

## REALITY: THE MOST POWERFUL AND INTEGRAL KEY TO THE WORLD

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In spite of huge recent advances in the neurosciences, we are still in the dark about how the mind works. We know or even suspect very little of the consequences that allowing young children to live in a world of fantasy have on their embryonic minds. My hope is that this lecture will lead to more research on this subject to pay tribute to Maria Montessori's work. "The mind that works by itself, independently of truth," she wrote, "works in a void" (*The Advanced Montessori Method* 187); she demonstrated that the creative power of the mind constructs itself by means of working upon reality. Without reality, the mind wanders in the world of illusions, expectations, and false ideas, which only perpetuates ignorance, superficiality, and unsatisfied needs.

In *Education and Peace*, Montessori writes:

*Man must conquer the earth. If he has not developed normally, he must do so by means of violence and hatred. If he has developed into a truly normal man, he will find the happiness of healthy life in his effort. Man must obey the laws that rule his life and, because they are hidden, he must look for them. (108)*

My goal is to offer a view of some of the obstacles that the young child is facing in our world today, which are deviating his personality and his healthy, positive, optimistic view of the world. I found the topic challenging, as it is difficult to define reality and more difficult still to confront the emotions of adults when we insist that television, fantasy, fairy tales, and fables cannot be given to the child before he is five or six years of age if we want to help him construct himself in the best possible conditions. I want to share with you the latest research on why the mind needs to be in contact with reality to be able to reach higher levels of imagination, which supports the belief that watching television and being immersed in fantasy prevents children from having a healthy mind. I also want to talk about the power of imagination instead of fantasy and how Montessori education helps the child to preserve his psychic health and build a whole integrated human being in the present conditions of the world.

An analysis of reality as a key to the world must answer these questions:

- What is reality?
- How does the mind perceive reality?
- Why is it important that the child be in contact with reality during the first plane of development (0-6 years)?
- What is fantasy?
- Why do we have fantasy in our lives?
- What is imagination?
- How does Montessori education recognize that reality is the material required by the child's imagination to fulfill his task in the cosmic plan?

Before I continue, I want to be sure that you understand that what I am speaking about is in support of the ideas of Maria Montessori about the importance of reality in the life of the child.

There are still many mysteries about how the mind constructs itself and where the impressions that the child receives are stored permanently. Are there other realities? Are there more dimensions? Are we responding to the new technology as past generations responded to new discoveries? Each generation that discovers something from its own experience must pass that on with a balance between respect for what was discovered and uncertainty about what still needs to be observed. What is certain is that in our experience we see the damage that a world of fantasy and television does to the child before he or she is six years old. We educators have a tremendous responsibility in awakening our sleeping society about the child's potentialities and about the lack of providing the right "food" for his mind so he can construct himself in the best possible manner.

In *The Pleasure of Finding Things Out*, Richard F. Feynman writes:

*Scientific knowledge is a body of statements of varying degrees of certainty—some most unsure, some nearly sure, none absolutely certain. In order to progress, we have found it of paramount importance to recognize the ignorance and leave room for doubt. (146)*

### What Is Reality?

Reality—which reality? The only way we experience anything is through the nervous system: the brain. This means that the only way we can tell whether something is real is through the processes happening in our brain. The brain is the organ that discerns what is real, through its experiences in the environment. To be able to know what is real, the mind has to organize its intelligence and direct it to the environment. As a child becomes more intellectually developed, it becomes more difficult to fool him. Everyone has his or her own reality, constituted by their own experiences and perceptions. Most of our responses are driven by genetic and social conditioning wired into our brains on a level we cannot see.

Despite all of our scientific advances, we still do not know exactly how the mind works. We do realize, however, that the brain knows about the world through a set of senses which can only detect parts of the absolute world and, with that, constructs patterns of reality.

Jeff Hawkins writes:

*The senses help to create patterns that are sent to the cortex, and processed by the same cortical algorithm to create a model of the world. Through these patterns the cortex constructs a model of the world that is close to the real thing, and then remarkably, holds it in memory. (64)*

Our experiences do not merely link us to the outside world; they are us and they are the world for us; they make us part of the world.

Jacob Bronowski writes in *The Identity of Man*:

*If we write the laws of nature as if we ourselves had no part in them, we get the wrong answers to quite elementary questions.... Nature is a network of happenings that do not unroll like a red carpet into time, but are intertwined between every part of the world; and we are among those parts.... We do look for truth, however we define it; it is what we find that is knowledge. (36-37)*

Even though there is a huge network of theories that carries the whole field of science with reference to the brain as never before, still there is much more to know about the development of the brain from conception through the first three years of life. New theories on the concept of reality—quantum physics, string theory, constructivism, and many others, which all started with Einstein's relativity theory—are developed each day. It is interesting to find out that most of the research with reference to human behavior is done with children from kindergarten to adolescence;

very little is done with children in the first three years of life. What is more amazing is that most of the research is actually done to learn how to build *artificial* intelligence— robots that can perform human activities. At the Neuroscience Institute in La Jolla, California, for instance, I saw a video about Robot Soccer, where two robots play soccer. Sadly, most of the research that does concern human intelligence is on how to influence people through all kinds of media.

No matter how much has been discovered, scientists are just beginning to understand the awesome powers of the human mind, including consciousness, which was once considered a metaphysical activity, and the extreme flexibility, or capacity to be changed, of the neo-cortex (the last evolutionary part of the brain). Jeff Hawkins writes:

*The wiring of the neo-cortex is amazingly “plastic” meaning it can change and rewire itself depending on the type of inputs flowing into it. The human brain has an incredible capacity to learn and adapt to thousands of environments that did not exist until very recently. (54)*

Montessori called this phenomenon *adaptation* and saw that it was made possible by the absorbent mind and the sensitive periods. We know that children in the appropriate environment and nourished properly are capable of seemingly effortlessly learning any one of thousands of spoken languages—and certainly more than one. They can learn sign language, written language, mathematical language, musical language, computer language, and especially body language when they read their parents’ unconscious gestures and attitudes. We also know that due to many adults’ (particularly parents’) lack of understanding that all impressions are absorbed in the child’s mind for its self-construction, too often the young mind is malnourished with the wrong images, the wrong attitudes, the wrong vocabulary, creating an obstacle in the normal development of the child.

In his book *Mediated*, Thomas de Zengotita focuses on the central point of “how media affects your world and the way you live in it.” Everything around us conditions our experience. Our life is informed by representations of “life.” Adults’ reliance and over-reliance on media (computer, television, radio) as the basis of our modern information and our daily life experience allows us to be influenced by a very small group of persons.

It is now becoming impossible to distinguish between reality and representations of reality or computer-generated realities. As images come to our senses faster and are more sensational, we become less and less able to distinguish between what is real and what is synthetic, simulated, or replicated. The feel of the virtual is overflowing into the physical world. There will be a moment, I fear, in which the real will blend with the representational, alienating us from the physical world into a limbo state.

People are real, trees are real, social situations are real, but our understanding of the external world and our responses to it are based in our internal model. Most of our internal model is based on custom, culture, and what our parents teach us. The consequences of early life experiences are acquired when the brain first lays down its model of the world. Reality is a crucial prerequisite for optimal development. An education based on reality prepares the child to perceive his environment in a precise and accurate manner. It is essential to stress the importance of reality as the basis of education. After the child has been able to perceive the reality, he has no problem seeing the difference between real and unreal things. After the child has seen a real teapot and has been able to work with it, for example, he will not believe in a talking teapot. After he has directly manipulated and has a good understanding of different animals, he knows that the wolf did not eat Little Red Riding Hood’s grandmother. When he is mature enough, he can have and enjoy a critical selection of fairy tales—which are, after all, a literary style that can be very creative—or can view television programs without harming his brain.

## How Does the Mind Perceive Reality?

Nobel laureate Francis Crick, who in 1953 co-discovered the DNA helix with James Watson and later turned to the area of neuroscience, offers this hypothesis: “you, your joys and sorrows, your memories and your ambitions, your sense of personal identity and free will are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules.... You are nothing but a pack of neurons” (65). Genes dictate the overall architecture of the cortex, including the specifics of what regions are connected together, but within that structure the system is highly flexible to external input.

In *The Absorbent Mind*, Maria Montessori tells us that experiences from the environment form the mental flesh during the period of the psychic embryo. The absorption is a kind of chemistry; impressions do not merely enter the mind, they form it.

The central nervous system, consisting of the brain and the spinal cord, functions in two domains: the internal world (what Montessori would call *potentialities in the mind*) and the external world. In his book *Beethoven's Anvil*, William L. Benzoin describes this process: 1) the brain monitors the external world through various sensory systems and uses movement to act in and on that external world; 2) the organism's survival depends on the integrity of the internal world, on how the nervous system regulates the relationship between the external world and the interior world (33). Observation and sense perception is our primary form of awareness on which the conceptual level builds. The senses give the child the evidence of the external world, but the task of understanding it belongs to his reason. It has to be directed by the will, by the power of reasoning, which in the young child is developing during the first three years of life. The assimilation of reality constructs an internal structure based on order.

The great predicament of brain science is that it may well demonstrate that all of our experience and behavior originates in the brain, yet we still will not know how it will be used. On the other hand, maybe brain science will support the transcendence of our conditioned mind and will end by recognizing the spiritual wishes of humanity. Our “sense of spirituality” is now considered a physical function of the brain. We could say that spirituality is a combination of brain and heart. Spirituality orders your life. Its existence and its origin are part of material existence. We all have spirituality but in some human beings it is more developed than in others. The quandary of the human condition is that we face reality in two forms, material and spiritual, and our life needs to be a balance between both. In his book *The Biology of Transcendence*, Joseph Chilton Pearce quotes a researcher of the Institute of HeartMath describing the heart as having neurons with a magnetic field that can be modified by what the mind perceives from the environment. The heart might well be the spiritual center of man.

## Why Is It Important That the Child Be in Contact with Reality during the First Plane of Development (0-6 Years)?

We know that *conscious* memories usually can go as far back as what happened after three years of age. As it turns out, the hippocampus, the part of the brain responsible for long-term memory, doesn't mature until around the age of four. Still, the unconscious *impressions* that the child receives from birth are ingrained in his mind forever. The child is a concrete thinker and a sensorial explorer; everything that comes to his mind gets imprinted as a concrete experience. Children trust and expect the world to be as it is presented to them by the adults, and by their external environment. It is the process by which reality is experienced—either directly or through something else (mediated)—that enables us either to trust our world or to lose touch with ourselves, losing our identity.

The child must build his interior life through real experiences before he can express anything; he must take constructive material spontaneously from the external world in order to create his mind.

We have to offer the child that which is necessary for his internal mental and physical life, and leave him to produce the man or woman that he or she is meant to be.

Brain scientists have described the structure of the developed brain, mapping the areas responsible for sensations, perceptions, images, memories, thoughts, emotions, aches, pains, feelings, and, most recently, consciousness through experiences in the environment. Neuroscientists have begun to shape the nature of consciousness itself (Rose 4). Many books have appeared over the last years with this new “theory of consciousness.” It seems that consciousness is a result of brain dynamics and experience and that both perception and memory contribute to consciousness.

Gerald Edelman, the Nobel Prize-winning scientist, has proposed a global brain theory that accounts for the evolution, development, and function of the human brain, which, he says, “is the most complicated material object in the known universe” (117). He emphasizes that now we know there is a causal interaction of the body, brain, and environment that gives rise to consciousness:

*Consciousness arose during the evolution of complex neural networks with a specific kind of structure and dynamics. Before consciousness could emerge, certain neural arrangements must have evolved. These arrangements led to reentrant interactions, and it is the dynamics of reentrant networks that provide the causal bases that entail conscious properties. Such networks were chosen during evolution because they provided animals with the ability to make high-level discriminations, an ability that afforded adaptive advantages in dealing with novelty and planning. Consciousness reflects the ability to make distinctions or discriminations among huge sets of alternatives. These distinctions are made in fractions of a second and they vary continually. It is tied to an individual’s body and brain and to the history of that individual’s environmental interactions. (141)*

Humankind has achieved a higher level of consciousness through evolution. Every human being, from conception, repeats the story of human evolution. This means that the life of the individual reproduces the life of the species; just as the life of man reproduces the life of civilization, so in young children we find the psychic characteristics of the pre-historic human, the wild or the savage. At birth or even before, the developing brain of the child starts making distinctions from what he perceives from the environment. He categorizes and classifies these impressions in order to adapt to the place and time in which he is born. Every experience that comes through his senses develops in him the ability to make high-level discriminations.

In the pre-scientific world, due to lack of scientific explanations, humans were attracted by the fantastic, the supernatural, and the unreal, due to ignorance (we can say now that the neural networks were not complete); likewise, the child, who lacks knowledge of the external world, is at risk of being attracted by the fantastic, the supernatural, and the unreal. The child is like the prehistoric human, who, due to his level of development, was afraid of fire, of storms, of anything that he could not explain, and therefore invented fantastic stories about these elements of nature. The task of education is to help the child overcome this state and enter into the field of reality, to help him become a person who understands. To cultivate a wild state or to keep the child in an immature state shows a lack of respect for the developing human being.

### **What Is Fantasy?**

During all my years of training Montessori teachers, every time that I start a lecture on the importance of exposing the child to reality and the difference between the dangers of fantasy and the richness of imagination, I see the faces of my students in total disagreement with not allowing young children to have fantasy stories.

If these students, who have been exposed already to the Montessori philosophy and are individuals interested in education, respond in this way, you can imagine the responses and the



faces of many parents when I give the lecture. With this attitude they perpetuate the void in which children live these days.

There is, of course, an emotional aspect to their disagreement because, for many adults, their most beloved memories from childhood are related to fairy tales told by parents or other adults. We can reassure parents that the same “bonding” that is produced when reading fairy tales can be created with stories based on reality that help the child to make sense of the world around him.

In addition, I think adults experience a certain amount of fear that we want to take away from them a powerful tool to control or mesmerize the children. If they don't have this tool of fantasy, how are they going to entertain the children? How are they going to control them? This is not only true in homes but also in many schools. It is easier to let the child be superficially involved with fantasy games or to play by himself with toys than to prepare an activity that involves some kind of attention to detail. I have great respect and compassion for those teachers that I see in school supply stores looking desperately for some fantasy illustrations that can excite the child to stay focused with superficial attention during their group lessons.

Before I knew anything about Montessori my house was also full of beautiful, illustrated fairy tale books, records, and fantasy figures. I remember one of my daughters repeating by memory the whole story of Cinderella, when she was three years old. When we interrupted her and asked her about the story, she kept repeating the words, imitating the sounds and words with perfect pitch but without understanding the meaning of the story. She could understand certain sentences or a word; however, there were some things that were not clear for her. At that time we were amazed with her memory without awareness of the foolish content of the story. I changed all this when I took the Montessori course and realized that my children had a total trust in what I was teaching them and therefore that lying to them or telling them things that were not the truth was abusing their immature minds and their trust in me.

Yes, it is possible that there are good programs on TV and great fairy tales or fantasy stories with beautiful illustrations and great quality paper, but they can be introduced after the child has a good grasp of reality, which is usually after five years of age, when the brain cortex is mature and they can make a distinction between real and unreal situations.

Since the Greek philosophers, there has always been a concern with giving fantastic or untrue stories to young children. For example, Plato insisted that we must avoid stories that can create “the presence of falsehood in the soul concerning reality. To be deceived about the truth of things and so to be in ignorance and error and to harbor untruth in the soul is a thing no-one would consent to” (*The Republic*, Book II). He believed that the stories children hear early in their lives have a profound influence on them.

Intelligence develops only through critical analysis of the reality that is perceived. This happens only in contact with reality, not in world of make-believe stories and foolish images. Reality is what you perceive through your senses, what is recognized by the cerebral cortex. The visual sense can be fooled by images that present fantasy as if it were real. For the self-construction of the mind, the child has to be able to have real experiences with real objects, perceived through multiple senses.

Adults think that they are developing the imagination of children by making them accept fantastic things as realities. Yet we all have children in our classrooms with different forms of imperfect development resembling the characteristics of the wild child or the uneducated. These children are constantly wandering in fantasy, cannot concentrate, have poor coordination of movement and very poor language—they cannot express themselves and they use a single word for several purposes. Illusions or false perceptions are the beginning of false reasoning, which deviates the intelligence of the child.

Montessori writes in *The Advanced Montessori Method*:

*But how can the imagination of children be developed by what is, on the contrary, the fruit of our imagination? It is we who imagine, not they; they believe, they do not imagine. Credulity is, indeed, a characteristic of immature minds which lack experience and knowledge of realities, and are as yet devoid of that intelligence which distinguishes the true from the false, the beautiful from the ugly, and the possible from the impossible.*

*Is it, then, credulity we wish to develop in our children, merely because they show themselves to be credulous at an age when they are naturally ignorant or immature?... We speak of credulity as a mark of the uncivilized. (200)*

To maintain ignorance in children—and in adults—is a form of control. The ignorance and credulity disappears with experience, with knowledge; when the mind matures the child is ready to understand the difference between real and unreal. Reality as the essence of education should be directed to help the intelligence.

When the child no longer believes in fairy tales, we know that he is maturing. He has overcome his infantile state in spite of having adults that want to keep him in ignorance and illusion. Many adults resent this state as a sign that the child “has lost his innocence.” What he has done is gained knowledge and triumphed over ignorance and credulity.

Adults that do not trust the child insist on moralizing with stories to young children about values that they don't need to be reminded of. They only need to be in a real environment with a very well prepared adult to manifest their true nature. Children are interested in moral values in the second plane of development, from six to twelve years, after the brain has matured with many real experiences. This is the time of fables, morality stories, and fairy tales.

The child is a spiritual being and does not need to be reminded of virtues before he is six years old. He has given proof of having the highest capacity for love, trust, compassion, generosity, and authenticity when he is in a prepared environment and can act with independence and freedom. Love for work, self-discipline, order, obedience, concentration, satisfaction, and especially joy are the characteristics of a normalized child, and a child can only be normal if he is free of fantasy.

In *The Advanced Montessori Method*, Montessori writes:

*The mind that works by itself, independently of truth, works in a void. Its creative power is a means for working upon reality. But if it confuses the means with the end, it is lost.... confounding the means with the end, recurs in every form as a “force of inertia” which pervades the psychical life. (187)*

In the present time, it is not only fairy tales or fantasy stories that cause the mind of the child to stray. One of the worst problems in our time is exposure to television before six years of age.

It has now been proven that viewing television causes great damage to the brain. Plenty of scientific research is focused upon the effects of television in the child's life, because it was noticed that young children who watch TV for long periods start to have problems of adaptation, learning difficulties, and behavior deviations. The child suffers a multi-level sensory deprivation and a lack of motor development, which impair the ability to concentrate (Johnson).

Susan R. Johnson, MD, describes her experiences as a mother and as a pediatrician observing her own child's behavior before, during, and after watching TV:

*Before watching TV, he would be outside in nature, content to look at bugs, make things with sticks and rocks, and play in the water and sand. He seemed at peace with himself, his body, and his environment. When watching TV, he was so unresponsive to me and to what was happening around him, that he seemed*

*glued to the television set. When I turned off the TV he became anxious, nervous, and irritable and usually cried (or screamed) for the TV to be turned back on. His play was erratic, his movements impulsive and uncoordinated. His play lacked his own imaginative input. Instead of creating his own play themes, he was simply re-enacting what he had just seen on TV in a very repetitive, uncreative and stilted way. (1)*

In the book *Who's Bringing Them Up?*, Martin Large describes television as being damaging to children's development, independent of content, producing such effects as poor concentration, eye strain due to artificial light, effects on the senses and brain, bad dreams, perceptual disorders, hyperactivity, language and movement disorders, obesity, and nervous problems.

With regard to fantasy, when the cortex is still immature the child cannot distinguish real from imaginary sensory input. The images presented on the TV monitor are fully real for the child as he is a concrete thinker at this age and absorbs those images, integrating them into his brain. The neo-cortex is still not developed enough to permit him this distinction. Watching violent programs becomes a habit and conditions the child to solve problems in an aggressive manner. The images go directly into his soul, because he cannot judge what he sees, he only absorbs it unconsciously, and the consequences of his interpretations are manifested much later in the form of deviations that parents do not understand, such as fears, aggression, and violence.

In her book *Endangered Minds*, Jane Healy writes:

*The overall effects of television viewing and other forms of video on the growing brain are poorly understood, but research strongly indicates that it has the potential to affect both the brain itself and related learning abilities. Abilities to sustain attention independently, stick to problems actively, listen intelligently, read with understanding, and use language effectively may be particularly at risk. No one knows how much exposure is necessary to make a difference. Likewise, no information is available about the overall effects on intelligence of large amounts of time taken from physical exercise, social or independent play, pleasure reading, sustained conversation or roaming quietly about in one's own imagination. (216)*

In her well-known article "Television and the Young Child," Silvana Quattrocchi Montanaro insists that we must ask ourselves:

*Can the external world be transmitted from the television screen? Can all the dimensions necessary to the knowledge (and mastery) of reality be perceived through television? Can time, space, landscape and context reach the person watching the screen in the dark of a room? In a world in which many important natural experiences are made difficult (or impossible) for children, television reduces even more the direct relationship with reality. (1)*

We have to be aware that the children are our only hope for a better humanity, and it is in our hands to protect their minds in the same manner we protect their bodies from poisonous food.

### **Why Do We Have Fantasy in Our Lives as Children or Adults?**

To unravel this mystery is not so easy, as many scientists say that to understand in a satisfactory manner the brain that fabricates the human mind and human behavior, it is necessary to take into account its social and cultural context. One approach would be to consider that pain and pleasure are the means required to operate in the world. When something gives us pleasure, we look for it, and we avoid anything that causes us pain. In *Descartes' Error*, Antonio R. Damasio says:



*When many individuals, in social groups, experienced the painful consequences of psychological, social, and natural phenomena, it was possible to develop intellectual and cultural strategies for coping with the experience of pain and perhaps reducing it. (262).*

Is fantasy a strategy for coping with pain and try to reduce it? I believe that when we cannot cope with reality, or when we experience pain and unsatisfied needs, our mind escapes into a world of make believe.

Life is beautiful, but is also a constant challenge. Suffering and pain is inevitable, but education based on reality, on culture, and on individual history can reduce its intensity or provide us with productive means to make it better. The world's problems are not solved through escaping into fantasy; in fact, they become worse if we do not face them in an intelligent manner and use our imagination based on real facts to solve them.

In my experience, the children who spend most of their time in a world of fantasy are those who are living stressed lives in constrained environments, full of traffic and pollution; traveling long distances in cars; with working parents that do not have the time to be with them; or with parents that, when they are with their children, besides overprotecting them, are busy with their own complicated life (including the latest cellular telephone or computer). For these children, it is extremely difficult to find work that can engage their attention or concentration.

It is frustrating to see young children trying to participate in the life of adults and looking to do something with their hands, and the parents, trying to satisfy this need of the child, instead of letting him or her participate in a real activity such as washing dishes, giving them some toys to pretend the activity. These useless toys do not challenge the intelligence of the child and are promptly discarded or destroyed. Children have no interest in such toys because there is no reality in them. Many children would prefer to wash the car than to watch television if they have the choice.

To be comfortably immersed in a fantasy world and to live as if what we imagine actually existed is to live in an unproductive world. It is to run after an illusion, believing that winning the lottery will solve financial problems or waiting for a prince on a white horse to marry you. Not to recognize reality is a thing so common that scarcely is it acknowledged in our times.

In his book *The Uses of Enchantment*, Bruno Bettelheim points out a positive aspect of fairy tales, their psychological value. Many of these stories can be used appropriately with children in the second plane of development (6-12 years of age), allowing them to understand real situations by identifying with the characters. The idea of projecting conflicts onto fictionalized characters comes from Freud, who was able to interpret psychological deviations from the dreams and fantasy stories related by his patients. Interpreting these dreams or stories was a form of therapy that allowed patients to make conscious certain obstacles in their development that were preventing them from leading a healthy life. Expressive therapy and the use of daydreaming or visualizations are tools for understanding unconscious needs and repressed states in older children, adolescents, and adults.

## **What Is Imagination?**

Imagination—as opposed to fantasy—is what we want the child to experience. It is the very basis of the mind, the process by which all the impressions taken from the external world are placed at the level of abstraction. It is a human tendency that, along with the tendencies of observation, work, manipulation, exactness, and others, has made possible the work of man over his environment to construct civilizations. Imagination, to Montessori, is the power of the mind to venture beyond what is seen, or what is concrete. In a lecture of the 1939 London training course, she said:

*All the work of man has a starting point in his imagination.... Man is compelled by some force to realize in practical fashion the ideas he imagines.*

*The first thing we observe is that the child's mind is filled with a quantity of images surpassing those which he sees in the outer world. These images reveal that there is a strong force, a psychic energy, in the mind of man, something which is different from intelligence. The word intelligence means to distinguish one thing from another. It is taking pictures from the environment through the senses and distinguishing between them. Imagination is something different, there is no observation there it is something that does not exist that we cannot see.*

Imagination has a sensory basis, and its construction in the mind has to be firmly established by reality. The more it is connected with the reality of the external world, the higher will be the value of its internal creations. Man has been able to transform the environment with his intelligence. In the words of Montessori:

*Even in imagining an unreal and superhuman world, the imagination must be contained within limits which recall those of reality.... every lofty writer and every great orator perpetually links the fruits of the imagination with the observation of fact; and then we say that he is a genius full of imagination and knowledge, and that his thought is clear and vital. (The Advanced Montessori Method 191-193)*

When we think about the inventions of Leonardo da Vinci, which were made into reality many years later, we can recognize that they were invented through the observation and knowledge of real things, real objects, and real elements in nature. He scientifically observed the flight of birds, for instance, before attempting to draw an object that was much later to become a helicopter. Most scientific discoveries have come through the imagination of man. Artistic imagination is based on truth, collected from the environment. Picasso's first drawings and paintings were copies of reality, and from there the imagination took him to exquisite abstractions that we all have enjoyed. Abstraction may be seen as a form of imagination.

To accomplish their great task upon the earth, Montessori says, "all men should come under the influence of the scientific method" and look for the truth (*The Advanced Montessori Method* 188). The scientific method, she pointed out, has brought light to the mysteries of past civilizations. The child is a scientist who observes intensely to become a perfect human being. "Every child," writes Montessori, "should be able to experiment at first hand, to observe and to put himself contact with reality. Thus the flights of the imagination will start from a higher plane" and will produce the necessary work to build a better humanity. It is through imagination that "the intelligence will be directed into its natural channels of creation" (188-189).

In *To Educate the Human Potential*, Montessori writes:

*Imaginative vision is quite different from mere perception of an object, for it has no limits. Not only can imagination travel through infinite space, but also through infinite time; we can go backwards through the epochs, and have the vision of the earth as it was, with the creatures that inhabited it. (10)*

Children who have the opportunity to be in contact with reality when they are young have a better opportunity to make the right choices, to distinguish between alternatives, to be creative, to exercise critical analysis, to imagine constructive and meaningful things, and to manifest their intelligence. When the mind is ordered and the thought-structure is clear, the imagination can proceed to draw conclusions and make logical deductions and inductions that cannot be seen, or even experienced, directly.

When there is senseless talk of fantastic things that are not based in reality, there is a total incapacity to perceive actual things correctly, and it is therefore impossible to organically construct the intelligence. There is no way to achieve anything when a person repeats or imitates the images of others. Every artist, to be able to create, has to observe reality.

Reasoning within sharply defined limits and distinguishing one thing from another prepares the blueprint for imaginative constructions; the ideas have to be logical to be able to associate the images. Originality derives from the delicate shifting of point of view, slight detail, or full or partial context to create echoes of understanding and connection with others. The empty mind that copies or imitates without reasoning cannot create anything new.

To be prepared to perceive the things in the environment, children need to be in contact with reality and observe in an exact manner. Exactness and precise observation are perceived by the senses and are the material that imagination requires to construct creatively. Montessori says: "The true basis of the imagination is reality" (*The Advanced Montessori Method* 196).

### **How Does Montessori Education Recognize That Reality Is the Material Required by the Child's Imagination to Fulfill His Task in the Cosmic Plan?**

Montessori writes in *The Advanced Montessori Method*:

*Man is guilty of a like sin against the intelligence when he employs his creative activity of thought for its own sake, without basing it upon truth; but so doing he creates an unreal world, full of error and destroys the possibility of creating in reality, like a god, producing external works. (188)*

To help the developing imagination of the child, we need to enhance his life with a prepared environment where we can enrich his mind with knowledge and experiences based in reality. We give him the possibility to mature in a free environment where he can develop all his potentialities, and then we can expect a fruitful imagination.

A human being has a natural potential for knowledge, but he needs to know his environment and how to act in it. He will develop this understanding depending on the information received from the environment. The mind of the child matures by means of knowledge of the external world, through real experiences in the environment. This means that he can acquire this knowledge only in contact with reality. He has a mind that explores everything in order to develop a healthy, ordered intellect. He needs to orient himself and make sense of the external world to construct a frame of reference that can allow him to trust the world and dare to act on it. It is a fact that the cells in our brains create the mind. They contain all memories, knowledge, skills, and accumulated life experience. When the experiences the child has are based on fantasy and make believe, the mind wanders without a purpose and does not find any satisfaction in real life.

Children need true stories to be able to fulfill their task in the cosmic plan. Richard Feynman describes how he became a scientist through his father's teachings:

*We had the Encyclopedia Britannica at home and even when I was a small boy [my father] used to sit me on his lap and read to me.... we would read, say, about dinosaurs and maybe it would be talking about the brontosaurus or something, or the tyrannosaurus, and it would say something like, "This thing is twenty five feet high and the head is six feet across," you see, and so he'd stop all this and say, "let's see what that means..." Everything we'd read would be translated as best we could into some reality and so I learned to do that—everything that I read I try to figure out what it really means, and what it's really saying.... it was very exciting and interesting to think there were animals of such magnitude. (3)*

We do not need to give horses, planes, and cars to the child to satisfy his desires, but we can give him something with which he can work, such as real objects in his house or in the prepared environment. When he cares for himself or the environment, he derives a different kind of satisfaction that opens his internal creative activities.

It is living among real possessions of his own and acquiring independence, order, and a good feeling about himself that make the child wish for real things, not things that are mere illusions. It is not the same to pretend that you are cooking in a toy kitchen with toy foods as it is to cook real meals that you will eat; the latter makes you feel capable of feeding yourself without the immediate help of another.

All the areas of the Montessori prepared environment for the first plane, starting from the Nido to the Children's House, provide meaningful experiences with real activities and real objects: concrete experiences with materialized abstractions in the areas of sensorial activities, language exercises, and mathematical concepts. The child is prepared to abstract and use his imagination through the principles of indirect preparation and isolation of difficulty.

In language, the stories respond to the interest of the child in his surroundings, in nature, and in all aspects of his culture. He wants to participate in the life of adults to be able to adapt to his time and place. He deserves to be in contact with the truth, as we know it in this moment of history.

Montessori says in *The Advanced Montessori Method*:

*The power to imagine always exists, whether or not it has a solid basis on which to rest, and materials with which to build; but when it does not elaborate from reality and truth, instead of raising a divine structure it forms incrustations which compress the intelligence and prevent the light from penetrating thereto (205)*

A function such as imagination, wandering without a purpose, wastes the body until it loses its function. Once more, imagination uncontained by truth consumes the intelligence and causes it to assume characteristics similar to the mental characteristics of the wild, the fanatic, or the uneducated person.

## **Conclusion**

We are living at a turning point in our civilization. The exciting part of this is that with each new discovery there is more to support what Montessorians have known for many years about the mind. The psychic embryo has been one of our "best kept secrets." This is the time in which we must reach out to the outside world and find a common source of values. A new awakening shines with a light that exists at the center of every human heart. Our collective awareness of the threat to our planet, and to our very survival, asks us to take a step in awakening society to the powers of the child for the reconstruction of humanity.

Despite the insistence of neuroscientists that our brains are the sole source of our experience and behavior, adults don't want to believe that this is the case and continue feeding the mind of the child with nonsensical information, which is reflected in their daily behavior. If parents want to understand what happens in the brain for themselves they need to learn more about their child's development; otherwise, they will end up on the side of ignorance. The child from birth to six year, is constructing his personality and his post-natal embryonic state, and knowledge about the world is necessary to adapt to his own time, culture, and family. To have a child is an immense responsibility, which entails not only feeding his or her body and looking after the child's physical state. It is also the responsibility of being aware of how the external world that we adults are offering the child is feeding his or her mind.

Montessori writes in *The Absorbent Mind*:

*Instead of leaving everything to chance, the child's growth at this time should be a matter of scientific care and attention. This means that something more is needed than mere physical hygiene. Just as the latter wards off injuries to his body, so we need mental hygiene to protect his mind and soul from harm. (13-14)*

Are we willing to question our convictions deeply enough to come to grips with what neuroscience has to say about the mind?

Are we, Montessori educators, ready to awaken the consciousness of parents and adults who work with children about the responsibility to give them a world of reality to educate and guide their intelligence?

We are threatening the survival of the species through our lack of acknowledgement of the dangers confronting the developing brain and our lack of directed actions to remedy the situation. The existence of life depends on a specific course of action. If an organism fails in that action, it cannot survive. Man needs knowledge in order to survive, and reason is his tool of knowledge. To remain alive he must think clearly. Critical thinking skills and instilling the best values we know are the only way to teach children how to distinguish between fact and fiction, between reality and fantasy.

Maria Montessori says in *The Absorbent Mind*:

*... the conclusion is irresistible that society must heed [pay attention to] the child, recognize his rights and provide for his needs. Once we have focused our attention and our studies on life itself, we may find that we are touching the secret of mankind, and into our hands will fall the knowledge of how it should be governed and how helped. ...*

*This is education, understood as a help to life; an education from birth, which feeds a peaceful revolution and unites all in a common aim, attracting them to a single centre.... This is the bright new hope for mankind. (15-16)*

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