen (mobility). As a result something new appears, namely the rhythmical functioning of heart and lungs.

The most distinguishing characteristic of the heart and lungs is that they function rhythmically. The organs we find in the chest are therefore called the "Rhythmic System" (see figure 3).



Explanatory drawing by Robert Gorter

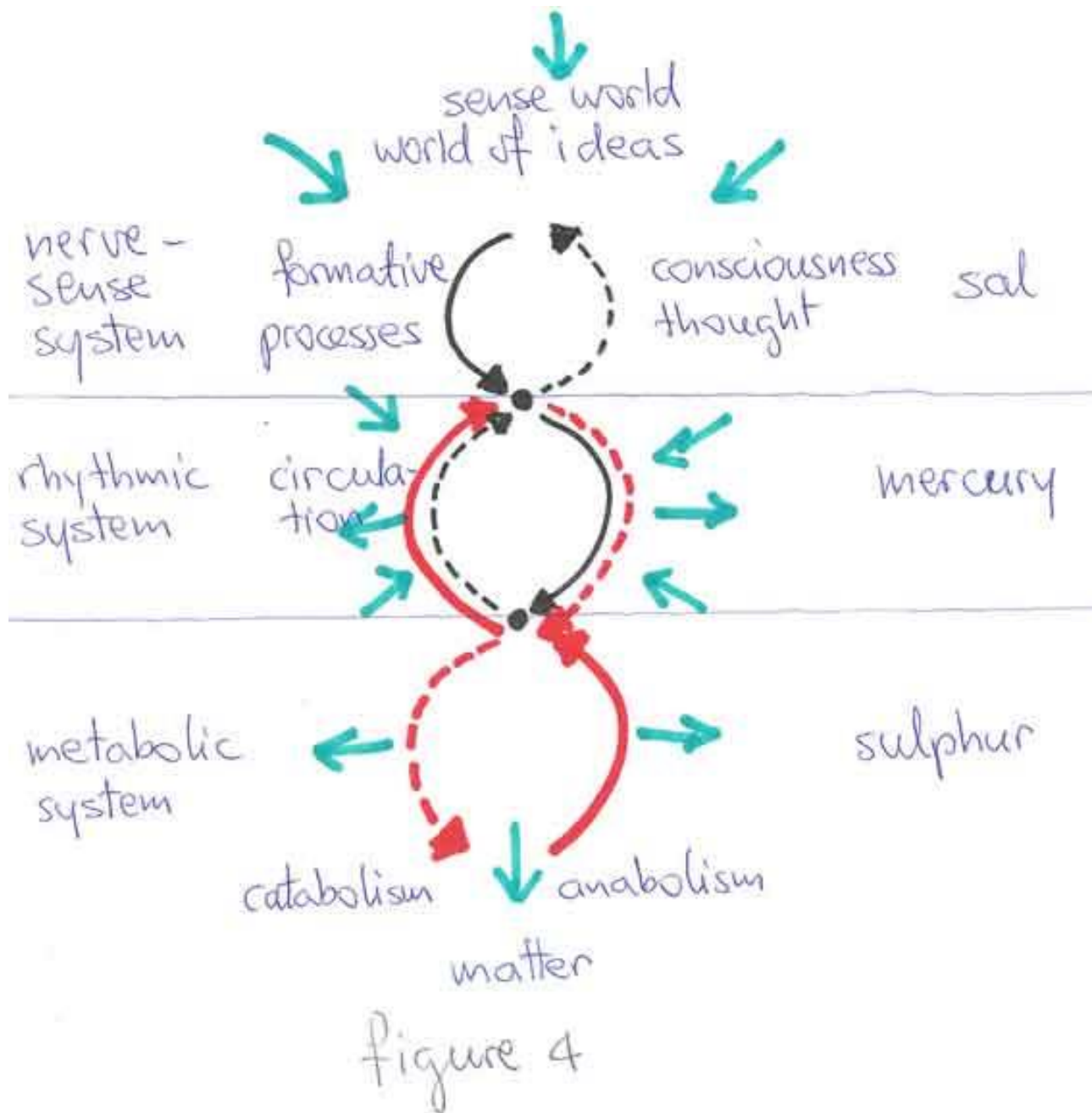
Thus, according to this way of looking at the human being one might say:

"A human being is three-fold, comprised of three by themselves independent (distinct) systems: the nerve-sense system, the rhythmic system and the metabolic-limb system"

The nerve-sense system is mainly located in the head region, but is of course, spread throughout the body. The head gives a "home" to the brain and most of the sensory perceptions. The central nervous system facilitates all conscious activities and bodily functions. However, in other areas of the body, there is also nerve tissue and sensory perception present.

The same is true of the rhythmical system. One can say that the heart is the center of the blood circulation. One can use the heart as the representative example of the rhythmical system. From the heart, the blood gets its rhythmic pulsations. One could say, that the blood circulation is "organized" by the heart. In addition, throughout the body, the rhythmical pulsation of the blood stream as it flows through the arteries can be perceived. One can therefore conclude that, although metabolic processes are mainly located in the abdomen, there are metabolic processes occurring throughout the body.

Thus, although each system is located mainly in one of the three bodily regions, in the healthy person they inter-penetrate, support, and counterbalance each other. Later we will see that when a system gets isolated or too strong or too weak in relation to the two other systems, this can become the basis for disease. But we must remember these three systems as being very vital and in continuous "dialogue" with each other. There exists a very dynamic, ever changing and adaptable interaction between these three systems in the human. As a health care provider, if one is aware of the three systems, or has learned to "read" and diagnose their functioning, one can influence this interaction beneficially by appropriate therapeutic interventions. These include medications, artistic activities, curative eurythmy, exterior application of compresses or ointments, psychological and biographical (social) support, and dietary and lifestyle modifications (see figure 4).



Explanatory drawing by Robert Gorter

These principles lay the basis of the application of Anthroposophically extended medicine. Large university and teaching hospitals and clinics and numerous doctor's offices practice according to these principles.



One example of many university hospitals that is completely dedicated to Anthroposophically extended medicine. This hospital is located near Bochum and Dortmund in Germany and has 800 beds and all ambulatory care a teaching hospital needs.



One other example of a teaching hospital that is completely dedicated to Anthroposophically extended medicine. This hospital is called “Filderklinik” in Filderstadt, located near Stuttgart in Germany and has 450 beds and all ambulatory care a teaching hospital needs.



Entrance of the doctor’s offices and next door the Ita Wegmanhuis at the Weteringschans 72-74 in the very center of Amsterdam, the Netherlands.

In the early 1970’s, Robert Gorter bought the very large properties at the Weteringschans 72 to 76 to establish an ambulatory Anthroposophical health care center, bio-dynamic vegetarian restaurant with cooking classes facilities, etc.

By the time he left for the USA (in 1982-1983), he donated all he had built up to a Non-Profit Organization “Stichting Odin” to follow the principles of Three-Fold Social Order: property cannot be in private hands but belongs “to all of us.”

Currently, six Anthroposophical medical doctors work there with a large team of therapists.