Child Development-Conception to Birth

Embryology from an Anthroposophical Perspective

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Embryology is a modern science. It was in the Renaissance that isolated researchers such as Leonardo da Vinci first showed a quickened interest in the subject. Two to three hundred years later, the evolution of thinking and fundamentally important research by Goethe, Olken, Carus, and others created the basis for the study of embryology and the idea of metamorphosis associated with it. Systematic research in embryology was only well established after 1940.

This new scientific possibility offered the public the ability to actively engage their thoughts on the interval where invisible transformation takes place between two visible phenomena, since only isolated phenomena can be found during pregnancy examinations or after miscarriages. Continuous development as it is described in textbooks cannot be directly observed.

All that we see are microscopic "snap-shots." This is the result of an activity–an invisible transformation, or metamorphosis–in the interval between two visible forms. Films that show this continuous development are attempts to make the transformation graphically clear. However, it always remains invisible and can only be comprehended through the activity of thought. It is just this activity of thought that is new. It has only been possible for about one hundred years, since the end of the nineteenth century. It assumes the modern ability to transcend with consciousness the threshold between that which can be perceived by the senses and that which is extrasensory.

Reproduction is a process of biological life, like breathing, blood circulation, digestion, and so forth. Maturation of sperm cells and egg cells is a particular specialization of the reproduction process. Reproduction is constant. For instance, the skin constantly renews itself, intestinal mucous membrane, blood, and hair are always growing. Reproduction penetrates the entire organism at varying tempos: the intestinal mucous membrane renews itself every four days, the skin every four weeks, the blood every hundred days. The slowest substances are the nerves. They need about seven years in order to fully regenerate.

Within this intensive renewal activity, there is one that is specific–the formation of gametes (mature male and female reproductive cells). This is the only place where an organism biologically divides itself into male and female. The gametes are formed within the genitals, in the gonads of ovaries or testicles. This intensive cellular fluid regeneration is the matter, indeed, the **content** of an organism. The preservation of **form**, however, can be found in the invisible archetypes. They come out of the astral body and are active in the life body, lead by the individuality, the "I." The appearance of form is forever maintained through constitutive archetypes that hide themselves from sensual perception.

The cells of a human body are not isolated but rather found in tissue, enmeshed in fluid, strands, and filaments. The human body is 75–95% liquid, depending upon age and organ. Human tissue is tender and weak in its structure since it has comparatively little firm material contained within a lot of fluid. In tissue, substances are constantly transforming themselves. Confined by the skin, every cell is an organized collection of matter within liquid. It is like a living drop that breathes, extends, and then concentrates itself. There is a moment of maximum extension (with the thinning of the fluid) and a moment of maximum concentration (with the thickening of the fluid). A cell pulses between the thinned, extended state and the thick, viscous, concentrated state. Chromosomes can only be observed as protein strands in the thicker phase, and at that time take on a characteristic form. As cells, they continue to pulsate, extending, thickening, and then the chromosomes dissolve. This dissolution

is equal to the cell becoming chaos. It opens itself to the potency of formative forces in that it loses its earlier form in order to create itself anew. That is how the form is kept alive and the re-forming of cells and tissue is ensured, depending upon the situation and need.

Chromosomes, like other cellular structures, are the results of condensation of formative archetypes in matter and not causes of form characteristics. The word *chromosome* means "a colored strand"–they are the structures that lend themselves the most to coloration when preparing cells for examination under a microscope. Genes are the conceptual parts of chromosomes that are arbitrarily apportioned along the length of these strands. The name comes from the word *genesis* and means "divine creation." The Creator wants to be found in the smallest biological structure. Cell division (mitosis) is an important process of reproduction. Cells divide themselves through mitosis at differing rates. Meiosis is the special form of cell division in the gonads, a specialized exception found nowhere else.

In the process of mitosis, the cell doubles itself and divides in such a way that two new cells come about that quantitatively resemble each other. In the process of meiosis there are two phases: the first is a mitosis and the second is a division without a previous doubling. The end result is that from one starting cell, four are created which, however, contain each only half the genetic material. This process pertains to the formation of sperm cells in the testicles. With the formation and maturation of egg cells in the ovaries, only one egg cell is produced from every ancestral cell, and not four, because the others dissolve themselves as polar bodies during the process. After maturation, the gametes are excreted by means of sperm ejaculation or menstrual bleeding, and they die. Only when impregnation takes place can an egg cell and a sperm cell, as a fertilized egg cell, live on in a new way and in a new form. Gametes themselves are not fertile. They expire after their long and complicated maturation if impregnation has not taken place. However, simultaneous with fertilization they reach a new qualitative level of life, without dying. They serve as a development basis for the formation of a new organism that is biologically and materially different from the mother-organism, wherein the egg cell was formed, and from the father-organism, where the sperm cell was formed.

Differentiation that occurs in the genetic stream and the gametes (reproductive cells):

Just as gametes, after their long maturation, leave the organism and perish as infertile and biologically unfit cells, other differentiating qualities can be determined. What are their differentiating qualities and role in the reproductive process?

Let us begin with the egg cell**.** Already in the fourth week of pregnancy, within the embryo, there begins the organic construction of what will later become the new child's reproductive organs and the first cells that will develop further into sex cells. This construction is, at first, common to both sexes and is still undifferentiated. After the fourth week of pregnancy, if the embryo develops further into a female organism, this biological composition develops one-sidedly towards the inside, back, and upward and loses the other spatial directions. However, the right-to-left symmetry remains. Then the ovaries develop as well as the uterus, the fallopian tubes, and the vagina. The long maturation of the egg cells is already initiated in the ovaries in the fourth week of pregnancy but they will rest between the first and second phase of meiosis until puberty. The rhythmic ovulation process begins at puberty when month to month one "egg cell" is released from an ovary: one time from the right, one time from the left. During the hours of ovulation, a localized rise in temperature occurs around the ovary. A mature egg cell is one of the largest cells in the human body; measuring approximately 0.1 millimeters, it is within the realm of visibility. This cell is still not a mature egg cell because the second phase of meiosis is completed only during an eventual impregnation. If no impregnation takes place, this immature cell dies and is expelled from a woman's body during menstruation, along with the spent uterine lining.

The egg cell is a turbid cell without its own power of movement. It rests within the surrounding follicle and is moved into the uterus by the peristaltic action of the fallopian tube. This follows after two weeks of building up in the time between the last menstruation and ovulation.

Then there is another two weeks of building up between ovulation and the next menstruation. The egg cell becomes chaotic through its differentiation and its comprehensive range of chemical potential. In this state of chaos, it is especially sensitive and open to cosmic archetypes. From the fourth week of pregnancy, the male development also begins in the common organic construction during which phase the male gametes, the sperm or spermatozoa, are developed. The male organs develop towards the outside, the front, and downward. The right-to-left symmetry remains.

Maturation of the sperm is also at rest until puberty. However, after puberty, sperm formation is not rhythmic or regular, and with every ejaculation–which can occur many times a day and is influenced by sensual stimulation–thousands of mature sperm are ejected and perish. The reduced temperature of the testicles, which are outside the body, is critical to male fertility. Sperm cells are one of the smallest cells in the human organism.

Sperm is highly differentiated and thoroughly formed. It has a crystalline structure and, because of its high degree of crystallization, almost no chemical potential. Sperm are transparent cells with their own power of movement (disorganized, directionless, and fast). These are earthly qualities. So, it is clear that with the separation of the sexes, a kind of onesidedness appears, an extreme polarization between the male and female reproductive cells. At the end of the process, every gamete is biologically unviable and perishes. The following table shows a comparison of the polarization:

Female	**Male**
One	**Thousands**
Slow to mature	**Quick to mature**
Large	**Tiny**
Regularity	**Irregularity**
Rhythmic	**Arrhythmic**
Chaos	**Form**
Inside	**Outside**
Back	**Front**
Up	**Down**
Warm	**Cold**
Clouded	**Transparent**
Unmoving, inert	**Power of movement**
Chemical potential	**Crystallized**

The fertilization process is first initiated by a localized rise in temperature during ovulation. Once a month, between the last and next menstruation, in the middle of the menstrual cycle, a rhythmic temperature rise occurs in the mother-organism. Within this warmth of ovulation, an egg cell is released along with its surrounding follicle. The last phase of egg cell maturation begins outside of the ovary. The released egg cell is received by one of the fallopian tubes and is moved further along towards the uterus by its peristaltic action.

The egg cell is cooled somewhat in this process. Spermatozoa in the semen come toward the egg cell. Their path goes from the vagina in the direction of the uterus. Sperm come from the outside, from a cooler temperature, and warm themselves along the way. That is the first step of fertilization and takes place before the two cells come into contact with each other. The undifferentiated, warm, chaotic state of the egg cell is differentiated and cooled by the sperm. Within the meeting of these two genetic streams, a warmth organism is formed. The polarities of one-sided and extreme cold and warmth are overcome. The individuality, the I, form the warmth organism from the balance that has occurred. The next step is the meeting of the gametes or reproductive cells. The egg cell is surrounded by thousands of sperm and in this moment a rhythmic rotation begins that lasts approximately thirty-six hours. A biochemical glow begins. There is still no penetration by a spermatozoon, but a light-organism has formed accompanied by ordered and harmonious movement. This is the second step of fertilization. Now, the individuality of the child has overcome the cloudy and inert state of the egg cell and the transparent, self-powered disordered-movement state of the spermatozoa and has again developed a light/movement organism out of the balance. The third step is what is traditionally known as actual fertilization, but is, in fact, the third process. A spermatozoon penetrates the egg cell, and its outer membrane chemically isolates itself from the mother-organism:

The first immunity processes begin. The other sperms die and dissolve. The egg cell goes through its last maturing by a process of further undifferentiating and chaos and by secretion of the so-

called polar body, a concentrate of hardened cell material that is incapable of life. A rejuvenation of the egg cell occurs in this moment of intense activity between the egg cell and the differentiating determinations of the spermatozoon. The spermatozoon loses its crystalline structure, swells up, expands, and then dissolves in the plasma of the impregnated cell. An egg has now been formed—a biological and genetically complete cell. This cell then divides for the first time (mitosis), and other divisions rhythmically follow. There is not yet any growth, merely cell divisions in geometric progression—one becomes two, then four, eight, sixteen, thirty-two, and so on. The morula is formed while still inside the fallopian tube (like a little mulberry or raspberry). This organism does not glow and has no power of movement itself. The entire activity is now chemical-biological and has relocated to the inner, light organism. The organism has overcome the polarities of potential chaos. A crystal forms and builds a chemical organism out of the balance, a new deed of the individuality.

The fourth step of fertilization is implantation into the mucous membrane of the uterus that has built up in the two weeks after menstruation and reached a high point in its development around the time of ovulation. Without fertilization (and the beginning of pregnancy), the mucous membrane would again deteriorate, and the dead tissue would be expelled with the next menstruation. With the implantation, which is an activity of the child, the built-up state of the mucous membrane and the hormone situation maintains itself until birth. The morula is still inside the fallopian tube (right or left) and then goes out so that it can fall into the uterus between the fifth and seventh days after conception. During this first experience with "falling" (weight, heaviness), the morula reshapes itself into a blastula or blastocyst. Here we have an organism that on one pole has formed a bladder filled with intercellular fluid, while on the other pole the cells of the no-longer-existing morula are thickened. During the process of falling, a polarization appears between cell thickness and fluid lightness. This changes the form of the organism. If the blastocyst was not an individualized, living totality, but rather an inorganic sphere, it would either burst in the mucous membrane or spring back into uterine space. However, it is embedded in the wall of the uterus—rather like an act of acceptance or receiving. The organism is now going through a new metamorphosis, and there is a recoil as the inner activity of the organism stays within itself, and there is a falling into heaviness but with a balancing buoyancy. A new fluid has formed at the pole where the cells were bunched. It is transparent, rich in silica, and poor in organic material, the amniotic fluid. The fluid that formed during the descent of the blastocyst is thicker, chemically active, and rich in material, the yolk sack fluid**.** In between is found the embryonic disk from which the body of the embryo will be formed. These two fluids are the first two enveloping organs of the embryo. In this fourth deed of the individuality, the separation of space that is typical for the female as well as the male sexual organs was overcome. With implantation a geographic location is chosen. A physical organism is formed that takes part in the laws of weight and lightness and the dimensions of space.

Fertilization, accompanied by the four deeds of the individuality that create balance, has overcome the extremely one-sided tendency to dissimilarity and separation of the sexes, and within one week and four steps has formed an individual organism that carries immunity, an organism that is fourfold in that it has the qualities of warmth, light, movement, and is biologically/chemically and physically/geographically localized. Implantation, the last step of fertilization, is simultaneously the first phase of formation of the amnion. Fertilization and the organic forms that follow, are already the visible results of contention between the genetic material and the individual constitution of the incarnating child. The localized rise in temperature during ovulation of the mother-organism is the first accommodating, genetic, organic activity that is encountered by the individual, the child who wishes to incarnate. It builds a bridge out of the earthly genetic stream to the individuality and its constitution, which was already prepared before conception.

The individual constitution prepares itself in a world that is inaccessible to sense observation, the world that is in the interval between visible forms. A kernel of enthusiasm from the sea of will is what inflames the individual motive to incarnate and begin a new life. This "midnight world"

before conception is the highest experience of spiritual development until after death. It is an awareness of the goals of human development in the present time and a growing enthusiastic absorption for the task of realizing those goals within their karmic webs on earth. This enthusiasm for the realization of the human acts like a magnet and draws the will toward the solicitous interest of all the spiritual hierarchies. A body of differentiated starlight–a star-body or astral body–envelops this kernel of spiritual enthusiasm. The will of the hierarchies to take part, with their presence, in the human creation of individuals is so great that the universe is threatened with becoming empty. But thanks to the cosmic reproduction force of healing and regeneration, the effects of the stars remain as envelopment around the kernel of individuality and the beings themselves remain sustained in the universe. A new body, a new covering, whether cosmic or etheric, now also belongs to the individual constitution. Each individual "I" forms itself out of certain characteristics of its own, and this composition differentiates it from others that are likewise formed out of the same components and properties but in different configurations. This is the spiritual physical body–one's own physical body within its spiritual being. It cannot yet be perceived by the senses because it is not yet penetrated by matter.

This four-fold individual constitution has occasioned the meeting between father and mother out of a line of ancestors, and, from the time of fertilization, it will begin to penetrate the genetic stream, fusing, overcoming, and transforming the organism so that it becomes a tool for its own destiny. Enthusiasm for the development of humankind joins itself to the warmth as an organic agent; indeed, it is the warmth in the organic. The hierarchical will-archetypes work in light and in ordered movement. The chemical activity of the cells and cell divisions is subordinate to these archetypes that imprint them into matter, and, through this organic connection, matter is transformed over time. The individual destiny that wants to fashion itself takes on a form in this way and allows traces of its acts upon the earth into the dimensions of space.

The formation of the embryonic amnion began with the last step of fertilization–the implantation. The embryonic disk, a two-layered cellular disk in the middle of the sphere that embedded itself into the uterine mucous membrane, will rest another two weeks during the formation of the amnion. The yolk sack is a thick, cloudy, chemically active organ. It is confined through one of the two embryonic disks called the endoderm or inner skin. Its functions are nutrition and metabolism.

The amnion is a transparent, vitreous organ. Equipped with light and formative forces, it is chemically inactive. It is, in turn, confined by the other layer of the embryonic disk, the ectoderm or outer skin. The allantois (sausage-like) is another amnion organ, out of the yolk sack and differentiated as a protuberance with the functions of elimination and detoxification. The entire outer spherical surface that is in direct contact with the uterine mucous membrane, along with the mother-organism, constitutes the fourth amnion organ.

Later the chorion further develops into the placenta. This organ intermediates between the two organisms, the mother and the fetal child. Within the mother-organism, the heredity–*the past*–resides, for the time of the pregnancy; this is the four-fold *present* organism of the child. This organism in turn carries or surrounds in its interior a third organism that will become the organism for the *future.* During the pregnancy, it will be elaborated upon by the individuality of the child for the time after birth. The four enveloping organs (embryonic amnions) fashion a complete organism with these four systematic functions:

Nutrition/metabolism	**Yolk Sack**
Transparency/form	**Amnion**
Elimination/detoxification	**Allantois**
Exchange with environment, circulation	**Placenta/Chorion**

The motor system, the limb system, is still missing from this organism. It is present in the embryo body, but it will first develop and mature after the birth in contention with the earthly forces. In the middle, between these four enveloping organs, is the embryonic disk that rests until the seventeenth day after conception.

In the first week, fertilization is completed. It is finalized with implantation, the step that includes formation of the enveloping organs. By the end of the third week, the organism has been formed in which the individuality will live until birth (amnions). The embryonic disk is in the middle of this organism. From the seventeenth day until the end of the fourth week, the individuality molds the organism surrounding the embryonic disk until it is efficiently reorganized into an embryonic body.

This body contains all the organs that will serve as tools for the individuality after birth. By the end of the first month, the individuality has already built up its own organism in one shot. The individuality exists not only in relationship to space, but also to time–the 36-hour rotation and glow in the second step of fertilization, the day of implantation, and so forth. Every month of pregnancy has its own underlying characteristic. During pregnancy, the child experiences the course of the year for the first time. Birth comes at the end of the third quarter of this first year. The first three months after birth also belong to pregnancy because the individuality must contend with earthly conditions for the first time and ripens its physiology based upon what is living in its environment.

The development of the embryonic organs from the amnions begins on the seventeenth day after conception. Until then the embryonic disk is resting and the creation activity is in the amnions. The embryonic disk consists initially of two skins, the ectoderm and the endoderm, which confine the yolk sack and the amnion sack.

The first noticeable gesture of the reshaping of the embryonic disk occurs on the ectoderm around the seventeenth day. At the place where the head pole will develop, an impression appears, as if an invisible finger had imprinted it. Out of this the neural cavity develops away from the head pole. This indentation as well as the neural cavity determines the anatomic spatial bearing–right, left, i.e. the lateral symmetry, caudal, dorsal, and ventral. The neural cavity develops further into the neural tube, thereby closing in amnion fluid that, from this point in time, will surround the nerve system as cerebrospinal fluid. The first rudiments of the spinal cord and the vertebrae have appeared. Later on, the back is reminiscent of the ectoderm of the embryonic disk. The sensitive area around the fourth thoracic vertebra is a memory of the area around that first impression. The disk form reshapes itself into an oblong showing the tendency to form like the neural tube. An intermediate skin, the mesoderm, is formed between the ectoderm and the endoderm. Now the rounding formation tendency of the endoderm and the yolk sack becomes spherical and is internalized in the body.

There are two polar formation tendencies clearly displayed. Chronologically, the first is the formation of the skin and the nerve-sense system from the ectoderm and runs linear, oblong, and towards the outside. The last formation chronologically builds the structure of the digestive and metabolic systems from the endoderm and runs spherical, round, and towards the inside. In the middle chronologically, between the linear and the round tendencies, the rhythmic waves of the mesoderm are acting, mediating between the facing polar tendencies. Finally, the round tendency will form the typical round, circular shape of the embryonic countenance. Likewise, from the endoderm a tube develops, although internalized–the structure of the digestive tract from the mouth to the anus with all the organs that belong to it. The content of this digestive tube is the yolk fluid, and the embryo is completely surrounded by amniotic fluid. Connective tissue, the muscles and cartilage, is formed from the mesoderm. On one side, this connective tissue fills the space between the nerve-system, the sense-organs, and the skin and, on the other side, that of the metabolic-digestive systems. The chorion is the outermost sphere of the embryonic amnions and develops into the placenta. Here, outside the embryonic body, blood formation begins. Islands of blood flow into the yolk fluid and penetrate the body. They favor certain stream paths that are enclosed by the mesoderm and formed into blood vessels. Two main vessels, at first outside of the body, are formed at the heart, in front of what will be the ribcage, and the throat directly underneath the developing head. However, before the ribcage completely closes, the heart penetrates and fills it.

The urinary bladder and the sexual organs are

formed from the allantois together with the endoderm and the yolk sack. Formation of the kidneys, however, comes out of the nerve system–their beginning structure is located in the back of the brain. This structure develops from the brain immediately under the skin in two rows of little "pearls" along the spinal cord further to the dorsal area. The "pearls" close to the head degenerate and those at the dorsal area wrap themselves, taking on the spherical without losing their lateral symmetry. Here a neural tendency is brought into the vicinity of the metabolic system.

The lungs are formed from a protuberance of the digestive tract. By dividing in half the lungs are placed in a three-fold symmetry to the branching of the bronchia and the alveolar system inside the ribcage–right to left, cephal and caudal, front to back. Here a metabolic tendency is brought into the vicinity of the nerve system.

Simultaneously with lung formation, hand formation begins immediately followed by the feet, then the lower arms and calves, and finally the upper arms and thighs. The lungs are formed together with the limbs. After the birth, they serve together in the life on earth and in the air. By the end of the fourth week, all the structures of the embryonic organs are formed. This process was completed in about ten days. In the prior three weeks, fertilization, implantation, and formation of the enveloping organs were completed.

Birth usually happens at the end of the third quarter. The fourth quarter is the first three months of life outside of the mother-organism. Now important maturing processes and restructuring of the organs take place. These processes require contact with gravity and the atmosphere outside the womb, but are still considered processes belonging to pregnancy. It is important to get to know the characteristic of each of the twelve months.

The first month brings the summary of all the components of the enveloping organs and the body. Out of the gaze toward the past, it is an all-embracing acceptance of the universe and the first assimilation of wholeness. With the help of Rudolf Steiner's indications for eurythmy, the formative gesture of **Aries** can be recognized.

The second month shows the assimilation of the mobility of the universe, the first inner movements, the beginning physiology. The "gaze" turns to the present and future, the universe now in this life, the formative gesture of **Taurus.**

In the third month, the individuality begins to experience the body. The first tactile experiences follow. The hands and feet touch each other, the two sides touch each other, the formative gesture of **Gemini.**

In the fourth month, the body's immunity and resistance are so far structured and developed that the formative gesture of **Cancer** can be recognized, to close oneself off from the environment. These first four months have, as their priority, formation out of the universe, starting from the head.

In the fifth month, the inner regions of the organism have been filled, the ribcage developed, the gesture of **Leo.**

In the sixth month, important maturing processes take place. From this month onward, the body exhibits more and more organic resistance in order to survive a possible premature birth, the gesture of **Virgo.**

The seventh month brings new contentions with weight and heaviness for the pregnant woman. The child practices balance and placement, the gesture of **Libra**.

The eighth month can bring with it the danger of reciprocal poisoning, the first contention with earthly matter, the nearness of death around the time of birth, the gesture of **Scorpio.** These middle four months address themselves to inner-formation–the torso.

The nearness of the birth also brings with it the contention with the earth, with the will that is served by the limbs, with breathing, with the gradual introduction of nutrition and with digestion, with learning of sleep and changing states of consciousness, with the maturing of the warmth organism. These processes ripen after birth with the formative gestures of Sagittarius, Capricorn, Aquarius, and Pisces.

The last months of pregnancy and likewise the first months of life address themselves to the first calisthenics of the limbs and the metabolism in conjunction with earth forces. These characteris-

tics of the twelve months of the year can serve as an orientation and help us get to know the psychological mood of the mother and child during pregnancy. The organic contributions of the mother to the birth are the rhythmic muscle contractions, the intensity and characteristics of which change around the time of the birth. Normally the *first phase* of the birth appears with the placement of the child's head at the opening to the birth canal from the cervix going in the direction of the vagina. It is the expression of the child's will to set his/herself in contention with the earth. Again, the head pole, the nerve system, is the first. The individuality of the child, which is still living in the enveloping organs, begins to leave them in order to move into the organs of the body. The first step is the death of the amnion fluid when the amniotic sack breaks. The nerve-sense activity now begins to move into the head. The head searches for the way outside and, as a result, the child's forehead comes in contact with the mother's pelvic bone.

At this moment, the child is in complete solitude and cannot be helped from the outside. The child must find the so-called hypomochlion, that is a search for balance between life in the womb, its past, and turning to the earth, its goal and future. Hypomochlion is also the name of the balancing point on a scale. At the moment of birth, the gesture of the child's head is an exaggerated downward position of the chin in order to free the forehead so that the head can go upward: this is the first gesture of erectness and verticality. The light of the world will be seen. After this first obstacle is overcome, the body is born, usually head first. Later, it will always be the limbs that carry out the will and lead movement. After birth, the head attains a state of rest, places itself at the top, in lightness. The child is taken into the mother's arms. In the *second phase*, the child begins to breathe and experiences a string of changes and maturations in the cardiovascular system. It begins to draw upon the middle system of the new body. The umbilical cord now stops pulsing, the placenta dies and is expelled. Hours after birth when the child has been diapered, has maybe already slept, the excretion of the meconium occurs. This is not yet a stool, but rather the demise of the yolk fluid contained in the intestine. In the *third phase* of birth, the child has now begun to draw upon the digestive and metabolic system.

With the first urination, one has the outer sign that the child, in a *fourth phase,* has stirred the organs of excretion and detoxification. The allantois now dies. The dead allantois remains as a holdover in the organism as a fatty strand, the *ligamentum paraumbilicale*. Birth has four phases just like fertilization. The individuality gradually grasps the four functional main systems. Birth is accompanied by the deaths of the four enveloping organs that will be left behind. Birth has a *past* (excretion of the amnion fluid, head movement, and maturation of the nerve system), a *present* (the first breath, changes in the heart and circulation, and the death of the placenta), and a *future* (excretion of the meconium and the metabolic system beginning to mature–which will not be finished in a lifetime). And, as a remembrance of mortality, a "poisonous sting," the *ligamentum paraumbilicale* remains in the organism after birth.

The individuality no longer has a spherical organism in its surroundings. It now begins to have its own organism as its center that step by step is grasped and penetrated for at the least the next eighteen to twenty-one years. It is the task of adults to form and act as the new enveloping organs, to support the individuality within the surroundings of its own body, and to help with the efforts to individualize the newborn organism. There will still be many different births of the individuality and many deaths of what was inherited in the further course of development that should, from now on, be educationally and pedagogically accompanied.

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