The Embryo: Memory of an Innate Biological Knowledge

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Full Text: Headnote ABSTRACT: This article reveals the discoveries of Varenka and Olivier Marc in their research of children's drawings from around the world. Since the 1950s, Varenka and Olivier Marc have extensively collected and studied children's (from 13 months to 3 years old) drawings during their trips around the globe (40 countries). Many of the graphics amazingly portray embryonic and fetal stages of the human body. How come little ones can depict histological and anatomical stages of human intra-uterine growth? The children also trace lines which appear in the drawings of adults in altered state of consciousness: abstract symbols used in many traditions as a support for prayer and meditation. KEYWORDS: Children's drawings, embryonic memory, memory of evolution. INTRODUCTION After the publication of our first book on children's drawings, called The Child who Gives Birth to Himself, and the T.V. show that followed, called "A Baby is a Person," a very famous French philosopher and writer, Pierre Emmanuel, commented on our book in an article that he titled "The Embryo Memory of Humanity." We would like to develop and illustrate the idea that the embryo is in our memory. OUR THREE BRAINS: MEMORY OF EVOLUTION When a baby is just born, two hundred billion cells are shaking inside its brain. When the child is about 3-or-4-years-old, millions of cells assemble in the neocortex, and connections are made between the baby's three brains-the older, reptilian brain, the mammalian brain, and the rational brain. These connections allow the child to associate, to memorize, and to control its archaic impulses and emotions, in order to organize its way of thinking and to acquire a personal idea of the world and itself. When this rational brain is organized well enough, which means that millions of neural connections have been completed, the child-provided she is left free to express herself-is able to draw a picture of evolution and describe the way in which she acquired consciousness. In the Beginning, Everything Was Rhythms and Vibrations Thanks to molecular and cellular biology, we know that matter is composed of atoms and molecules in constant motion, and that all organic cells constitute a world that is constantly vibrating and crossed by rhythms. Wouldn't this rhythmic universe guide the hand of the very young child when she begins to draw rhythms and waves on a sheet of paper that is presented to her? Doesn't she express in this drawing the most primary perception that we may have of life? Wouldn't all these waves and rhythms come to form the very first image that a child may have about itself-its beginning as it were? The observations of the famous child psychoanalyst, Françoise Dolto (2001), who is renowned in France, allow us to understand that the first unconscious perception that a child might have of its body would be its own rhythms combined with the rhythm its mother's body. This means that the child would feel itself as a rhythm before beginning to perceive itself (unconsciously of course) as an organism. People from the most ancient civilizations used to engrave rhythms and waves on stones erected to denote sanctuaries. These engravings appear as prayers or hymns offered in celebration of life. The best known examples are megaliths in Southern England, prehistoric caves in different parts of Europe, or even simple petroglyphs. The Music of Proteins These primal rhythms, which also make proteins vibrate, have recently been translated into music by quantum physicists. One of them, a Professor Sternheimer, discovered that the protein of cow's milk generates "music" that has a rhythm similar to those of Mozart's compositions. The similarity is so close that cows listening to Mozart's symphonies produce much more milk than cows not exposed to this music. If the music of tomato's protein is played to a tomato field, production is multiplied 10 times, and the field requires only half as much water as usual. When yeast is exposed to its music, it makes bread that tastes better! This scientifically suggests that everything in the living world is music, and plants and animals are particularly sensitive to music. So why would babies not be inhabited

by the rhythms of life and be able to reproduce them? MEMORY OF EMBRYO After having traced rhythms on a piece of paper, the small child draws shapes that one might think are meaningless, just scribbling! But, when compared with embryonic organisms, it appears that these images might be representations, sometimes very precise, of the embryonic and fetal stages of development. During these stages, the developing human has the characteristics of an animal from the phylum chordata-the type of early organism from which we seem to come, and which continues to exist in the depths of oceans. This chordate transforms and develops into the form of a spine, around which the capacity of the embryo to absorb and reject is being organized. Next to this sort of worm-shaped spine, there later appears a rough shape in the form of a heart. Isn't this the basic anatomy that the child tries to represent? Very young children's drawings seem to evoke various stages of the embryo's development: First, there is a reptilian shape, whose tail soon disappears; then comes the beginning of the limbs; then outlines of the eyes, nose, ears and also the "stomodaeum," which is a sort of primitive mouth. The child seems to show us that she has memory, and not only of the embryo's evolution, but also of the smallest details of the anatomy, such as the specific skin formation. And she also seems to express elements of all the kingdoms, mineral, vegetable and animal, that make up the biosphere. Indeed, doesn't the child show us that she grew in the way a plant does: when an ovular-seed takes roots in the wall of the uterus and, very soon after, there emerges a stalk (the umbilical cord) at the end of which develops a sort of bean (the embryo), which quickly transforms into a microscopic mammal very similar to the young mouse (the embryo). Very soon, our nervous, arterial, and vein systems invade our new organs with "arborescent," or bushy, shapes. Everything seems to happen as if the "spirit" of the minerals had contributed to produce the basis of our bones, another, vegetative "spirit," contributed to the development of our arborescent veins and arteries, while also contributing to the growth of our extremities-our fingers are manifested as leaves-at the end of our "stems," which were first like "buds." A third spirit transformed us into a snake, whose limbs grew until it was transformed again into a mammal. And a fourth spirit seems to have satisfied itself with developing our rational brain, which allows us to stand up and become conscious of ourselves and the universe in a more complex way than animals do-though amazing ongoing research about animal behavior will, over time, deeply change the vision we have of them. Our rational brain provides us with an abstract and dialectical way of thinking. The research of Piaget (Silverthorn, 1999) about the development of the mind is particularly edifying on this topic. As the ancient Mayans used to say, humanity is made of the spirit of the mineral, the vegetable, and the animal. What makes it specific is that it is the four reigns of life. A Genetic Memory But how did nature manage to make our bodies carry the memory offish and reptiles, when the aquatic species had to mutate and adapt to a dry environment? Sandor Ferenczi, a Hungarian psychoanalyst, answered this riddle in a fascinating study about the origin of sexual life called Thalassa (1936/1990), "In order to maintain a memory of primordial life under the seas, nature invented the female sexual organs, so that the original aquatic milieu would be maintained in the dry new milieu. Nature also invented the penis, so that males may continue to deposit their seeds in the original milieu that is maintained inside the female body." Thus, the mammals who we are continue to reproduce life in the same way as it was under the oceans before the continents emerged. Thanks to the genius of nature, the human being can always begin life as a chordate, which evolves without any discontinuity until becoming a mammal, adapted to the aquatic milieu (the baby in the uterus), ready to repeat the passage from life in the seas to life on land. This constitutes, in some way, a current memory of life in the oceanic origins. Our three brains carry the memory of this amazing evolution: the reptilian, the mammalian, and the creation of the Homo sapiens' rational brain, which gives us the possibility to manage our instincts using rational thinking and transform archaic impulses and primitive emotions into feelings. Recognition Between the ages of 2 and 4, children progressively acquire a spontaneous feeling of belonging to the world: They are amazed because they recognize themselves in it-and of course to each of us the world "says" or means something with more or less intensity, and we approach it with more or less curiosity. This natural ability to begin belonging to the world appears to be a phenomenon of "recognition." Does the ability to recognize mean that we previously knew? When they draw,

children seem to show us clearly that, all throughout their inter-uterine life, they had knowledge. When they are born, they arrive with an unconscious knowledge of the universe experienced in their mother's womb. They have knowledge, and the universe that they discover little by little is a rediscovery of this knowledge, a new birth in a way-a birth of consciousness this time. Imagine if, just after being born, you were taken away from your mother and put into a big, empty white sphere. Wouldn't you have immediately died, because there would not have been any possibility to recognize yourself in the surrounding universe? If we could not find a "revelator" of ourselves, we would not be able to acquire consciousness of ourselves. Our unconscious knowledge of our existence in the womb plays the role of this revelator. In fact, everything seems to work as in a camera: we are "printed" by our experience of the universe inside the darkroom (the uterus) and we need a revelator to be able to recognize ourselves. Isn't the consciousness of this phenomenon of recognition exactly what made the philosophers of the Greek antiquity say that we are "microcosms," scale models of the universe! The drawings of children show us that they know they have been the universe in evolution while they were in their mother's uterus and also that the brain has the capacity to make child represent that evolution-without ever having seen an image of it-between the ages of three and five. Everything seems to operate in the human brain as if it were a hidden camera, able to register the evolution of life from its very first vibration until the day the child is able to develop the film! But this inner knowledge, which allows the child to reproduce the universe (or its evolution) is very quickly repressed, probably because the rational brain focuses on the outside world, to make it possible for the child to "re-find" himself in it and create an attachment to it. A beautiful Arabian tale says that, when a child is born, the angel Gabriel comes towards him and puts his finger on his mouth, to signify not to say anything about what the child knows! But when children draw, they not only show us that they are memory of the living, they also show that they are able to recognize themselves as part of the world. IN THE FIELD: A UNIVERSAL LANGUAGE We have traveled many countries and always carried with us what was necessary for a child to draw: white sheets of paper and pencils. We collected drawings in Europe, Russia, Japan, Afghanistan, India, Iran, Egypt, the Maghreb countries, Ivory Coast, Senegal, the USA, Canada, Mexico, Guatemala, and also among the nomads in the Sahara, who travel across borders. We observed that the children all follow the same path to build their psyche, starting from non-existence (the initial Chaos) up to the ability to have a representation of themselves and recognize themselves in the world (the process of symbolization). This is not surprising, as we are all constituted in the same way. It is, however, amazing to note that all children in the world "give birth to themselves" in the same way. This is to say that the process of symbolization is the same for all of us. The Birth of One's Image The first coherent image of the universe that the children draw is a spiral, generally turning from left to right, starting from a central point. This image seems to represent the "model" of the universe proposed by Einstein, which in turn made the first landing on the moon possible. This feature, generally repeated several times on a drawing, seems necessary to help organic shapes to emerge on the paper, just as the cosmic movement would be necessary for them to appear physically! Then, very soon after, other uncertain non-organic shapes, which have a tendency to become geometric, appear. They quickly evolve towards the shape of a circle, a square and a triangle: At about the same time, crosses begin to appear. For a long time, we were intrigued by the emergence of these early geometric shapes, and asked ourselves what they could mean in the child's psyche. We began to understand their meaning when we felt they might represent what the psychoanalyst, C. G. Jung (Storr, 1983) has called "archetypes": An archetype, he explains, is not an image, it is a sort of pre-formation in the psyche that will take various shapes in different cultures. So those geometric shapes might signal a stage in the construction of the psyche of the child. Then, in a monastery in Kamakura, Japan, we had the opportunity to see works of art by a Japanese monk named Sengaï, and discover calligraphy representing a circle, a triangle and a square placed one next to the other. It is said that when a disciple of the Zen master saw this painting, he dared to ask his master after a long silence what the picture represented. "The universe," the master answered. So then, what archetypes could these three figures represent in a 4-year-old child's psyche? Of course we had noticed that, throughout the world, architects have

used cubes, cupolas, and pyramidal roofs (a square, circle and triangle in three dimensions) to build religious buildings. The ancient Egyptians, the Mayans and the Aztecs-and also Christians, Muslims, and Hindus-have used them. Some cultures used the triangle more, others used cubes and cupolas. Some of them, for example the Buddhist Shingon sect at Koyassan or the Tibetans building stuppas and chorten in the Himalayas, used the three symbols together. So, what does a circle represent in the still immature spirit of a child? A circle requires a center, which means the center exists even if it is invisible. Moreover, a circle has no beginning and no end. So it seems to represent the archetype of invisibility and timelessness. In all cultures, the circle is the space reserved for the divine: The auras of saints are circles. In many icons, Christ is represented in a circle. In Islam, mosques in the desert are made of pebbles arranged in a circular shape. The basins in which the sky reflects are generally circular. The Tibetan mandalas, tantric supports for meditation, and the mandaras of Japanese Shingon sect, are made of concentric squares and circles. So it seems clear that the circle in the child's psyche should represent the place of unity, of the divine and, by extension, the sky. It should, therefore, represent a constitutive archetype of the psyche. The square is made of two opposite sides, two by two, so that it may represent the duality of the human condition, and, by extension, the earth. It is the opposite complement of the circle. As to the triangle, its lower part lays on the ground and its sides point towards the sky. It seems to represent the archetype of boundaries-the connection between the earth and sky. This connection has been the focus of a spiritual search by human beings from the very beginning of mankind. It is indubitably the need of mankind to unite sky and earth, an impulse that gave birth to the pyramids. The Creation of the World As soon as a child has acquired an archetypal perception of himself represented by sky, earth, and the ability to connect them together, he is ready to "create" the world and identify himself as an individual by using the three archetypal figures: a circle for his head, a triangular body and a square base. His house is also a square topped by a triangle, and the circle is removed from the top to become the sun in the sky. When the child represents himself thus, it is as if he would say "here I am, linking earth and sky." Next a child is ready to "create" the world. The child shows an understanding of the process of creation when it traces a thick blue line at the top of the sheet of paper and another green or brown at the lower part. This gesture is the consequence of the child's new ability to separate the concepts of sky and earth. In the Koran, God is called the "Great Separator," the one who creates the world by separating (creating opposites). How does this ability to separate develop? It seems evident that it is physical birth that structures the child's brain, so that he or she may symbolically draw the creation of the world by the age of 4 or 5. In the uterus, he or she has knowledge, but has not developed mental tools for "recognition." The brain needs immediate oxygenation from the lungs to be able to represent (or symbolize) a birth experience. When the child leaves the oceanic milieu, his or her brain is strongly oxygenated, allowing it to understand that he or she was in the water, a situation that could not be understood as long as the child had not discovered the opposite of water: earth. The same experience occurs when the child discovers light: she begins to understand that she was in the dark; and when the child feels cold the child also realizes that the mother's womb was warm. By allowing for the perception of the opposite, birth gives the child the possibility to create the world. Isn't it this process of birth of the consciousness that the Bible describes? If is said that, when sky and earth were created, God created day and night, and by separating the waters, God made the continents appear, and to the assembly of waters, God said, "sea"; and to the solid, God said, "earth." God saw that it was good... This was the second day. In many Asian myths of creation, a spiral movement pushed the waters, producing a foam which, when solidified, became a sacred tumulus named Mount Meru. This is the way solids were supposedly separated from liquids in the beginning. In the Cambodian narration of creation, the land of the Khmer nation emerged from the churning of a milky sea by the Royal Naga (Snake). Various representations are produced by the same archetypes that have the same symbolic meaning. As soon as children have created the sky at top of the sheet of paper and the earth in the lower part of the same sheet, between sky and earth they establish their house, created with a square roofed by a triangle, and then they create themselves, very often as circle, triangle, and square. Then appears a second great moment in the

formation of the psyche: The brain, after having given the possibility to separate, gives the possibility to associate, just as did God in the Bible. God said, "let fish populate in the waters, and land produce cattle and all sorts of cowling beasts, and let the sky fill with wings." After children have separated sky and earth and have represented their house and themselves, they start to draw fishes in the water, birds in the sky and, on earth, their favorite pet if they have one, then other mammals. Then they grow trees, and plants and flowers, just as it is described in the Bible. By 5 or 6, they have completed the creation, they have asserted the consciousness of themselves and begun to show interest in the external world in their drawings: They represent villages, cars, planes and all sorts of people. They begin to reproduce what they see around them. They have progressively forgotten their inner vision of the universe and begun to conceive the world simply as it appears. References REFERENCES Dolto, F. (2001). Archives Francoise Dolto. Retrieved 3/2/2007 from http://www.francoise-dolto.com/english/bio-en.htm Ferenczi, S. (1936/1990). Thalassa: A theory of genitality. London: Karnac Books. Silverthorn, P. (1999). Jean Piaget theory of development. Retrieved 3/2/2007 from http://chd.gmu.edu/immersion/knowledgebase/theorists/constructivisin/Piaget.htm Storr, A. (1983). The essential Jung. New York: MJF Books. AuthorAffiliation Varenka Marc is a child psychoanalyst, Olivier Marc is an adolescent and adult psychoanalyst. Varenka consecrates her professional practice to the mother and child relationship, having a vast experience with children in the autistic spectrum. Olivier works with adults and adolescents, and researches the origin and symbolism of cultures' gestures and forms. They link anthropology and psychoanalysis in their profound and unique observations of children's drawings and have authored and coauthored over 30 articles and 5 books. They can be reached at 12, rue Saint Louis en L'ile, Paris, France, 75004. Tel-Fax (33) 1-46331160.

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