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TABLE OF CONTENTS

1. Introduction

The Italian medical doctor, Maria Montessori developed a teaching method at the beginning of the 20th century on the grounds of the discoveries she made while empirically studying and scientifically examining children in her children's houses. She founded the method in order to give children an optimal educational foundation with regards to their individual level of development. Thereby it should become possible for children to learn with joy and enthusiasm, according to their interests and above all in a self-dependent manner. The aim behind her teaching method is to help the child develop into an independent, self-reliant, responsible and socially competent person that can confidently master the demands in life. In order to comprehend Montessori's method in regard to language acquisition it is necessary to give an overview of her most important concepts and how they are applied in the classroom.

In the second part of this paper a rather basic introduction to existing linguistic theories of first language acquisition will be given. Maria Montessori's theoretical beliefs on this subject will be compared to linguistic hypotheses and empirical findings. When looking at Maria Montessori's writings it becomes apparent that she is not so much interested in a philosophical and linguistic analysis or debate about language acquisition but rather in finding out about the child's behavior and patterns to be able to devise an environment for him that provides optimal support for his development. Her main concern is how one could pedagogically encourage the child's progress in his natural language acquisition process. Nonetheless, the Italian teacher offers some very interesting insights and ideas about first language acquisition and the success of her method which has been around now for more than one hundred years seems to confirm at least some of her underlying philosophies.

Since Noam Chomsky has had a significant influence on linguistic research some of his most important theories of first language acquisition will be examined in this section. Furthermore, the question whether language is an innate or learned behavior as well as what innateness would imply (content versus process approach) will be discussed. The linguistic environment and its influence as well as the role and effectiveness of caretaker

language and of various attempts at helping the child acquire his mother tongue need to be addressed. Moreover, after looking at critical periods in first language acquisition and Montessori's model of sensitive periods, the successive stages in language development will be examined in great detail. As this paper is only concerned with the acquisition of early speech, the one- and two-word stages will be analyzed extensively. In particular, the first periods in the acquisition of vocabulary and grammatical structures will be looked at.

The final part of this thesis will discuss the acquisition of early writing and reading in connection with the Montessori Method. Similarities and differences between the acquisition of the spoken and the written language will be mentioned. This chapter will also include a brief discussion about various problems children encounter when learning how to write and read, for example spelling, word boundaries, handwriting and reading first words, by comparing linguistic research with Montessori's views on this topic. In addition, the description of the Montessori Materials shall provide further insight into Montessori's theoretical concept about the acquisition of the first periods of the written language and will show its practical application in a Montessori environment.

It is necessary to mention that due to simplicity the 'child' has always been referred to with the male pronoun 'he' in this thesis. Since this paper was written on a computer with an English keyboard the letters for the various 'Umlaute' were missing. As a result, quotes in German are original, except for the use of /ae/, /oe/ and /ue/ for the respective Umlaut.

To understand Montessori's philosophy behind her method one must take a look at her writings and her life. It is particularly interesting to see that, with regard to her pedagogical ideas and her way of life, the Italian educator clearly lived ahead of her time.

Maria Montessori was born in Chiaravalle, Italy on August 31st, 1870. In 1882 her parents decided to move to Rome in order to provide a better education for their ambitious daughter. Having successfully graduated from high-school Maria Montessori felt the strong desire to study medicine, a field known to be exclusively reserved for

men. In spite of the difficulties involved, she was accepted as the first woman student by the Roman faculty of medicine in 1892 and was awarded a medical degree by the university four years later.

As an assistant doctor at the Psychiatric Clinic at the University of Rome she gained her first experiences in the field of pedagogy when working with mentally deficient children. While observing and studying them, Maria Montessori came to believe that their mental deficiency was not caused by a medical but rather a pedagogic problem and that with the help of special educational treatment the children's mental condition could be considerably improved. While looking into all the then-known theories of education she came across the studies of two French doctors, Jean Itard (1774 – 1838) and Edouard Séguin (1812 – 1880), who were the first to try to develop a method for educating mentally handicapped children by stimulating their sensory perception.

In 1899 Maria Montessori became the directress of the first State Orthophrenic School in Italy (Scuola Magistrale ortofrenica) where she prepared a group of teachers in a special method of educating mentally deficient children. Attached to it was a model school where all the children in Rome who were regarded as uneducable were taught by using materials that were originally developed by Itard and Seguin and further improved by Montessori herself. After a short period of time some of those mentally deficient children learned to read and write and successfully passed a public exam taken together with normal children. While the press was celebrating this miracle, Montessori thought about the consequences that this success implied:

> The results seemed almost miraculous to those who saw them. To me, however, the boys from the asylums had been able to compete with normal children only because they had been taught in a different way. They had been helped in their psychic development, and the normal children had, instead, been suffocated, held back. […] While everyone was admiring the progress of my idiots, I was searching for the reasons which could keep the happy healthy children of the common schools on so low a plane that they could be equaled in tests of intelligence by my unfortunate pupils! (Montessori 1964b: 38-39)

In an effort to find a way to use Itard's and Seguin's method on 'normal' children Maria Montessori stopped working at the Orthophrenic School and returned to the University of Rome to study experimental psychology and anthropology. At the same time she

translated Seguin's two books into Italian and visited many elementary schools where she performed anthropological experiments. Montessori was very upset when she saw how students were treated there. In her opinion the school environment she witnessed was a hindrance to the children's development:

> Today we hold the pupils in schools, restricted by those instruments so degrading to body and spirit, the desk – and material prizes and punishments. Our aim in all this is to reduce them to the discipline of immobility and silence […]
> Often the education of children consists in pouring into their intelligence the intellectual contents of school programs […] [B]efore such dense and willful disregard of the life that is growing within these children, we should hide our heads in shame […] (Montessori 19964b: 26-27)

In January 1907, after working as a professor at the anthropological institute of the University of Rome for two years, Maria Montessori finally got the opportunity to use her materials on 'normal', healthy children. In San Lorenzo, one of the poorest districts of Rome, she founded the first 'Children's House',[1] the so called 'Casa Dei Bambini', where fifty children between the ages of three and five coming from analphabetic families were provided with an environment suitable for them (little chairs and tables, open shelves), in which they had the freedom to choose from materials Montessori had either already used before, when experimenting with the handicapped children, or improved or even newly developed (e.g. Sandpaper letters and numbers).

Observing the children Maria Montessori noticed that while working with the materials they fell into deep concentration - a phenomenon she later referred to as 'polarization of attention'. She realized that children go through 'sensitive periods' in the course of their lives in which they are particularly receptive to the acquisition of certain skills. Strongly connected to these periods of sensitivity is the 'absorbent mind', a term used by Montessori to describe the ability with which children from birth to six years of age learn from their environment (Montessori 1995: 26).

On the grounds of her discoveries and experiences with the children Montessori created her pedagogic concept of the self-education of the child in a didactically prepared environment that was soon known as the Montessori Method. After a short period of

[1] Maria Montessori called her schools and institutions that worked according to her principles 'Children's Houses' – houses that belong to the children.

time more children's houses were opened in Italy and other countries around the world. Because of the great interest in her method, in 1909 Maria Montessori started teacher training courses and published her first book *Il Metodo (della Pedagogica Scientifica applicato all' educazione infantile nelle Casa dei Bambini)* which was soon translated into more than twenty languages. She further developed her pedagogic concept and created materials for children between the ages of six and twelve, which lead to the foundation of Montessori elementary and middle schools all over the world.

During the following years Maria Montessori completely dedicated her life to the teaching of her method and held training courses in Europe, America and Asia. As a result of the political situation during the first half of the 20th century Montessori had to change her permanent residence every now and then in order to be able to continue with her work. In 1916 she moved to Barcelona, then twenty years later to the Netherlands. When World War II broke out, she was just about to give a teacher training course in India. She decided to stay there till after the war and returned to the Netherlands in 1946.

Besides writing books and articles and giving lectures and courses all over the world Montessori carried on with her psychological researches and developed concepts for educating adolescents (ages 12 - 18) and very young children (ages 0-3). In her later years her concern about education for peace intensified and she was twice nominated for the Nobel Peace Prize. Highly honored for her work Maria Montessori died at the age of 81 in Noordwijk aan Zee on May 6th, 1952.

2. The fundamental principles of the Montessori Method

2.1. The discovery of the child

> I protest against myself being hailed as the great educator of this century, because what I have done is merely to study the child, to take and express what he has given me, and that is called the Montessori Method. At the most I have been the child's interpreter. (Montessori 1974: 4)

Throughout her life Maria Montessori was concerned about the whole child, his physical, emotional and intellectual well-being. Therefore her educational goal was to help the child develop his whole personality through motor, sensory and intellectually based activities.

When her first Children's House, the Casa dei Bambini, was opened, the pioneer educator saw a chance to try out her new ideas and materials with children of normal ability from the ages of three to six. Her observations and scientific studies on the true nature of the child revealed surprising findings, which form the basis of her method. As Montessori made the same discoveries when observing children of various cultures in many countries all over the world, she concluded that these were universal principles of human behavior which generally should be regarded as a foundation for educational systems everywhere.

Many of her contemporaries considered childhood as a transitional stage to adulthood, in which the child had to learn as quickly as possible how to behave like an adult. During her anthropological investigations, however, Maria Montessori realized that the child's and the adult's personalities completely differ from each other and came to the conclusion that the period of childhood in a person's life is of greater importance than was realized up to this time (Holtz 1994: 64).

> Wir sehen klar, dass die Kindheit ein Stadium der Menschheit ist, das sich vollkommen von dem des Erwachsenen unterscheidet. Wir haben die zwei verschiedenen Formen des Menschen erkannt. Das Kind traegt nicht die verkleinerten Merkmale des Erwachsenen in sich, sondern in ihm waechst sein eigenes Leben, das seinen Sinn in sich selber hat. (Montessori 1996a: 9)

Montessori began to observe and study the child and his behavior to find out how to truly support and further his natural development according to his needs and tendencies and discovered 'astonishing' abilities which no one at that time would have thought to be possible with children of that age: when working in an environment suitable for them, they were full of joy, discipline and concentration. Maria Montessori came to believe that the child is naturally good and continually works toward perfection.

2.1.1. The child creates himself

> Das Kind ist nicht ein leeres Gefaess, das wir mit unserem Wissen angefuellt haben und uns so alles verdankt. Nein, das Kind ist der Baumeister des Menschen. (Montessori 2000: 13)

During her observations Maria Montessori noticed the children's enormous desire to learn new things. She realized that the child accomplishes himself through activity which is derived from behavioral impulses that respond to the environment. According to Montessori, meaningful knowledge is not developed by force, but rather by self-chosen activities based upon individual interest (Fischer 1966: 20).

> [The child] has initiative, he chooses his own work, persists in it, changes it according to his inner needs; he does not shirk effort, he rather goes in search of it, and with great joy overcomes obstacles within his capacity. He is sociable to the extent of wanting to share with every one his success, his discoveries, and his little triumphs. (Montessori 1964a: 77-78)

This insight disproved the widely-spread psychologists' assumption at that time that the adult forms the child's character. It is, however, the opposite: the child himself creates his own personality. (Montessori 1996b: 38-44)

> [Das] Kind allein ist der Bildner seiner Persoenlichkeit. Schopferischer Wille draengt es zur Entwicklung. Noch ist im kleinsten Kind die Zeichnung des Charakters nicht sichtbar, aber in ihm ruht, wie in der Zelle, die ganze Persoenlichkeit. (Montessori 1996a: 9)

In contrast to the adult, who works for the sake of achievement, the child works for the sake of self-development. The child repeats an exercise over and over again because for

him the result of an action is not in the center of attention but the activity itself (Montessori, Grundlagen meiner Paedagogik: 15). In her book *Montessori Today* Paula Polk Lillard gets to the heart of it:

> Although work is important to both adults and children to maintain harmonious personalities, children's work differs in scope and purpose. Adults work to change the environment; children use the environment to change themselves. (Lillard 1996: 42)

Montessori recognized that the repetition of exercises, which was always accompanied by deep concentration, plays a significant role for the child's intellectual and physical development. By repeating an activity the child not only gains control over his body and precision in his movements, but he is also able to classify and structure his own impressions within his mind (Montessori 1964b: 357-358).

As the child's ability to concentrate was best when he was allowed to move spontaneously while working, the pioneer educator concluded that movement and the sensorial impressions involved are necessary and important for the development of the child's mind. To support the child in his process of self-formation, Montessori designed didactic materials which enable him to sort out and assimilate the large number of impressions he gains when interacting with his environment. By doing manipulative exercises that involve the use of his hands and mind together, the child becomes an active participant in his own learning process.

Modern research shows that through the interaction with the environment the human brain is physiologically changed. In recent years neuroscientists discovered that the human brain is "plastic", meaning it is modified by experience. In early childhood there is an overabundance of synapses in the brain. During a person's life experience and stimulation shape, refine and fine-wire the brain's neural circuits, while absence and deprivation of brain stimulating experiences let inactive synapses perish. The brain's plasticity is greatest during early childhood but still persists into adulthood. (Bruer 1999: 107, 108, 116)

Although the brain is capable of manipulating increasingly abstract information and ideas, these concepts are always based on the individual's initial sensorial impressions of the material world, which he must form through his own activity (Lillard 1996: 20).
Montessori writes about the connection between movement and mental development:

> Wenn man von geistiger Entwicklung spricht, wird es Leute geben, die sagen: „Bewegung? Was hat Bewegung damit zu tun, wir sprechen doch von geistiger Entwicklung?", und wenn wir an geistige Uebung denken, sehen wir uns alle sitzend und unbeweglich. Aber die geistige Entwicklung muss mit der Bewegung verbunden sein und von ihr abhaengen ... Beobachtungen an Kindern aus aller Welt beweisen, dass das Kind seine Intelligenz durch die Bewegung entwickelt. (Montessori 2000: 129)

During her daily observations in the first Children's House in San Lorenzo, Montessori noticed that children have an innate desire to work according to a particular work cycle that follows a certain pattern. Once starting to concentrate on a specific activity, children begin to repeat this exercise several times and finally stop when an inner need has been satisfied. She realized that this cycle of work, especially the completion of an activity, was of great importance for the child's mental development (Montessori 2000: 195). As a result, in her writings Montessori repeatedly points to the fact that a child, whose concentration is disrupted while working, looses his interest and enthusiasm, because his natural work cycle is thereby interrupted. Consequently the adult must not disturb the child while working, in order not to be an obstacle to the child's mental development. (Montessori 1998a: 118-119)

2.1.2. The developmental stages of the child

> Die Entwicklung [des Menschen] ist ein Aufeinanderfolgen von Geburten. (Montessori 2000: 16)

Working with children and young adults Maria Montessori recognized that there were certain stages in human formation, in which children undergo profound physical and mental changes. In his development the child passes through different periods of transformation that alternate with phases of uniform growth. According to her there are four such planes of development: two stages of childhood, from birth to 6 years and from

6 to 12 years of age, and two planes of adulthood, from 12 to 18 years and from 18 to 24 years of age (Lillard 1996: 5).

Montessori noticed that in each of these planes the child or young adult is exceptionally sensitive to the acquisition of certain skills that help him fulfill his developmental goal for each particular stage. As each period builds upon the last, deficits in formation in one plane have effects on the successful completion of the succeeding ones. Consequently, she strongly believed that schooling should recognize these developmental stages of human formation:

> Instead of dividing schools into nursery, primary, secondary, and university, we should divide education in planes and each of these should correspond to the phase the developing individual goes through. (Montessori 1971: 1)

In contrast to traditional education the Montessori Method is not based upon the assumption that intelligence increases with age, but rather follows the natural development of the child, which shows that in each plane human formation reaches a peak and then declines again, alternating approximately every three years between intense change and slower pace (Lillard 1996: 7).

2.1.3. Sensitive periods in development and the 'absorbent mind'

> Es ist klar, dass man den Aufbau des kindlichen Geistes nicht verstehen kann ohne Kenntnis dieser sensiblen Perioden und der Reihenfolge ihres Ablaufs. (Montessori 1998a: 73)

In the course of his scientific research on insects the Dutch biologist Huge de Vries discovered that the caterpillars of a certain species of butterflies show a special sensibility for light only for a limited period of time. After having learned this particular ability the sensitivity fades away forever. He concluded that these animals pass through a sensitive period of development in which they are exceptionally receptive to the acquisition of this specific skill (Montessori 1998b: 47).

During her work in various Children's Houses Maria Montessori made similar experiences with children. She realized that all humans go through developmental stages of sensitive periods when they easily incorporate a particular ability into their schema if allowed to practice it exhaustively during this time. The Italian doctor refers to this phenomenon as "a passing impulse or potency" (Montessori 1966: 38) and compares it to a searchlight – coming from within the child's mind. Illuminating certain areas, it leaves the rest in darkness and thereby the child's attention is drawn to this bright spot (Montessori 1998b: 49). This concentration on particular aspects of his environment enables the child to categorize and distinguish his various impressions. The Italian educator noticed the fundamental significance of these sensitive periods for the child's self-construction during his developmental process. She became aware that certain sensibilities last only until a necessary need is fulfilled. For a limited period of time, the child develops an interest in a specific part of his environment, thereby easily acquiring special skills.

> Children pass through definite periods in which they reveal psychic aptitudes and possibilities which afterwards disappear. That is why, at particular epochs of their life, they reveal an intense and extraordinary interest in certain objects and exercises, which one might look for in vain at a later age. (Standing 1957: 100)

Observing the children Maria Montessori found that sensitive periods occur in a certain order depending on the child's age. In each of the four developmental stages the child or adolescent shows a particular sensibility for specific interests and needs. Although these phases are irreversible as they base on each other, the child can still acquire certain skills with the help of special materials after a sensitive period has passed, but only with greatest effort (Holtstiege 2000: 74-84). For this reason Montessori attaches great importance to the observance of sensitive periods when educating children. When these phases of sensibility are taken into account, children develop an active interest and an incredible enthusiasm for learning. E. M. Standing, who was one of Montessori's closest friends and admirers, writes:

> When the education of children is organized in relation to their sensitive periods, they work with a sustained enthusiasm which has to be seen in order to be believed. (Standing 1957: 113)

The Italian teacher, therefore, strongly demands an environment that is adapted to the child's needs and his prevailing sensitive periods. With the help of didactic materials which are part of this environment the child can develop, according to his inner needs, into an independent and free personality.

Montessori's prescient understanding of these critical periods is now confirmed by scientists and has found its way to the general public through popular articles and books, with Time magazine calling it "windows of opportunity" (Nash, 1997: 55). John Bruer (1999: 104) defines sensitive periods as "time spans during which […] animals, including humans, can acquire specific traits, behaviors, or skills". According to modern research these periods do not end abruptly but gradually, and are not windows that slam shut. Most learning is not confined to certain periods, although it can be more easily acquired during certain times in life than during others. However, some skills may only be obtained during a specific period, such as first language acquisition (from infancy until puberty) or second language phonology - unaccented language learning. Researchers still argue about the duration of the critical period for learning a second language without an accent. Some believe that this phase ends around 5 or 6 years, others claim that it closes at the age of 14 (Bruer 1999: 103, 104, 128, 131). Based on personal observation and experience the author of this thesis supports the first hypothesis. She moved from Austria to the United States when her children were 5 and 8 years old. Her younger daughter speaks unaccented English; her older one, on the other hand, has a slight accent that native speakers can detect.

2.1.3.1. From birth to the age of six

This unstable stage in human development that Maria Montessori (1995: 60) calls the "formative period" plays a very important role in the formation of the child's personality, his intelligence and psychic faculties. According to the Italian educator, this phase of development is characterized by the activity of the absorbent mind. Montessori divides this period in two sub-phases of three years.

1. Sensitive Period between Birth and Three:

During this developmental stage the child acquires knowledge subconsciously by absorbing impressions from the environment which he is placed in. These impressions have great influence on the child's mental development:

> Die Eindruecke dringen nicht nur in seinen Geist ein, sondern formen ihn. Die Eindruecke inkarnieren sich in ihm. Das Kind schafft gleichsam sein „geistiges Fleisch" im Umgang mit den Dingen seiner Umgebung. Wir haben seine Geistesform *absorbierenden Geist* genannt. (Montessori 2000: 23)

While learning from and assimilating effortlessly with the world around him, the child himself is forming parts of his mental being. Gradually behavior patterns are established; attitudes, movements and language are developed. As the child subconsciously absorbs the world around him, his development cannot be directly influenced by education during this formative period. For this reason Montessori considers it necessary to create an environment that is adapted to the child's needs and has a stimulating effect on his prevailing sensitivities.

At the age between birth and three the child is particularly receptive to three sensibilities which occur at the same time: movement, order and language. The child learns to gain control over his body by developing the movements of his hands, maintaining his balance and starting to walk. He has a strong need for order and routine, which helps him to sort out and assimilate the many impressions he is exposed to on a daily basis and to build up inner orientation. He easily learns the language around him by unconsciously absorbing not only words but the whole structure of the language (Montessori 2000: 22; Holtstiege 2000: 74-77).

2. Sensitive Period between Three and Six:

This period of life marks the child's transition "from unconscious creator to conscious worker", as he now absorbs his environment consciously by using his hands (Montessori 1995: 165). It is through the activity of his hands that he gains more experience and perfects his skills. By actively exploring his environment the child starts to analyze the

world around him. He is particularly sensitive for the development of his consciousness. At the age between three and six children show great interest in living together with others in a group. According to Montessori (2000: 211) a child can be regarded as socially integrated when he identifies with this group whose welfare he considers to be more important to him than his own. (Holtstiege, 2000: 77-78)

2.1.3.2. From the age of six to twelve

This second developmental period of the child stands out due to its great stability. It is ruled by three sensibilities which manifest themselves in the following needs (Montessori 1979b: 32):

1. The child has an increased desire to break out of his limited environment and to gain social experiences within a larger group of people. Montessori (1979b: 26) considers this necessary for the child's healthy development.

2. In this phase the transition of the child's mind from concrete to abstract thinking is evident. During that age children turn from "sensorial" into "reasoning explorers" (Lillard 1996: 154). They are now passing through a 'sensitive period of imagination', which forms the basis for their mental development, and therefore need to be supported by the adult (Montessori 1979b: 51). To help them build up this imagination and organize structures within their mind, Montessori demands: "das Ganze geben, indem man das Detail als Mittel gibt" (Montessori 1979b: 49). The principle of studying one aspect of the real world in detail in order to recognize it as part of the whole supports the child in his process of creating structures and putting them into context. This enables him to find his way around his socially expanding environment.

3. During this period the child develops his moral awareness, which is closely linked to the formation of his social awareness and his inner sensibility of conscience, and manifests itself in the child's sense of justice (Montessori 1979b: 29-30).

2.1.3.3. From the age of twelve to eighteen

This third period of life, which Montessori again divides into two sub-phases of three years each, is once more characterized by instability, turbulence and vulnerability. During these years of self-construction adolescents develop social sensibility, which is accompanied by their desire to gain independence within their sphere, socially as well as financially. As this is a time of insecurity and self-doubt the adolescents seek protection and support in a community of peers or in an adult friend. On the other hand, however, they also wish to discover their role in society and try to understand people's behavior in the world at large. Montessori, therefore, calls adolescents in this period of life "humanistic explorers" (Lillard 1996: 154).

Adolescents have a great need for increasing their self-confidence and they develop sensitivity for self-esteem and human dignity. For that reason between the ages of twelve and eighteen they have a desire to make a direct contribution to society and are particularly dependent on social recognition and encouragement (Oswald 1958: 88). At the same time adolescents show great interest in creative expression with the help of which they are able to develop into socially conscious human beings and responsibly take their place in the adult world (Montessori 1979b: 97-98; Holtstiege 2000: 82-83).

2.1.3.4. From age eighteen to twenty-four

The fourth and last stage is again a period of stability and can be compared to the second phase of formation. The integration of previous development now results in the mature adult.

These years of life are characterized by the young adult's desire to prepare for his personal career in order to gain economic independence and make a meaningful contribution to society. He is still in need of the support, encouragement and guidance of adults, like university professors or other adult-mentors, whose role it is to serve as a link to the society at large. The young adult has now reached the last stage of his development to become a 'specialized explorer' ready to choose and prepare for a first

career, to continue his intellectual studies throughout his life and to finally join society as a contributing adult member (Lillard 1996: 176).

2.1.4. Independence, freedom, order and discipline

> No one can be free unless he is independent: therefore, the first, active manifestations of the child's individual liberty must be so guided that through this activity he may arrive at independence. (Montessori 1964b: 95)

Maria Montessori strongly believes that the acquisition of independence, in particular from the adult, who has the tendency to influence and hamper the child in his spontaneous activity, is essential and necessary for the child's normal development.
Through creative activity the child gains freedom and independence, he perfects himself intellectually and he is able to become a free and self-confident human being.

> Unabhaengigkeit offenbart sich [...] als etwas fortwaehrend zu Erringendes: das Erlangen nicht nur von Freiheit, sondern auch von Kraft und Selbstvervollkommnung, durch unermuedliches gestaltendes Wirken. (Montessori 1998a: 87)

As children are in a constant process of self-formation, it is, according to Montessori, the adult's responsibility to respect their drive for independence. Influencing and manipulating a child by correcting, praising, punishing or helping him without being asked for assistance not only ties the child to the adult but also has a negative impact on his development (Lillard 1996: 93). Consequently, it is of great importance that the adult does everything in his power to support the child on his way to independence. 'Help me to do it by myself!' – This request made by a girl to Maria Montessori herself, has become one of the most important guiding principles of the Montessori Method (Eichelberger 1997: 15).

> Das ganze unbewusste Streben des Kindes geht dahin, sich durch die Losloesung vom Erwachsenen und durch Selbstaendigkeit zur freien Persoenlichkeit zu entwickeln. Unsere Erziehung traegt diesem Streben des Kindes in allem Rechnung; und unser Bemuehen ist es, dem Kind zu helfen, selbstaendig zu werden. (Montessori 1996a: 11)

In order to grant the child the greatest possible freedom in his activities and enable him to explore his surroundings independently from others, the environment must be structured (Montessori 1998b: 63-64). Montessori realized that children have an innate sensitivity for order in their environment which helps them to find their way around and to recognize and establish relations between things. Disorderly surroundings create the desire within the child to restore order again, a phenomenon that finds its application with many Montessori materials (Montessori 1996a: 17).

Subsequently, freedom and order go hand in hand. The child needs the opportunity of independent activity and a structured environment to create an inner order and self-discipline. Montessori (1964b: 86) believes that "liberty is activity" and "discipline must come through liberty". Consequently, the Italian educator talks about an "active discipline", which is not imposed from outside but develops within the child himself. Montessori (1994b: 86) calls a person disciplined "when he is master of himself, and can, therefore, regulate his own conduct when it shall be necessary to follow some rule of life".

By liberty Montessori understands "the freedom to choose between things that are in themselves good", i.e. any activity that leads to order, harmony, self-development and therefore to discipline (Rambusch 1963: 25). In that sense the prepared environment plays an important role in the child's development as it supports him in forming his inner discipline by drawing his attention to objectives worth striving for (Holtstiege 2000: 29).

A child, who is in a state of deep concentration and is able to work independently without teacher interference, has truly achieved the goal of self-direction and is "master of his own actions" (Montessori 1964b: 376). Montessori (1996a: 27) considers a child to have gained independence when he has been able to develop according to his inner laws of nature and developmental needs.

Freedom of the child, however, does not mean that he can do whatever he pleases. As soon as a child does not treat other people or things with respect by disturbing others or misusing materials, the teacher steps in. Montessori writes:

> The liberty of the child should have as its limit the collective interest; as its form, what we universally consider good breeding. We must, therefore, check in the child whatever offends or annoys others, or whatever tends toward rough or ill-bred acts. (Montessori 1964b: 87)

These limits and rules are guidelines to support the child in his normal formation. He is not left to his own devices, but can freely develop in a prepared environment that is adapted to his needs. In this respect the adult has the role of an observer who helps the child in a loving and respectful way to observe these rules.

2.1.5. The 'polarization of attention'

> So wie es beim Zirkel notwendig ist, einen Punkt festzulegen, damit der Kreis genau wird, so ist beim Aufbau des Kindes die Aufmerksamkeit der wesentlichste Punkt. (Maria Montessori in: Eichelberger 1997: 34)

One of her first discoveries, which soon became the focal point of her psychological and experimental studies, was the "polarization of attention", a deep concentration caused by the child's interest in a particular object (Montessori 1964c: 68). Maria Montessori encountered this phenomenon in the Children's House for the first time when observing a little girl of about three years who was working with the wooden cylinders, a material Montessori developed for the training of the senses. The child repeated the same exercise over and over again and was so deeply absorbed in it that she did not react to what was going on around her. This concentration was so strong that even Montessori herself could not get the girl's attention. Finally after the child had repeated her exercise forty-four times she stopped "independently of any surrounding stimuli which may have distracted her, and she looked round with a satisfied air, almost as if awaking from a refreshing nap". (Montessori 1964c: 68)

Maria Montessori realized that this polarization of attention, which could be observed with all the children in the Children's House, was important and essential for the child's inner development. After having learned the meaning of an exercise the child enjoys repeating it over and over because by doing so he is developing and perfecting his

psychic activities. The deep concentration that accompanies these repetitions is fundamental for the development of order within the child. The Italian educator writes: "The organization of psychical life begins with the characteristic phenomenon of attention." (Montessori 1964c: 67)

During her studies Montessori noticed that in the course of uninterrupted work the child's concentration develops in three successive stages (Montessori 1992a: 52-53):

1. The "phase of preparation" or "vorbereitende Stufe" lasts only for a very short period of time in which the child's interest and attention is drawn to a specific material that corresponds to his prevailing inner needs. (Montessori 1964c: 103; 1992a: 52)

2. The "serious work" or "Stufe der grossen Arbeit" is a phase of long duration. The child repeats the exercise for an indefinite number of times and becomes deeply absorbed in his work, which shows that he has reached the peak of his activity. (Montessori 1964c: 103; 1992a: 52)

3. The "period of rest" or "Zeit der Ruhe" completes the work cycle. When his activity comes to an end the child contemplates his work for a long time and appears to be well-rested, satisfied, and uplifted. (Montessori 1964c: 103; 1992a: 52)

Maria Montessori realized that this deep concentration, which is so necessary for the child's self-formation, only occurs under certain conditions. According to her, in order to help the child in his spontaneous development, education must pay attention to the sensitive periods, provide freedom of initiative, choice and movement and a prepared environment that takes account of the child's need to develop independence. This environment includes not only the materials which help the child to form himself according to his sensitivities but also the adult who in a respectful and loving way guides the child on his path to independence and responsibility. (Holtstiege 2000: 181-182)

Montessori's discovery of this phenomenon of deep concentration brought about a different understanding of the child and was the beginning of a new kind of education with its goal being to initiate this polarization of attention by creating an environment suitable for the child in order to effectively support his normal development.

> Hier liegt offenbar der Schlussel der ganzen Paedagogik, diese kostbaren Zustaende der Konzentration mit ihrer Wiederholung der Uebung zu erkennen und sie zum Lernen all dessen zu nutzen, was die Bildung betrifft [...] Alle Psychologen sind sich darin einig, dass es nur eine ideale Form des Lernens gibt: tiefstes Interesse und lebhafte und andauernde Aufmerksamkeit. (Montessori 1992a: 45)

2.1.6. 'The normalized child'

> Nur die „normalisierten", von der Umgebung unterstuetzten Kinder offenbaren in ihrer sukzessiven Entwicklung die wunderbaren Faehigkeiten, die wir beschreiben: die spontane Disziplin, die staendige, freudige Arbeit, die sozialen Gefuehle der Hilfe und des Verstaendnisses fuer die anderen. (Montessori 2000: 185)

During her observations Maria Montessori (2000: 180-183) noticed that once the polarization of attention had taken place the child's personality changed. Manifestations of disturbance that are commonly accepted as normal behavior with children, like aggression, laziness, disobedience, untidiness, shyness, etc, disappear as soon as this phenomenon sets in and a permanent state of order and discipline starts to develop within the mind. The Italian educator realized that this deep concentration was the key to the revelation of the child's true nature, a process she called "normalization" (Hainstock 1997: 62).

> [E]ach time that such a polarization of attention took place, the child began to be completely transformed, to be calmer, more intelligent, and more expansive; it showed extraordinary spiritual qualities, recalling the phenomena of a higher consciousness, such as those of conversion […] Thus, when the phenomenon of polarization of attention had taken place, all that was disorderly and fluctuating in the consciousness of the child seemed to be organizing itself into a spiritual creation, the surprising characteristics of which are reproduced in every individual. (Montessori 1964c: 68)

When children are given a prepared environment which is tailor-made for their needs and in which they are free to choose their own activities, they constantly reveal love of order, discipline, concentration and exactness. They appear to be calmer, more content and satisfied and show compassion for others and an increasing responsibility for their environment. Only the normalized child who has organized himself reveals the positive abilities mentioned above. The initiation of the process of normalization is always characterized by the deep concentration on one specific task. (Montessori 2000: 185)

Montessori believes that this transformation from initial confusion to inner order is the normal process of self-formation for all human beings. Having organized his personality according to his true nature the child has reached the state of normality.

> Das Kind, das wir normal nennen, ist organisch verknuepft mit den Uranfaengen seines eigenen Lebens, und sein ganzes Wesen, das sich im Stadium der Entwicklung befindet, ist durch ein inneres Gleichgewicht in Harmonie gebracht. Das andere Kind ist das, das vom Erwachsenen nicht verstanden wurde und dessen inneres Wachstum erstickt worden ist und in Spaltungen sich kuemmerliche Wege sucht. (Montessori 1996a: 28)

According to Montessori all deviations from the child's natural behavior are abnormal and for the most part caused by the adult's disparagement of the child's personality.
In her opinion there are no good and bad children but only disciplined and undisciplined ones. (Montessori 1996b: 117)

> Our teachers […] never say: The child is developing, or progressing, the child is good or naughty, etc. The only phraseology they use is: The child is becoming disciplined or is not becoming disciplined. It is internal order that they await. (Montessori 1964c: 121)

To support the child's natural development Montessori considers it necessary to create an environment that motivates and interests the child and helps him to achieve this state of normality.

2.2. Practical applications of Montessori's discoveries

The knowledge and understanding of the child's nature which Maria Montessori gained during her research led her to the conclusion that children's education had to be newly defined:

> Wissenschaftliche Beobachtung hat demnach ergeben, dass Erziehung nicht das ist, was der Lehrer weitergibt. Erziehung ist vielmehr ein natuerlicher Vorgang, den der einzelne Mensch von selbst vollzieht, nicht durch Hinhoeren auf Worte, sondern durch Erfahrungen mit der Umwelt. (Montessori 1998a: 55)

She therefore demands a new kind of education so that "the true child" can come to light (Montessori 1972b: 138). In search of an ideal method, Montessori takes her observations and discoveries, mentioned in the previous chapters, as well as children's spontaneous remarks[2] as a basis and develops her pedagogic concept. As already mentioned, according to her, the goal of education should be to observe the child's sensitive periods, allow freedom within certain boundaries, encourage independence and provide an environment that initiates the polarization of attention.

2.2.1. The prepared environment

> Die Bedeutung der Umgebung fuer die Erziehung ist lange bekannt. Wir schaffen uns selbst auch staendig eine Umgebung, die zu uns passt und die zu unserer Entfaltung beitraegt. Diese Umgebung formt uns staendig, wir passen uns ihr an, bilden uns um. Die Umgebung des Kindes dagegen ist ein wenig anders, da sie den Beduerfnissen des Kindes entsprechend geschaffen ist, sie soll es nicht beeinflussen, sondern sie soll mit seinen Beduerfnissen vollkommen in Einklang stehen. (Montessori 1996a: 52)

For a healthy development, Maria Montessori demands surroundings which are adjusted to the child's emerging sensibilities and interests as well as supportive to the child's needs for independence and self-reliance. According to the child's developmental stage, a methodically prepared environment is designed that has the purpose to arouse the

[2] In *The Secret of Childhood* Montessori (1972b: 138-139) describes and lists children's reactions to certain activities, their likes and dislikes, which she took into consideration when developing her method.

child's interest. It must be clearly structured, in order to help the student find his way around the classroom and to build up his inner self-orientation.

Three factors, which are part of the prepared environment, play an essential role in the realization of these demands and are at the same time considered the three basic principles of the Montessori Method: the classroom environment, the teacher and the materials. (Montessori 1998b: 144)

2.2.1.1. The classroom environment

> Die Grundlage ist also nicht das Nachdenken darueber, wie man das Kind lehren oder erzieherisch beeinflussen kann, sondern wie man ihm eine Umgebung schaffen kann, die seiner Entwicklung foerderlich ist, um es dann in seiner Umgebung sich frei entwickeln zu lassen. (Montessori 1996a: 51)

Maria Montessori believes that it is the adult's responsibility to create a prepared environment that meets the child's needs.
All furnishings, such as tables, chairs, shelves and sanitary appliances should be adapted to the child's proportions. To allow maximum freedom for the students, the chairs and tables should be light in weight, so they can be moved around by the children themselves. (Montessori 1996a: 45)

To facilitate spontaneous movement, which Montessori considers an essential factor in building up the child's conscience and intelligence there is no seating arrangement. As in Montessori schools children can work on the floor as well as at tables, the space should be designed in a way that half of the classroom is not furnished. (Eichelberger 1997: 34; Montessori 1998b: 103)

In order not to disrupt the child's concentration when working, time limited lessons, like in traditional schools, are not imposed. During the so called 'Freiarbeit', the student usually has about three to four hours without interruption to perform, repeat and complete the tasks he chooses. Such an environment, in which children can learn and develop at their own pace in a relaxed and peaceful atmosphere, helps them to have a

stress-free learning experience and leads to the phenomenon that Montessori calls the polarization of attention, which is described in 2.1.5. (Krieger 1998: 170)

A fundamental feature of the prepared environment is the formation of classes according to the children's sensible periods. Therefore, children of 3-6, 6-9, 9-12, 12-15, and 15-18 years of age are put together in collective classes. This composition of different age-groups enables the children to gain multi-faceted experiences, socially and intellectually, and, consequently, to learn from and with each other. (Montessori 1979a: 83)

In her numerous writings, Montessori repeatedly emphasizes the importance of aesthetics when creating the prepared environment. Fresh flowers, green plants, walls and furniture painted in soft colors and pretty objects and pictures that are a joy to the child, are equally as important as the developmental materials. (Montessori 2000: 53 – 54)

Due to the fact that "[i]t is the tendency of the child actually to live by means of the things around him" (Montessori 1964c: 28), it is necessary that his environment mirrors reality. Dealing with breakable objects, such as glasses and porcelain, also belongs to this concept, in order to raise the child's awareness of cautious handling and to give him a feeling of pride and responsibility.

The environment that is adapted to the child's needs is, in Montessori's opinion, one that encourages the child's independence and his own actions. Only through his own activities and appropriate interaction within his surroundings, can the child build up his own personality. Consequently, the environment must be adjusted to the child's stage of development; at the same time freedom of movement and free choice of materials must be guaranteed. For this reason, the materials are stored in open shelves and are therefore easily available to the child. All the objects are horizontally placed on eye-level, so that the student has a good overall-view of the materials and can easily reach them.

To help the child find his way around, the didactically prepared environment is divided into the following academic areas: 'Exercises of Practical Life'[3], 'Sensory Education'[4],

[3] The Exercises of Practical Life comprise all daily activities undertaken by adults in establishing, maintaining and embellishing their environment, e.g. cleaning, buttoning a jacket, tying shoes.

language, arithmetic, geometry and 'Cosmic Education'[5], which comprises subjects such as geography, history, science, art, music, arts and crafts and information about other cultures.

Another feature of the prepared environment is that it should appeal to the child's interests, in order to stimulate the student to work. Thereby he is able to learn effortlessly from his surroundings. Montessori writes:

> Alle Dinge der Umgebung, die wir dem Kind bereiten, sind so angeordnet, dass sie dem Kind das aeussere Ziel anregend darbieten. Das Kind wird dazu aufgefordert, die Handlung aus Interesse zu beginnen, und der Anfangshandlung folgt dann die Wiederholung. (Montessori 1996a: 15)

By this means the child is encouraged to explore and discover the environment himself. Not the teacher, but the child himself decides spontaneously which subject and learning contents are appropriate for him. With the help of the developmental materials and the loving support of the adult, the child is guided step by step to those learning experiences that correspond to his inner needs (Montessori 1996a: 48)

This is achieved by structuring his surroundings and the materials that then, in return, support the child in building up his inner order. The didactically prepared environment must not influence or disturb the child in his development and, according to Montessori, should therefore have a revealing rather than a molding character. After all, it is through this that the child discloses himself "in seiner Eigenart und seinem Lebensrhythmus". (Montessori 1996a: 52)

2.2.1.2. The role of the adult

> Der Lehrer in unserer Arbeit ist nicht der Bildner und Belehrer des Kindes, sondern der Gehilfe. (Montessori 1996a: 26)

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[4] By systematically working with the Sensorial Materials the child develops and refines the five senses and builds a solid basis for his intellectual activity. For a detailed description of the Sensorial Materials and their application, see 5.2.2.

[5] Maria Montessori's educational goal is to develop within the child a global vision. She calls the path whereby this goal is achieved "Cosmic Education" (Hainstock, 1997: 107). As a result the children develop a gratitude for the universe and their lives within it.

In her writings Maria Montessori is very particular about the behavior, the duties and the attitude a Montessori teacher should have.

As the child teaches and educates himself with the help of his environment, Montessori believes that it is one of the most important duties of the adult to maintain an appropriate, tidy and orderly learning environment (Montessori 2000: 250).

Furthermore, the teacher has the active task of putting the child in a direct relationship with this prepared environment. This is achieved by lessons in which the teacher shows a single student or a small group of students certain materials. The teacher must therefore know the developmental materials and their immanent didactic structure in order to be able to show and teach the child their use with joy and precision. The correct introduction of the developmental materials is vital to enable the student to work independently, without the teacher's assistance, later on. (Montessori 1992b: 110)

In this context the educator takes on the function of an initiator who immediately takes a back seat when the child becomes mentally active and starts perfecting himself by repeating the exercises and working in a concentrated manner. Thereby he leaves the mediation of knowledge to the materials themselves. According to Montessori, it is in this follow-up practice, spontaneously undertaken by the child, in which the actual learning takes place. (Montessori1996a: 18; Lillard, 1996: 37)

Strongly connected with the concrete use of the materials is the so-called "three-period-lesson" (Hainstock: 1997: 88) or "Seguin lesson" (Lillard, 1996: 36). After the student has had a long time to work with an object on a sensory level, the teacher finally attaches language to the abstract concept that the particular material represents. According to Lillard (1996: 36) language used in that sense "transforms the knowledge gained into a 'key'", which can be used as a tool to further explore the world outside the classroom. Given the appropriate terms (e.g. big – bigger - biggest, dark – darker – darkest, etc.) the children are able to recognize the different characteristics of objects in the world around them and to communicate their findings more effectively to others.

Hildegard Holtstiege (2000: 118) describes the three-period-lesson as follows:

1st stage – naming:

In naming the characteristics of the materials, the child establishes a relationship between the sensory experience and its name (‘That is rough.’).

2nd stage – recognizing:

The child recognizes the object and its characteristics when the teacher names it (‘Give me the rough disc!’).

3rd stage - active control:

The child can name the shown object and its characteristics after being requested to do so by the adult. (‘What is this?’ – ‘Rough’)

Having mastered the third stage the child indicates that the abstract idea, immanent in the material, is now within his mind and can be used for additional exploration. In Lillard’s opinion the advantage of learning in this manner is the great amount of flexibility that it provides for the student:

> The second stage, which is the actual learning period, can be extended and repeated as many times as necessary for an individual child. Each child then has a greater chance of success in the last period, which is, in effect, the testing stage. (Lillard, 1996: 37)

In order to support the child in his process of development the teacher must step back and play the passive role of the observer, who does not interfere with the independent work of the student and only helps him, when the child himself asks for assistance. The teacher may not interrupt or influence the student by praising him or correcting his mistakes. He is of far more assistance to the child by offering him food-for-thought in order to not take away his joy of independent experimentation and discovery. According to Maria Montessori only the child himself knows what he needs for his development, and any forced activity results in disturbing his development and his mental balance (Montessori 1996a: 17).

> Das Kind hat seine eigenen Wachstumsgesetze, und wenn wir ihm beim Wachsen helfen wollen, so muessen wir ihm folgen, anstatt uns ihm aufzudraengen. (Montessori 1998a: 111)

Through exact observation, the teacher is able to recognize the child's current stage of development. Thus he is able to offer the appropriate materials that are adapted to the student's interests and needs at that particular time.

As an important element of the didactically prepared environment the adult has the duty of doing everything possible to initiate the child's polarization of attention and then to support the student on his path to self-development. In the course of this process the teacher must treat each child with love and respect and always take the student's individual character into consideration.

In summary, Montessori (1992b: 110) says the following about the tasks of the teacher:

> Er muss herbeieilen, wohin er gerufen wird.
> Er muss zuhoeren und antworten, wenn er dazu eingeladen wird.
> Er muss das Kind, das arbeitet, respektieren, ohne es zu unterbrechen.
> Er muss das Kind, das Fehler macht, respektieren, ohne es zu korrigieren.
> Er muss das Kind respektieren, das sich ausruht und das den anderen bei der Arbeit zusieht, ohne es zu stoeren, ohne es anzurufen, ohne es zur Arbeit zu zwingen.
> Er muss aber unermuedlich versuchen, demjenigen Kind Gegenstaende anzubieten, das sie schon einmal abgelehnt hat; das zu unterweisen, das noch nicht verstanden hat und Fehler macht. Und dies, indem er die Umgebung mit seinem Sorgen belebt, mit seinem bedachten Schweigen, mit seinem sanften Wort, mit der Gegenwart jemandes, der liebt.

2.2.1.3. The developmental materials

> Unser Material soll [...] Helfer und Fuehrer sein fuer die innere Arbeit des Kindes. Wir [...] geben ihm ein Ruestzeug, die ganze Welt und ihre Kultur zu erobern. Es ist wie ein Schluessel zur Welt. (Montessori 1996a: 16)

In order to give the child the utmost support in his development during his sensitive periods, Maria Montessori has designed the so-called developmental materials, which are divided into the following three groups and are closely connected to each other (Eichelberger 1997: 33):

1. Materials for the Exercises of Practical Life, which include the daily activities usually done by the adults in a family in creating, preserving and decorating the environment and in taking care of oneself and others. They are adapted to the child's size, interest and capabilities, e.g. dusting, cleaning shoes, buttoning a shirt or laying the table.

2. Sensorial Materials for the training of the five senses: e.g. Cylinder Blocks, Pink Tower, Boxes of Color Tablets, Thermic Bottles, Smelling Bottles, Sound Boxes, etc.

3. 'Didactic Materials'[6] for language, mathematics, geometry and cosmic education

According to Montessori, the materials serve the main purpose of connecting the child with his real surroundings by helping the student to put the impressions he gains in everyday life into a systematic order (Standing 1966: 30). Working with the materials also encourages and initiates abstract and independent thinking.

> Das Material ist gleichsam nur ein Anfang; die manuelle Arbeit mit ihm ordnet seine Kenntnisse und fuehrt zu selbstaendiger, geistiger Taetigkeit. Das Material ermoeglicht dem Kind eine geordnete geistige Entwicklung. (Montessori 1996a: 19)

In order to fulfill these requirements, the materials must have certain characteristics (Krieger 1998: 171 – 172):

1. As the self-educating material must correspond to the child's developmental stage (Montessori 1996a: 34), it is necessary that the material has the distinguishing feature of isolating difficulty, meaning that the degree of difficulty of an exercise can be exactly matched to the child's abilities, in order to help him better understand the concept (Eichelberger 1997: 33).

2. The material also has to demonstrate distinguishing features of aesthetic qualities. It is inviting to the child by its color, form and design and thereby encourages him to use it (Montessori 2001: 117).

[6] By the term 'didactic materials' Montessori understands the educational materials that a child uses for self-teaching.

3. The developmental material must be designed in a way that it attracts the spontaneous attention and awakes the interest of the child for a long period of time. Subsequently, it encourages the repetition of the exercise, leading to phases of deep concentration. This is reached by the distinguishing quality of activity itself, meaning that the child can actively manipulate an object e.g. by taking it apart, rearranging or sorting it. (Montessori 2001: 118)

4. The material features a hierarchy-of-order-principle. Due to the presence of structured stimuli the material helps the child move step by step from the concrete object to abstract thinking (Montessori 1996a: 16). Thus, it is possible for the student to acquire the structure of the material on his own and consequently to build up an inner mental order of the things surrounding him.

5. The material must contain a control of error, which enables the child to recognize his mistakes himself and thereby to learn to take on responsibility for his own actions. For Montessori, this quality in the material is a fundamental necessity for the child's self-learning process (Montessori 2000: 224 – 225).

6. The self-educating material holds the quality of isolating one particular feature, enabling the student to pay attention to only one specific quality at a time. By isolating for example a certain sense (e.g. height, weight, color etc.) the student is able to proceed from a few strongly contrasting stimuli, to many stimuli in gradual differentiation and thus to classify the mental impressions that he receives more easily. (Montessori 2001: 115)

7. The didactic materials always present themselves as pieces of a whole, which means that they are understood as details of a bigger unity. By dealing with single qualities in a differentiating manner, and connecting them on a wider scale, the student is not only encouraged in his continuous abstraction process (Holtstiege 2000: 107), but also becomes curious about how things are connected to each other in the world. (Krieger, 1998: 172)

8. The final characteristic of the self-educating material is the limitation of each material in the classroom to only one specimen. According to Montessori, there are two reasons for this: The child is able to put the chaos of stimuli surrounding him into a certain order more easily (Montessori 2001: 119), and at the same time learns respect and patience on a social level while waiting for certain materials which another student is working with (Montessori 2000: 200 – 201).

2.2.2. 'Freiarbeit' as a methodical principle of education

> Nur die Stimme des Lebens selbst kann die Arbeit waehlen, deren das Kind wirklich bedarf. (Maria Montessori 1992a: 51)
>
> Dazu ist es erforderlich, dem Kind die freie Wahl der Gegenstaende zu ueberlassen. (Montessori 2001: 111)

The way children learn at Montessori schools is called 'Freiarbeit'. This term does not originate from Maria Montessori herself, but is more of an inheritance from the reform pedagogy movement, which developed at the beginning of the last century as an opposing response to the traditional educational concept which sees the teacher as the focal point of the lessons. Instead, the focus is on the child himself. Besides creating a didactically prepared environment and thus enabling the child to teach himself independently from the adult, one of the main concerns for this movement, as well as for Montessori, was the free choice of work during an uninterrupted three to four hour period of time, which has generally become known as Freiarbeit. (Eichelberger 1997: 21)

The prerequisite for the concept of Freiarbeit in Montessori's sense is the preparation of the classroom and the didactic materials in such a way that the student is able to extend his knowledge on his own. As the learning materials offer the child not only a visible but also a tactile control of error, for example when he works with the 'sandpaper letters'[7], it is possible for the pupil to work and learn independently. By this principle of indirect guidance the teacher takes a back seat and lets the developmental materials convey the knowledge. Consequently, in order to give the child the greatest possible freedom in his decisions the teacher has to thoroughly prepare the environment.

[7] For a detailed description of this material see 4.8.3.2.

> [Er muss] alles in der Umgebung, also auch alle Gegenstaende so weit fuer das Kind vorbereiten, dass es jede Taetigkeit selbst ausfuehren kann. (Montessori 1996a: 16)

During the period of independent work neither the adult nor other classmates must interrupt, praise or correct the child in order not to disturb his concentration and thus his inner development.

According to Krieger (1998: 174 – 175) Freiarbeit in Montessori's sense means that the child must have:

- the chance of taking free initiative,
- freedom of movement,
- freedom in choosing materials and partners (to do something alone or with a group),
- freedom in deciding where to work (on the table or on the work-carpet on the floor)
- freedom in choosing the length of time it takes to complete the tasks (the student himself determines his own work pace).

Due to the fact that the child has this freedom he develops interest and enjoys his work, he learns to make his own decisions, to obey rules and also to take on responsibility for his actions. Since the concept of Freiarbeit encourages the students to help and respect one another and to learn from each other by working together, Montessori schools put great emphasis on social learning (Eichelberger 1997: 139).

3. First language acquisition

3.1. Theories about first language acquisition

When considering the complexity of language with its grammatical rules and large amount of vocabulary, one may easily conclude that learning a language is a time-consuming and strenuous process. Nevertheless, the opposite is true. Children acquire their mother tongue without direct instruction and seemingly effortless. Moreover, they appear to instinctively know in advance how language works and how it is structured. As a result, one might presume that humans have an innate system that allows them to acquire language naturally. Noam Chomsky and others have given this aspect a lot of thought and their proposals on this subject will be discussed in some detail here.

The question how children manage to learn their mother tongue in such a short period of time and with relative ease has captured linguists for decades. Although extensive research has been done in this field, a lot of aspects are still subject to speculation. In fact, presently nobody is really able to explain exactly and with absolute certainty how a child learns his native language. The following section contains a short summary of the most important theories of language acquisition. This chapter only gives a fairly basic overview on this fascinating but quite complex subject in general and is for the most part based on Jean Aitchison's book *The Articulate Mammal*, as it gives a thorough and comprehensible introduction to this topic.

3.1.1. Nature versus nurture

One of the most discussed issues connected with language acquisition is the question whether language is a learned skill or a natural phenomenon. In the late 1950s, based on his experiments with rats, Harvard psychologist B.F. Skinner claimed that children acquiring their mother tongue do not use an innate mental device but systematically observe their environment and learn language by trial and error. According to him language, like any other behavior, is "a set of habits gradually built over the years" (Aitchison 1998: 7). The linguist Noam Chomsky criticized this attempt to explain

language acquisition since the behavior of rats is not relevant to the human language. Moreover, in his opinion Skinner does not comprehend the nature of language. He points out that the construction of sentences is not merely a stringing together of words but that each utterance has an internal structure. Therefore, he insists that any language has underlying "structure-dependent operations" (Aitchison 1998: 11) that children must be aware of when learning their mother tongue.

Due to the fact that young learners seem to identify these structures automatically, Chomsky comes to the conclusion that humans are pre-programmed for language. In fact, he claims that this awareness "is part of the child's biological endowment, part of his structure of language faculty" (Chomsky 1988: 45). Thus, according to Chomsky, the knowledge about language is innate and controlled by biological factors. He believes that children are born with a blueprint in their mind that comes into play when they reach a certain stage in their overall development and helps them to analyze the language they hear around them. In Chomsky's opinion (1979: 83) the human mind is "constituted of 'mental organs', just as specialized and differentiated as those of the body", that are specifically used for language acquisition. Since humans are capable of constantly producing new words that they have never heard before, the notion that children learn their mother tongue only by imitation seems unconvincing. Although the environment plays an important part in learning one's mother tongue by providing the necessary stimuli Chomsky insists that it is mostly due to the child's inherent ability and a biologically controlled timetable that language acquisition occurs. He writes, "[K]knowledge of a particular language grows and matures along a course that is in part intrinsically determined, with modifications reflecting observed usage, rather in the manner of the visual system or other bodily 'organs' that develop along the course determined by genetic instructions under the triggering and shaping effects of environmental factors" (Chomsky 1986: 2).

3.1.1.1. Is language innate?

Since researchers have not yet found an answer to the question what it truly is that enables humans to speak we may as well assume that the truth lies somewhere in the middle, like Bohannon and Bonvillian (1997: 262) suggest:

> Few will disagree that language acquisition is determined both by children's innate capacities and their linguistic experiences. The course of early development is too invariant across many languages and contexts not to have some innate component. Similarly, some type of experience is clearly essential for language growth. Regardless of the child's biological predispositions to acquire language, children with no linguistic experience […] do not learn to speak. The recognition of the necessity of both factors has not inhibited theorists from stressing the role of one factor at the expense of the other. Rarely are the two factors given equal credit.

Jean Aitchison agrees with this notion. By examining Eric Lenneberg's claim that language is a biologically triggered behavior Aitchison (1998: 66-90) proves that the nature-nurture debate, in fact, is pointless, since both sides are true: Although language is activated by nature, thus being an "innately guided" behavior, careful nurturing is essential "to reach its full potential" (Aitchison 1998: 90). The following list which is taken from Aitchison (1998: 67) includes six features of any biologically triggered behavior and demonstrates that language is indeed innate.

1. The behavior emerges before it is necessary.

Children develop language long before they have to use it in order to survive, as their parents look after their everyday needs. If humans lacked some kind of innate system, children would acquire speech only when being left by their parents to take care of themselves. Moreover, language would appear at different times in different cultures and there would be huge discrepancies in language proficiency among children all over the world.

2. Its appearance is not the result of a conscious decision.

Language acquisition is not due to the child's conscious decision to learn to talk, but emerges after certain developmental processes have prepared the infant for speech.

3. Its emergence is not triggered by external events.

Language acquisition is not set off by anything in the child's surroundings, but seems to be the result of rapid brain growth that happens between birth and the age of two. Nevertheless, the verbal environment must be stimulating for language to develop to its full potential.

4. Direct teaching and intensive practice have relatively little effect.

As shall be discussed in greater detail later, research indicates that children do not learn language by instruction, repetition and imitation. It is, more likely, due to being exposed to a rich variety of language that children make the best progress in language acquisition.

5. There is a regular sequence of milestones as the behavior develops, and these can usually be correlated with age and other aspects of development.

Children acquire language according to a "biologically organized schedule" (Aitchison 1997: 42), which we will focus on in a later chapter. The most important milestones in language acquisition seem to go hand in hand with other developmental processes in the child's development. For instance, at the same time when babies learn to sit unsupported, babbling sets in; children usually speak their first comprehensible words around the time they begin to walk and start to use a more complex grammar at the same time as their hand and finger coordination develops. However, it is necessary to note that the connection between the child's language development and his physical development is not essential, as some children learn to talk but never to walk and vice versa. (Aitchison 1998: 84-85)

6. There may be a critical period for the acquisition of the behavior.

The cases of socially isolated children who were cut off from language, some of them like Genie well into the adolescent years, seem to support the idea that there is a critical period for language acquisition and that the early exposure to language is important, since younger brains have more plasticity. Research shows that there is a huge language surge around the age of two when children start to utter two-word sentences. Approximately between birth and the age of fourteen children's language becomes specialized to the left side of the brain, a process called lateralization (Aitchison 1998: 55), and some language skills that have not been learned by the time the child reaches

adolescence, like grammatical structures, cannot be acquired at a later stage. However, Genie's case shows that the acquisition of vocabulary is still possible during the teenage years. This suggests that the notion of a critical period with a sudden beginning and a closing endpoint does not seem to be logical. Therefore, Aitchison (1998: 88) prefers the term 'sensitive period' which she defines as "a time early in life when acquiring language is easiest, and which tails off gradually, though never entirely". Due to her work with mentally deficient children, Maria Montessori gives the concept of sensitive periods a lot of thought in her writings and, as already mentioned, includes it as a principle in her method. According to her observations, she established a theory about the sensitive periods in language acquisition. Thus, we shall deal with this topic in a separate section later.

3.1.2. Content versus process approach[8]

As the previous section suggests, there seems to be enough biological evidence to support the claim that children instinctively know that language is rule-governed and consists of hierarchical structures, which is the reason why they learn language so fast and with relative ease. This assumption, however, does not offer enough information as to how language is acquired so efficiently and why children, learning the same language, show so many similarities in their lingual development.

Basically, there are two different types of approaches that try to explain how language acquisition works. Noam Chomsky, whose ideas will be examined in greater detail in the next section, proposes the 'content approach', which claims that children are already born with a significant amount of detailed knowledge about language in their mind. This linguistic information needs some time to mature and can then be used by the child to acquire language without effort, even if the lingual environment does not provide sufficient stimuli.

A number of linguists, on the other hand, argue that instead of pre-wired knowledge children possess an innate process mechanism that allows them to analyze linguistic data.

[8] For a full discussion on this topic see Aitchison 1998: 136-164.

Supporters of this process approach, like Dan Slobin (1971: 56), believe that "the child's mind is somehow 'set' in a predetermined way to process the sorts of structures which characterize human language". However, they do not agree with Chomsky's theory that the child has an inborn knowledge about the grammatical system of language, but rather think that he has "innate means of processing information and forming internal structures, and that when these capacities are applied to the speech he hears he succeeds in constructing a grammar of his native language (Slobin 1971: 56)."

There are two important differences between both theories. One is that the process approach suggests that the child has to acquire the necessary linguistic universals by means of inherent analytic procedures; in contrast to this, the content approach proposes that these structures are there in the mind already. The other discrepancy refers to the fact that the content approach assumes that the innate knowledge about language is independent from general intelligence. Linguists supporting the process approach, on the other hand, are divided on this issue. Some believe that children's inbuilt processing mechanisms are only used for language acquisition, while others assume that young learners make use of their general cognitive abilities in order to learn their mother tongue.

Jean Aitchison, for instance, is a supporter of the process approach. By analyzing these three hypotheses and looking at concrete speech samples to find out how children extract grammar from their linguistic environment Aitchison (1998: 163) comes to the conclusion that Chomsky appears to be wrong in his proposition that children are born with comprehensive linguistic information which is activated by only a negligible amount of exposure to language. According to her findings, children do not seem to have strong prior expectations about speech and produce sentences that are prohibited by linguistic universals. Instead, she thinks that children are born with an innate puzzle-solving mechanism that is specifically geared to language. Aitchison (1998: 153) believes that early on in life children switch from a semantic to a syntactic grammar by discovering "abstract relationships underlying the semantic ones". She suggests that children gain a syntactic insight that sets off an inbuilt processing device.

As will be discussed later, when looking at Maria Montessori's propositions about language acquisition it becomes clear that she is a supporter of the process approach. According to her, children possess an innate mechanism that is not only responsible for the acquisition of speech but for other aspects of learning as well. She calls this device 'absorbent mind'.

3.1.3. The hypothesis-making device, language universals and Universal Grammar

Since Noam Chomsky is one of the leading intellectual figures of our time who has had a major influence on linguistics and other disciplines it is crucial to mention his most important ideas and theories in this paper. As Chomsky's view that humans are born with an innate knowledge of language structures seems to be consistent with biological findings it is necessary to explain what exactly Chomsky considers as innate. In the course of time Chomsky has changed his opinion about various points concerning this subject, and this section will attempt to summarize and outline his earlier (1965) and more recent (1986) ideas.[9]

As already mentioned previously, Chomsky's basic assumption is that when acquiring a language the child instinctively knows that it is made up of rules for building speech patterns. When he has figured out the underlying principles he can use these structures to produce an endless amount of new utterances. By analyzing the language he hears around him the young learner builds his own set of rules. The child, according to Chomsky, acquires language by looking for regularities in the speech, then making hypotheses about the underlying principles of these patterns. By means of testing and abandoning his guesses if they are inadequate the child acquires structures and rules that eventually explain all the possible sequences of the language he is learning. In this way, the child constructs the complete syntax and grammar. If Chomsky's assumption is correct, children possess an "innate hypothesis-making device" (Aitchison 1998: 94) that allows them to form more and more complex hypotheses.

[9] For a detailed summary of Chomsky's theories see Aitchison 1998: 92-109.

The fact that children learn their mother tongue so fast and with relative ease suggests that they must have some prior knowledge about language in general at their disposal. Since the hypothesis-making device alone does not seem to explain the acquisition of language, Chomsky brings in the notion of 'language universals' that provide a blueprint for language, so that the infant knows in advance what a potential language looks like. These language universals make information about the basic 'building blocks' of language, like the set of feasible sounds, available to the child. Furthermore, they supply the young learner with knowledge about the different components of grammar and how they relate to one another and provide data about certain constraints on the form of the rules. (Aitchison 1998: 94-100)

The hypothesis-making device, language universals and an evaluation procedure, which assists the child in selecting the most appropriate grammar out of several possible ones, together make up the 'Language Acquisition Device' (LAD) or 'Language Acquisition System' (LAS). In 1965 Chomsky suggested that only LAD can account for the acquisition of language, a view which he later abandoned as he realized that his proposed evaluation procedure was not able to account for the problem of learnability.

In order to answer the question how children learn their mother tongue when the speech around them does not offer sufficient information about the entire system, in 1986 Chomsky introduced the notion of 'Universal Grammar' (UG). In a nutshell, Universal Grammar can be described as a separate system of the brain that is independent from general intelligence and contains a huge amount of information about the underlying rules of language. He writes, "UG is a characterization of these innate, biologically determined principles, which constitute one component of the human mind – the language faculty" which is "a distinct system of the mind/brain' (Chomsky 1986: 24, 25).

According to Chomsky, UG is made up of a variety of distinct components, called modules, which each contains special sets of principles. To facilitate language acquisition the principles operating within each module must cooperate with those from other modules. One module, for example, may determine which items in a sentence can

be moved and where to, while another module may assist in the interpretation of the sentence.

Universal Grammar can be seen as a system that is made up of two layers. One layer consists of 'universal principles' that can be applied to all languages; the other layer contains incomplete preordained information or pre-set options. The child has to make decisions from this finite set of options based on his experiences and observations. The second layer is called 'parameters', which indicate that they are properties of language that vary from language to language. These parameters need to "be fixed by experience" (Chomsky 1980: 66) so that the system as a whole is able to work. This two-layer approach is also known as the "principles and parameters" or "P and P" theory (Aitchison 1998: 106).

In order to make this concept more understandable, Chomsky uses terms which are associated with computers. He (1986: 146) explains UG as "an intricately structured system" which "is only partially 'wired-up'" and "is associated with a finite set of switches, each of which has a finite number of positions (perhaps two)." In his opinion, language experience is necessary to set the switches. Once all of them are set, "the whole system is operative" (Chomsky 1986: 146), and the child automatically knows the most important structures of the language he is learning. In Chomsky's words (1986: 147) he has acquired his "core language" and understands that language behaves consistently. The child, who grows up in an English speaking environment, for example, is instinctively aware of the rules that verbs precede objects such as in *eat your cake* and that prepositions are followed by objects as in *in the bath*. "Periphery" (Chomsky 1986: 147), on the other hand, refers to the small number of remaining elements that has to be added to the core language in order to acquire the whole language system. Chomsky claims that as a result of these innate underlying principles the child is able to learn language with minimal effort. According to Chomsky (1980: 39) the language system is "a mental organ, which grows mainly by itself, in the same way that the heart grows in the body." (Aitchison 1998: 103-107)

3.1.4. Montessori's views on language acquisition

As it has already been pointed out earlier, when analyzing Maria Montessori's writings one has to bear in mind that she does not look at the subject of language acquisition from a linguistic but rather from an anthropological point of view with the intention of using this information for educational purposes. In addition it is necessary to also take the time, when her theory was developed, and the resources she then had at her disposal into consideration. There have been countless scientific discoveries since the beginning of the last century and, as a result, Montessori would probably have adjusted some of her propositions accordingly.

Due to the fact that the child's language acquisition is closely attached to and reliant upon other developmental processes, such as the motor, social and emotional development, it is Montessori's opinion that the development of language is strongly connected to the child's general development. She (1979b: 114) writes, "Die Sprachentwicklung ist ein Teil der Personalitaet selbst". Since language as "an instrument of collective thought" (1995: 108) enables us to understand one another, the Italian educator looks upon language as the actual foundation of social life and civilization. Regarding the nature of language, Maria Montessori is an advocate of the followers of Aristotle's opinion that language is not a natural phenomenon, but in fact rather a creation of man-made signs, randomly put together, that unites a group of people and, thus, at the same time separates them from other nations. She describes language as "the expression of a kind of superintelligence [sic]", "a creation superimposed on nature [and] an intelligent product of the mass mind" (Montessori 1995: 109, 110).

> Tatsaechlich haben die Laute keine Logik [...] Was diesen Lauten einen Sinn gibt, ist die Tatsache, dass sich die Menschen darueber geeinigt haben, diesen bestimmten Lauten einen bestimmten Sinn zu geben. Das trifft fuer alle Worte zu. Die Sprache ist somit Ausdruck eines Uebereinkommens, das unter einer Gruppe von Menschen besteht. Und nur die Gruppe, die sich ueber diese Laute geeinigt hat, kann sie verstehen. Andere Gruppen haben sich auf andere Laute geeinigt, um die gleiche Idee auszudruecken. (Montessori 2000: 100-101)

Foreshadowing the thinking of Noam Chomsky, Montessori believes that the capacity to learn language is innate. Dr. Montessori argues that an area of the human brain is

especially predisposed for acquiring language during a sensitive period early in life. She expands on this at length in *The Absorbent Mind*:

> [A] special mechanism exists for language. Not the possession of language in itself, but the possession of this mechanism which enables men to make language of their own, is what distinguishes the human species. Words, therefore, are a kind of fabrication which the child produces, thanks to the machinery which he finds at his disposal. (Montessori 1967: 119)

According to Montessori (1967: 119), the child "is a psychic entity endowed with a specially refined form of sensitiveness". There is a certain similarity between Chomsky and Montessori as both refer to the language system as a "mental organ" (Aitchison 1998: 107) or "psychic organ" (Montessori 1967: 51) growing by itself. Chomsky and Montessori believe that the human mind is composed of numerous modules or mental organs that carry out specific psychological functions. Equally, both claim that the development of language is separate from general intelligence or, in other words, the mental organ for language grows independently from the other psychic organs. Montessori (1967: 51) writes that the child's development is organized around:

> points of sensitivity, which appear in turn. […] [I]t is not the mind itself that these sensitivities create, but its organs. [E]ach organ develops independently of the others.

The notion of a separate language faculty contrasts with cognitive theories that assume that the mind is a single unitary system, for instance connectionism which argues that language development depends on general cognitive growth (Cook & Newson: 1996: 31).

Montessori believes that as soon as these separate mental organs are fully developed they unite together to create the child's general intelligence. In contrast to Chomsky, she does not think that humans are born equipped with universal constraints. In her opinion, the child is not endowed with pre-information about language, like Universal Grammar, but rather with a mechanism that helps him to acquire language.

The following sections provide Montessori's theory on this aspect of language acquisition in greater detail.

3.1.4.1. Psychic organs

Montessori sees humans as being unique and different from all other living creatures as they can walk upright and talk, have a creative intelligence and a social and moral conscience. This behavior is not present at birth and must therefore be acquired by learning. Basically, Montessori believes that as soon as he is born the child begins to develop "psychic organs" which enable him to develop these abilities. According to her, these organs form around "points of sensitivity", which disappear as soon as the organs are ready, and then unite to develop "the psychic unity of the individual" (Montessori 1995: 51), the general intelligence. The pioneer educator compares this process with the development of the physical organs during the first weeks of the biological embryonic stage:

> Nicht nur die koerperliche, sondern auch die psychische Entwicklung des Kindes scheint dem Schoepfungsplan der Natur zu folgen. Auch die menschliche Psyche geht vom Nichts aus oder was als Nichts erscheint, wie auch der Koerper von der ersten Zelle ausgeht, die sich nicht im geringsten von anderen Zellen unterscheidet [...] Das Neugeborene muss demzufolge auf psychischem Gebiet eine formative Taetigkeit entwickeln, die an die embryonale Periode des Koerpers erinnert. (Montessori 2000: 46, 55)

According to Maria Montessori humans go through two embryonic periods: a 'prenatal period', which is comparable to that of animals in general, and a 'post-natal' or 'formative period' after his birth, which is only present in human beings and explains the long period of childhood. Montessori refers to the child during the post-natal phase as "the spiritual embryo" (Montessori 1995: 60).

In 1929 the American biologist Coghill discovered that in primitive amphibians the neural cells in the brain develop before the organs that they are going to direct. Montessori concludes that only by developing after the nerve centers the organs are able to form in such a way that they correspond to the environment. As a result, the Italian teacher believes that the child's formation of his psychic organs during the post-natal phase has effects upon the physiological development of the brain (Montessori 2000: 48). During this second embryonic period the child develops his psychic organs by completely adapting to his surroundings, in other words, by absorbing the world around

him. With the help of the absorbent mind he subconsciously takes in everything from the environment, which then becomes part of his psyche. Thereby it is ensured that the spiritual embryo develops exactly the necessary psychic organs that he will later need in order to become a competent member of his group or society (Montessori 2000: 56-58).

Maria Montessori's assumption that the child's brain forms after birth is confirmed by modern-day brain research. Neuroscientists have found that the human brain is indeed not complete at birth. Most of the 100 billion nerve cells that an infant is born with are not connected with each other. Brain development, that is the wiring and rewiring of the connections (synapses) between nerve cells (neurons), occurs throughout our lives. Nevertheless, the most critical period is between a child's birth and his third birthday, as this is the time when the brain is most flexible and when the basic neural connections are made permanent. Nerve connections that are associated with specific skills such as language and social, physical, cognitive and emotional skills are developed during the first three years of life. Research proves that the quality, quantity and consistency of these synapses have effects on everything in our lives, from the ability to distinguish letters to the way we form relationships to other people. (Shore 1997: 16-17, 20)

3.1.4.2. Horme and nebulae

Montessori insists on the fact that the child does not passively take in the impressions from the world around him, but he himself builds up the specific cultural behavior that is characteristic for his own race, namely the ability to talk, without additional help from the adult (Klein 1997: 94). The impressions the child receives "incarnate themselves in him"; he forms his own "mental muscles" by absorbing his surroundings (Montessori 1995: 25, 26). Therefore, Maria Montessori concludes that the child is not "an empty vessel that we [adults] have to fill", but that it is "the child who makes the man" (Montessori 1995: 15).

This notion strongly contrasts with the popular point of view held earlier in the beginning of the last century that infants are born with blank sheets in their heads. Montessori's proposition illustrates her belief that humans have an innate device for

language, which, apart from the absorbent mind, consists of additional elements which the Italian teacher regards necessary for acquiring one's mother tongue. In Montessori's opinion (2000: 77), the child manages to construct himself from his environment because of an inner creative developmental force, which the Italian physician calls "horme" [10]. This vital force is automatically active at birth and helps the infant to develop according to his time and civilization (Montessori 1995: 58). In addition, the child possesses inherent potentials and sensitivities, called "nebulae" (Montessori 1995: 79). Taken from the field of astronomy, Montessori uses this term to explain the nature of these innate sensitivities. Like a nebula (Italian, pl. nebulae) that is not yet a star, but has the potential to become one, the sensitivities are the necessary prerequisites to the development of all basic cultural behavior. Thus, a child is born with a nebula of mathematics, language, morality etc. Each sensitivity lasts only until the appropriate psychic organ is formed. When the absorbed impressions meet the inherent potentials the mental embryo is able to build his psychic organs, which then gradually replace his nebulae and thus enable and influence the child to develop a cultural behavior that is more and more controlled by himself (Montessori 2000: 47).

3.1.4.3. The absorbent mind

According to Maria Montessori, apart from the nebula of language, the absorbent mind plays a crucial role in first language acquisition. While the language nebula contains the prerequisites for the formation of language and helps the child to filter the sounds of the spoken language, thereby separating them from other sounds and noises of his environment, the absorbent mind takes the language sounds in and registers them in the brain. The Italian doctor believes that this special form of mental power is only present in human beings and belongs to their inherited abilities. It enables the young child to subconsciously absorb all the impressions from his surroundings and helps him to interact with his environment in a creative way, thus, being vital for the child's mental development. She writes:

[10] The expression "horme" was first used by Percy Nunn. It can be compared to the terms 'elan vital' and 'libido'; the first was introduced by Bergson, the latter by Freud. For further information, see Nunn 1956.

> Die Kenntnis der Sprache stammt [...] nicht von der Mutter, sondern das Kind eignet sich die Sprache sowie die Angewohnheiten und Gebraeuche der Menschen an, unter denen es lebt. [...] Das aufmerksame Studium des Problems, wie diese Abstraktion vom Menschen aufgenommen wird, hat zur Annahme gefuehrt, dass das Kind die Sprache absorbiert. (Montessori 2000: 14, 102)

During his first three years the child learns the language that is spoken in his environment as a whole entity, in other words, he not only gains knowledge of single words but of the complete structure of the language, as well as of the spoken accent – no matter whether he is learning a simple or difficult language. Around the child's third birthday, the subconscious work of the absorbent mind gradually decreases and he begins to absorb and analyze the language around him with the help of his growing conscious awareness (Montessori 2000: 148). At approximately the age of six years the activity of the absorbent mind comes to an end and the child must now acquire any additional language with his conscious intelligence (Montessori 2000: 103-104).

Consequently, for Maria Montessori, the acquisition of the first language, which does not necessarily have to be the parents' mother-tongue, takes on a special quality. By absorbing the language and simultaneously developing the psychic organs, the absorbed structures are thereby fixed in the brain. As a result, no other language can be learned in the same way as L1. (Montessori 2000: 46-47)

Recent studies support Montessori's hypothesis that the infant brain depends on environmental input and forms according to his surroundings. Due to recent advances in neurobiological knowledge and sophisticated new technologies, neuroscientists have now evidence that a young child's experiences, both positive and negative, influence the number and organization of neural connections, thus shaping the brain's anatomy. In his book *Denken, Lernen, Vergessen* Frederic Vester (1978: 35) writes that the stimuli a newborn receives from the outside world through his senses in the first weeks of his life irreversibly alter the physiological architecture of the brain, thereby creating a basic pattern that is unique with every human being.

> Es ist dies die einzige Zeit, in der sich aeussere Einfluesse wie die Wahrnehmung durch das Auge, die Nase, den Geschmack, Hoeren und Fuehlen, in der Ausbildung des Gehirns direkt niederschlagen koennen, das heisst in

> anatomischen Veraenderungen, in festen Verknuepfungen zwischen den wachsenden Zellen. (Vester 1978: 38)

Since the capability of the synapses depends on whether the young child receives proper stimulation, the environment, consequently, plays a significant role in the development of the brain. All the stimuli that an infant receives through his senses build connections and pathways between nerve cells promoting thought, emotion and physical movement. As the brain operates on the 'use it or lose it' principle, only those connections frequently used are maintained and strengthened. The brain selectively eliminates excess synapses, a process that has its benefits, as it enables the young child to adapt readily to his environment. A consistent lack of experience over a long period of time, however, causes the brain to prune back and thus to remain small. After the first decade of life there is a gradual decline in synapse density. Although this process of pruning proceeds until the child reaches late adolescence the brain still retains enough flexibility for future learning (Shore 1997: 20-21).

In order to explain the way the absorbent mind works in the child's early years, Montessori compares its activity to the process of developing a film. Similar to the film that requires absolute darkness in order to develop into a permanent picture, the absorbent mind works completely subconsciously and only reveals itself later in life.

> Das photographische Bild praegt sich im Dunkeln auf den Film ein, und immer im Dunkeln findet der Entwicklungsvorgang statt. Im Dunkeln wird fixiert, und dann kann das Bild endlich ans Licht kommen und ist unveraenderlich. Dasselbe geschieht beim psychischen Mechanismus der Sprache des Kindes. Er beginnt in der tiefen Dunkelheit des Unbewussten zu wirken, dort entwickelt er sich, fixiert sich, und dann offenbart er sich. (Montessori 2000: 104)

The film can receive all impressions in a very short period of time. First the impressions are imprinted and fixed on the film in the dark, and then the picture with all its unchanged impressions comes to light. The actual developing process always takes place in the dark. According to Montessori, it is the same mechanism which is present in the development of language: The child absorbs the language of his environment; he develops and imprints it in his subconscious and finally reveals the collected impressions in the form of an "explosion into language" that starts at about the approximate age of 2 years (Montessori 1995: 158).

The psychological process that takes place within the child himself and is invisible to the onlooker is accompanied by important developmental processes in the brain which are necessary preparatory steps before the child is able to actually say his first intentional words. Brain scientists knew as early as the beginning of the twentieth century that there are two separate sections in the brain that are responsible for language development, the language and the hearing centers, both of which are not yet fully developed at birth and are formed only through the child's contact with the language of his environment. According to the discoveries in research, the language center of the brain forms comparatively slower than the hearing center. The sense of hearing, which is developed later than the other senses, is particularly sensitive to the human voice. During the first half of the last century many early studies on the mental development of children suggested that all babies are born "deaf or hard of hearing" (Preyer 1905 [1995]: 64). Modern-day research, however, disproves this assumption. Scientists discovered that the fetus can react to sounds from the tenth to fourteenth weeks after conception. It acts in response to sounds with changes in its heart rate, eye blinks and movements (Hepper 1992: 133, 137; Fifer & Moon 1989: 430).

Taking the research data available at her time, not surprisingly, Maria Montessori believed that the child is not able to hear before he is born. She explains this theory by saying that before the actual hearing process can take place there has to be an intense concentration of sensitivity in the language center which subsequently helps the child to filter the language sounds out of his environment. In her opinion, during the first few months of his life the infant is most sensitive to the perception of hearing the language of his mother and observing the movements her mouth makes whilst talking. The child's absorbent mind subconsciously uses a stimulus filter that enables the infant to isolate crucial speech sounds of his target language. (Montessori 2000: 108-110)

The notion that infants give selective attention to specific sounds fits in well with the fact that language is a biologically triggered behavior. Therefore, it makes sense to assume that children are instinctively guided to extract certain aspects of speech from the language they hear around them. This idea shall be given more thought in a later chapter when discussing the sensitive periods for language acquisition.

In Montessori's opinion the transition from subconsciously absorbing to consciously learning a language happens when the child is approximately three years old. In recent years this idea has been confirmed by psychologists. Research shows that the child's language in his second year of life is affectively connected to concrete situations and people, as he cannot yet think abstractly. The psychologist Leontjew calls the child's very personal affective relationship of meanings that often only the people in his immediate surroundings understand the 'subjective sense' (Holtz 1999: 124). This phenomenon can actually be found with all human beings; older children and adults, however, expand and complete the meaning of an object or a word by incorporating objective connotations which eventually leads to a conventional definition of a term. In this sense a tree, for example, can objectively be seen as a plant with very special characteristics, while at the same time, subjectively, it can be looked upon as a place where the person had an accident when he was young. This association does not belong to the objective meaning of the word 'tree', but it is an interpretation which is drawn out of the person's own environment and his personal experience.

The small child lives solely in the world of his own personal senses. Once the child reaches his third year of age there is a dramatic change in the semantic area which finally allows the formation of objective meanings. During this phase, the child's consciousness begins to develop. Now, step by step the child starts to form a clear awareness of himself as a person. More and more, he considers himself to be separate from his environment which results in a huge expansion of his wishes, needs and interests. Should these demands conflict with reality at any time, or not be fulfilled in the way that the child wants them to be, the child will either want to be alone or he will try to find a constructive solution by means of playing a game. The development of fantasy as a form of awareness in a situation that the child imagines gradually relieves him from his earlier affective connectedness to concrete situations and people. In this way, the child, who, for instance, cannot experience the activity of riding a horse in real life, creates his own way of putting this idea into action by substituting the real horse by a broom and the activity of riding by the idea of riding the broom. This is only possible because the child is no longer trapped or captured in the concrete situation but has learned to think abstractly and use his imagination. The child has advanced from the visible, real situation to the

consciously devised situation, which, however, again has only been made possible with the help of an object and a real action. Vygotski writes:

> Das Denken des Kindes kann also Anschauung und Handlung nicht einfach hinter sich lassen, sondern benutzt sie, um von der unmittelbaren Situation abzuruecken. Der Gedanke loest sich also vom Gegenstand ... Die Handlung nach Regeln beginnt vom Gedanken bestimmt zu werden und nicht vom Gegenstand. Das ist die Wende in der Beziehung des Kindes zur realen, konkreten, naechstliegenden Situation. Die Tragweite dieser Wende kann nicht unterschaetzt werden. Sie erfolgt beim Kind nicht in einem Zug. Den Gedanken (die Bedeutung des Wortes) vom Gegenstand loszuloesen, ist fuer das Kind eine ausserordentlich schwierige Aufgabe. Das Spiel ist eine Uebergangsform dazu. (Vygotski 1980: 453)

The formation of fantasy as a conscious mental act also has an elementary significance for the child's language development, which is now no longer affectively bound to objects, situations and people; quite the opposite, his language has become an impressive instrument of abstraction.

3.2. The linguistic environment and its influence

As it has been pointed out earlier and will also be discussed in greater detail later, direct teaching and intensive practice have comparatively little effect on learning one's mother tongue. Consequently, the child's linguistic environment plays a significant role in language acquisition. Linguists agree that the verbal surroundings must be sufficiently rich in order for speech to develop to its full potential.

Eric Lenneberg noted that children who were brought up in orphanages, for instance, lagged behind in their language development due to the poor linguistic environment. Their speech showed less diversity of construction and was less comprehensible compared to other non-institutionalized children. Language impoverished children, however, tend to catch up relatively quickly once they are placed in a more nurturing verbal environment. (Aitchison 1998: 68-69)

Maria Montessori agrees with this notion. According to her philosophy, the young child cannot be educationally influenced during the first three years of his life, due to the subconscious activity of the absorbent mind. In her opinion, however, his learning can be indirectly encouraged and supported by means of creating a prepared environment for him (Holtz 1999: 117). It is for this reason that Montessori demands surroundings which are not only adjusted to the child's needs but also rich in their variety of sensory impressions. Since the child absorbs the language of his environment, it is necessary to create surroundings which offer both a wide range of vocabulary and a social emotional relationship to the people he relates to and respects. Here, the adult, as the true mediator of the language, takes on a great responsibility, as the child can only learn the language that he hears in his own environment. Therefore, Montessori insists that the language used by the parent and teacher should be grammatically correct and free of any accent or dialect. (Montessori 1992a: 102-104)

Only by listening to the language of his environment and carefully watching his caregiver while speaking, the child is able to develop the proper movements that are necessary to produce the appropriate speech sounds of his first language. Montessori writes:

> Daher muss sich die Bewegung zur Wiedergabe der Laute auf einem von der Psyche aufgenommenen Substrat von Eindruecken aufbauen, denn Bewegung haengt von den vernommenen Lauten ab, die sich in die Psyche eingepraegt haben [...] Die Aktivitaet des Kindes folgt also den Gehoerseindruecken. (Montessori 2000: 108-109)

According to Montessori (1995: 121-122), the child can only acquire these movements if he hears the language for an extensive period of time. Consequently, the Italian educator recommends that the mother or caregiver begins to speak to the baby as soon as he is born and as often as possible, even though the infant cannot understand the meaning of the spoken words.

Although scientists agree that early exposure to speech is a vital factor in language acquisition, the notion that direct conversation with infants is crucial for developing their mother tongue is disputed. Steven Pinker (2000: 28-29) points to the fact that even if

parents do not speak directly to their children, as it is common in some cultures, these children completely acquire their first language.

3.2.1. Caretaker language

Today we know that adults and older siblings tend to adjust their language to the baby shortly after his birth. The speech addressed to children is completely different from the language usually spoken to adults. It is often called “baby talk”, “motherese”, “caregiver language” or “caretaker language” (Aitchison 1998: 148; Ingram 1989: 131). Research shows that motherese is employed by caregivers worldwide in interacting with infants. The following features are characteristic of this diminished language: [11]

- The adult’s voice is articulated and transposed to a sequence which is about a third higher than usual. This higher pitched voice has a calming effect upon the child.
- The caretaker’s speech is characterized by wider fluctuations in intonation than that used in normal conversation with older children or adults.
- Important words are spoken louder in order to highlight and emphasize them.
- The adult makes noticeable, longer pauses in between the separate units of speech which contributes to a slower tempo of his speech in general.
- The caregiver tries to pronounce words clearly and exactly when talking to the baby.
- The adult uses a restricted vocabulary. Words are often repeated and questions are asked more frequently.
- Many short words are formed containing consonant-vowel-change, e.g. Daddy, Mommy, potty, etc.
- The construction of sentences, which are used, is usually syntactically simple and clear.

[11] For a detailed description of the features of caregiver language see Holtz (1994: 121) and Aitchison (1998: 148-151)o.

In the mid-1980s, studies at Stanford University demonstrated that infants preferred listening to motherese, with its pattern of exaggerated tone and slower tempo, over adult conversation. Other studies at the University of Washington found that caregivers saturate their speech patterns with vowels. The investigators concluded that this feature of caretaker language helps to form the infant's perceptual categories for his or her native language. (Fernald 1985: 303-306)

Although most researchers believe today that the motherese speech pattern is not essential for the infant's language acquisition, it does attract the child's interest and gets him to focus on the spoken language. The following utterance that includes many of the characteristics of caregiver language was directed to a one-month old baby by a neighbor:

> *What's a matter, Bobby, yo' widdle tum-tum all empty? Here you are, a growin' boy, and dese folks won't feed you. You tell 'em, they can't just let you cry, not while Aunt Sue is 'round […] You're a-gonna be a big boy, just like your daddy. Mamma gonna hafta get some new rompers soon […] Okay, okay, look, there's mamma, she's comin', she gonna get dat bottle right now and get it ready for you. It's a hungry boy, it is'.* (Aitchison 1998: 148)

In addition, caretaker language may draw attention to certain language features, such as patterns of emphasis and relationship of words, like this example shows:

> *Open your mouth. Open it.*
> *Spit out the snail, spit the snail out. Spit it out.*
> *Give mummy the snail. Give the snail to mummy.*
> (Aitchison 1998: 149)

Maria Montessori (1995: 123) strictly opposes to speaking to young children in this manner. In order to help the child acquire his native language with precision from the very beginning, she demands that parents should speak to the child frequently by using understandable and grammatically and semantically correct language. In addition to this, she considers it to be necessary for the child to have the opportunity to listen to adults' conversation on a regular basis in order to be able to learn the grammatical structures of his language properly. By being present when adults are talking to each other, the child is exposed to his native language in a much more complex sense which helps him

understand the innate structures of the language (Montessori 2000: 114). According to Montessori, the correct form of speech also includes the correct usage of words and terms. As a result, from the beginning children in Montessori schools learn the 'adult expressions' including Latin terms of objects that they are confronted with in their environment, for example 'Kubus' instead of 'Wuerfel'. Thus, they continuously build up their vocabulary.

As will be discussed in the next section, studies show that language uptake matters more than language input. In Aitchison's opinion (1998: 150-151), children have an inbuilt filter that enables them to be selective in what they extract from their environment. As a result, she believes that adult input has only limited effect on children's language acquisition. Aitchison, however, suggests that parents could help their offspring by engaging them in conversations about subjects that interest them or by encouraging them to do certain activities together with the adult, like helping with chores. This notion is supported by modern communications theory. Gregor Kozak (1998: 4) notes that adults are more likely to promote language acquisition by arousing children's interest, which is a motivating factor when learning one's mother tongue.

3.2.2. Correction, expansion and extension

Two features of adult speech, in particular, have caught the eyes of researchers in recent years: overt correction and unconscious expansions.

Numerous studies have found that explicit correction does not help the child in his endeavor to learn his mother tongue. As the following example, taken from Cazden (1972: 92), shows, the deliberate teaching of a grammatical rule which has not yet been internalized by the child has no effect on his language development:

> *Child: Nobody don't like me.*
> *Mother: No, say "Nobody likes me."*
> *Child: Nobody don't like me.*
> *(eight repetitions of this dialogue)*
> *Mother: No. Now listen carefully; say "Nobody likes me."*
> *Child: Oh! Nobody don't likes me!*

As research confirms, correcting children repeatedly may even have a negative effect on a young language learner's progress. As documented by Nelson (Aitchison 1998: 70), due to overt correction by his mother, 17-month old Paul lacked confidence and made less progress in his language development than 14-month old Jane whose mother responded uncritically to all of Jane's verbal expressions.

Similarly to corrections, unconscious expansions, that is repeating what the infant or child attempts to say by using the correct grammatical forms, are just as ineffective. Although some people believe that this way to speak with children is successful in encouraging the use of language in communication, studies have shown that this is not the case. An experiment done by Courtney Cazden (1972: 124-129) with two groups of children under the age of four tried to determine the effects of expansions on the acquisition of grammar. She exposed one group to rigorous and intentional expansions and the other one to so-called 'extensions', namely regular sentences that referred to the meaning of the children's utterances. In *Child Language and Education* Cazden (1972: 125) defines the difference between expansion and extension in the following way:

> Both expansions and extensions are adult responses that are contingent on the child's previous utterance, but the nature of contingency is slightly different in the two cases. Expansions in their purest form express the meaning of the child (as the adult understands it) in syntactically complete form. Extensions presuppose a particular expansion, but then build out from it along some dimension of meaning.

For instance, if a child said, *dog bark*, an adult using expansion would say, *"Yes, the dog is barking."* while an adult from the other group would say, *"Yes, but he won't bite."* When the progress was measured after three months the children who had been exposed to expansions were less advanced than the others from the second group. Their language progress lagged behind in the complexity of their grammar and the mean length of their utterances. In contrast to the researchers' expectations, semantic extensions seem to be more effective in language acquisition than grammatical expansions. (Cazden 1972: 125-126)

Aitchison (1998: 71-72) gives several explanations for this surprising result. One reason may be that when grammatically expanding the adult perhaps misunderstands the child's

intended meaning. Misinterpreted expansions could then interfere with the child's language development. It has also been suggested that young learners may lose interest when parents replicate their children's utterances and don't respond to what their offspring has said on a semantic level. In contrast to extensions, the frequent use of expansions has a negative effect on the variety of speech and may therefore lead to an impoverished linguistic environment. As has been discussed earlier in this chapter, however, children need to be exposed to a rich variety of language in order to acquire a high-quality version of their mother tongue.

Based on the insights research provides, one may draw the conclusion that parents who attempt to 'help' their children to learn their mother tongue by simplifying and repeating utterances may in fact hinder their progress. Provided that there is sufficient data at their disposal, children learn language by themselves and at their own pace and cannot be trained to talk like adults by imitating them. As mentioned above, Montessori regards the way how adults talk to children as an important issue in language acquisition; in addition, she points to another aspect of this matter. According to her, it is also a means of respect to speak with young children in an intelligible and courteous way, so that they feel understood and taken seriously. When talking to children "as if one was telling a foreign tourist how to get to the zoo" (Aitchison 1998: 72) they are not only exposed to a language deprived environment but also may get the feeling that they as a person are not respected, which could be another reason why they may decide not to listen to the adult's speech.

3.3. Sensitive period for language acquisition

In 1967 Eric Lenneberg claimed that children could acquire their native language only within a narrow critical period that extends from infancy until puberty. According to Aitchison (1998: 86), Lenneberg's overall outline seems to be correct; however, he appears to be mistaken in some details. Lenneberg, for instance, argued that the process of lateralization occurs slowly between the ages of two and fourteen and is connected to the critical period for language acquisition. Today research suggests that the specialization of language to one side of the brain is already apparent in the first months

of a baby's life and has probably come to a close by the age of two and a half. The notion that language acquisition comes to a sudden halt around puberty is another claim that is disputed among scientists today and will be discussed here.

It has been pointed out earlier that some linguists, like Jean Aitchison, prefer the term 'sensitive period' to 'critical period' in connection with language acquisition, since, according to their opinion, 'sensitive period' implies that it does not end abruptly but tails off gradually and never stops completely. Bruer (1999: 104), however, claims that, lately, neuroscientists have found that the majority of critical periods in development end gradually and not suddenly, making the original difference between the two terms obsolete. For this reason, the terms 'critical period' and 'sensitive period' are used interchangeably throughout this paper.

Clinical studies of children, raised in social and linguistic isolation, offer evidence that there is a sensitive period for first language acquisition and that early exposure to language is important. Cases like Genie, Isabelle and Chelsea suggest that the critical period for learning one's mother tongue may last into late adolescence. Genie who was first exposed to language at the age of thirteen, succeeded in acquiring a lot of vocabulary relatively quickly, but never managed to learn the complex system of grammatical rules of the English language. Isabelle, on the other hand, who learned to speak when she was six and a half, gained knowledge of thousands of words and was able to master difficult syntactical constructions by the age of eight. Chelsea, an adult with hearing impairment, was introduced to language in her early thirties. Similar to Genie, she acquired vocabulary with relative ease, but learning the grammar created an insurmountable obstacle. (Aitchison 1998: 86-88)

Taking this information into consideration, it becomes clear that the critical period of language acquisition must consist of several distinct sensitive periods when the child is especially sensitive for learning certain linguistic skills, such as the language's phonology, grammar and vocabulary. As we will see, the notion that the critical period for language can be subdivided into a number of periods during which the child is particularly receptive for the acquisition of specific features of language can also be found in the Montessori Method. All three children learned new words with ease which

shows that there may be no critical period for learning vocabulary and semantics at all (Bruer 1999: 130). It is widely known that humans can increase their vocabulary at any age depending on their exposure to new words which provides further evidence for this notion. However, the fact that Genie and Chelsea had great difficulty with learning the grammatical structures of the language while Isabelle acquired grammar without effort, suggests that there is a sensitive period for grammar acquisition that may last only until the onset of puberty.

This assumption is confirmed by linguistic investigations and neurological research. A study about critical periods in first language grammar acquisition with ASL (American Sign Language) learners conceived by Elissa Newport found that normally children completely and successfully acquire grammar only if they are exposed to language early in life. According to her findings, Newport comes to the conclusion that the ability to learn grammatical structures gradually declines with age and ends around puberty because of "maturational, presumably biological, brain-based constraints" (Bruer 1999: 132-133). Another investigation that was carried out by Helen Neville looked at first grammar acquisition in connection with brain activity. Neville found that when English-speaking adults engage in grammar exercises a distinct pattern of brain activity is recorded in the front part of the left hemisphere, close to the temple. In contrast to adults, English-speaking children start to show this pattern only at about eleven years of age which turns into the adult-like pattern when they reach the age of 15 or 16. This provides additional evidence for the suggestion that the sensitive period for grammar acquisition may come to a close early in adulthood. (Bruer 1999: 135-136)

3.3.1. Montessori's concept and other theories

The above findings raise the question how children's sensitivity to language works, especially with regards to the fact that they acquire language so much faster and with such ease compared to the majority of adults. What are the underlying processes?

Elissa Newport (Aitchison 1998: 89) supports a "natural sieve hypothesis" suggesting that infants have an inbuilt filter that allows them to pick out only certain restricted

language features from their verbal environment and to instinctively filter out difficulties. Newport claims that, under normal circumstances, when children get older they gradually lose this filter and are slowly prepared for the more complex features of speech. However, children, who are introduced to language at a later stage in their lives, have lost this innate filter and cannot cope with all the aspects of language pouring over them at the same time.

Another theory that has common characteristics with the above supposition is proposed by Locke (Aitchison 1998: 89). The so-called "tuning-in hypothesis" suggests that at each age children are sensitive to a certain aspect of speech. Babies may be attuned to the phonology of the language, while older children may be tuned in to the syntax and vocabulary.

Jean Aitchison (1998: 263) proposes that language acquisition works according to a process called "epigenesis". She believes that children learn language partly because they are naturally guided to process linguistic information, and partly because they acquire knowledge in successive stages. Aitchison compares the mind with its innate ability to filter certain language features to a fishing-net with a specific size mesh that "catches some fish but lets others slip away". Once the child has learned a particular amount of language a new net is set in place with a mesh that is a little different in size. So each level the child reaches builds upon the next.

Montessori's concept of an absorbent mind that soaks up everything from its surroundings contrasts with Newport's notion of an innate filter that restricts the intake of linguistic information. Interestingly, however, Newport and Montessori agree that this subconscious mental device is only active for a certain amount of time and then gradually loses its power. In Montessori's conception the absorbent mind works hand in hand with the sensitive periods, which provide the natural filter necessary to limit the amount of language input. Very similar to Locke, Montessori proposes that there are successive sensitive periods of language during which children are particularly attuned to certain language features. In the course of her empirical studies in the children's houses, Maria Montessori realized that all children's language development takes place in consecutive phases which conform to very specific rules. The Italian educator recognized

that particularly during the first two sensitive periods of development, that is from birth to 12 years of age (cf. section 2.1.3.), the child is exceptionally receptive to learning a certain aspect of language. Since Montessori's focus is on education she does not only concentrate on the acquisition of the spoken language but also on the written language and grammar. As a result, she integrates her findings into her overall concept of child education.

According to Montessori, the child's natural process of language development can be divided into the following three stages that are gradually built up and related to one-another (Olowson 1997: 27-32):[12]

1. Sensitive period for the development of the spoken language (0-3 years of age):

In order to understand the process of language acquisition, Montessori constructs the theory of the absorbent mind, which as previously mentioned, is subconsciously active, from birth onwards until the approximate age of three. According to her, the child's inherent potentials and a stimulating environment are crucial prerequisites for learning the basic characteristics of the spoken language. The most important factor responsible for first language acquisition, however, is the activity of the absorbent mind. In Montessori's opinion, only the construction of the absorbent mind can explain the impressively quick and extremely stable language learning process during the child's first three years of life.

2. Sensitive period for the development of the written language (3-6 years of age):

Due to the fact that the subconscious activity of the absorbent mind starts to dwindle and finally stops around the child's third birthday, the dominant factor in the process of learning how to write and read is the awakening consciousness. During the sensitive period for the acquisition of the written language, which, according to Montessori's observations, takes place at pre-school age, dominates the conscious learning that must be supported by the prepared environment and the specific developmental materials. The

[12] This does not mean that the development of each of these three aspects of language only occurs in its prevailing age period but rather that during each phase the child is especially interested in learning a particular aspect of language.

Italian educator looks upon writing principally as a motor activity that has already been trained previously through interacting with the sensory materials. Montessori regards reading, on the other hand, as a mental process. Consequently, she recommends 'writing before reading' and 'reading through writing'. The materials she developed for the acquisition of the written language take into consideration psychological learning principles, e.g. slowly increasing the abstraction level (concrete object – picture of object – word representing the object), and basic sensor-motor experiences, for example the work with the sandpaper letters.

3. Sensitive period for the development of grammar awareness (6-12 years of age):

During the sensitive period from age 6 to 12 years the child starts to take a conscious interest in grammar. On condition that his environment has offered him the appropriate and correct grammatical foundation, the child has already subconsciously learned the grammatical structures of his first language with the help of the absorbent mind by the time the child starts school. Furthermore, he has acquired the written language, with the aid of his conscious learning powers. The knowledge of the written language is now tied to the learning of grammar, as a conscious activity. The child becomes aware of the grammatical structures that he has subconsciously absorbed and thus perfects his understanding of his first language. With the help of motivating and self-explanatory materials the child is not only able to work on the grammar and syntax of his first language but also on increasing his vocabulary, especially in the area of abstract nouns.

3.4. Stages in first language acquisition

> [Language] develops naturally [...] its development follows fixed laws which are the same in all children. The various periods of the child's life show the same stages in the level reached […] All children pass through a period in which they can only pronounce syllables; then they pronounce whole words, and, finally, they use to perfection all the rules of syntax and grammar. (Montessori 1995: 111)

Children all over the world follow a regular sequence of stages when acquiring their mother tongue. As has been mentioned before, this behavior is controlled by a biological trigger that sets off the various phases in language acquisition. There is much

discrepancy among linguists regarding the names and characteristics of these milestones as well as the dates of their occurrence. Although the age at which children attain these milestones may vary significantly, the order in which language is acquired is relatively predictable as it is more or less similar among all humans. Under normal circumstances all children, for example, say their first comprehensible word around the age of one year.

The following diagram below which is taken from Aitchison (1998: 76) shows a number of important stages of language acquisition. The table, however, should only be considered a rough guide as the phases overlap and the ages given are only approximate.

Language stage	Beginning age
Crying	Birth
Cooing	6 weeks
Babbling	6 months
Intonation patterns	8 months
1-word utterances	1 year
2-word utterances	18 months
Word inflections	2 years
Questions, negatives	2 ¼ years
Rare or complex constructions	5 years
Mature speech	10 years

Table 1 (Aitchison 1998:76)

In her late work *The Absorbent Mind* Maria Montessori (1995: 124, 138-139) describes, with the help of two diagrams, the child's language development from birth until the age of two and a half years, when the child's ability to learn by unconsciously absorbing his environment starts to decline. These illustrations are similar to the table Aitchison provides in regard to the milestones children achieve between birth and the age of two and a half:[13]

[13] Note that the Montessori changed some of the symbols after *The Absorbent Mind* was published.

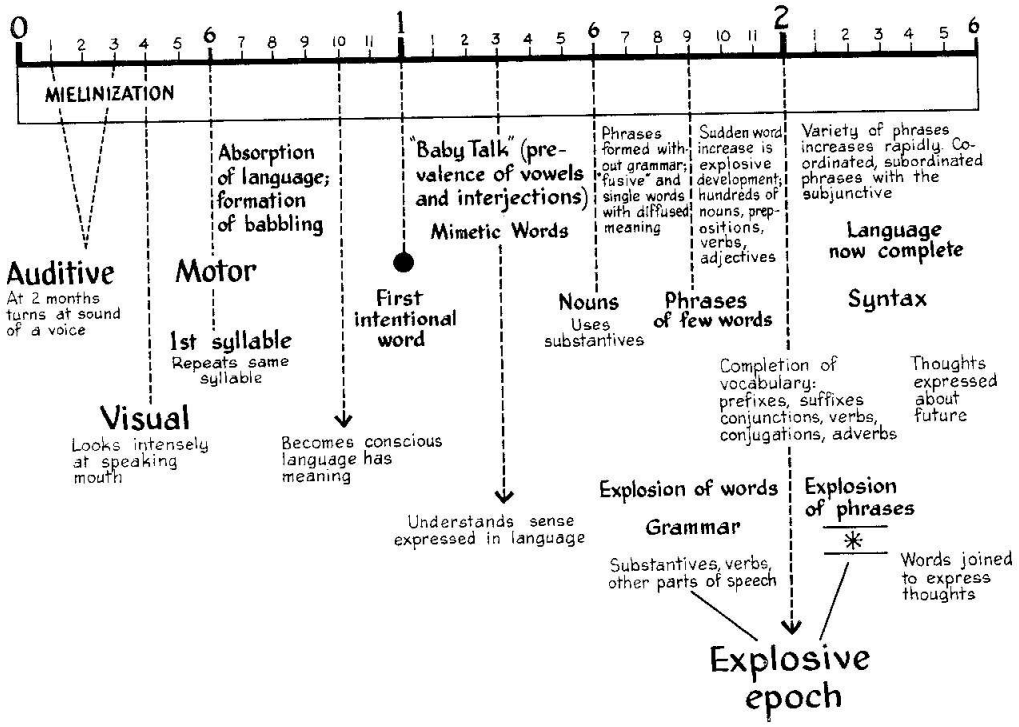
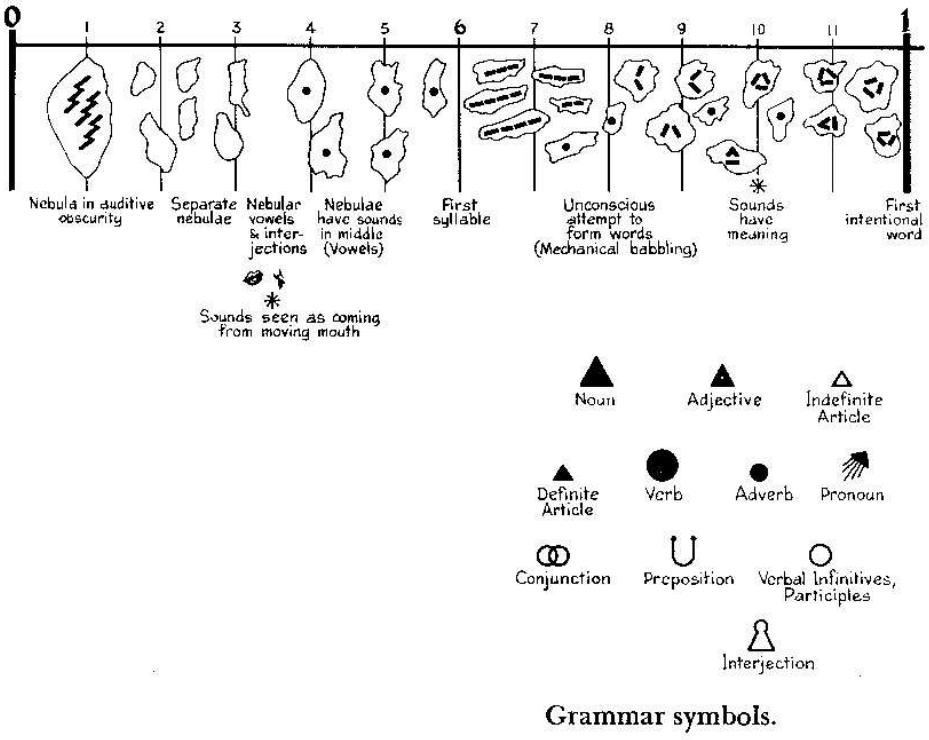


Table 2 (Montessori 1995: 124)



Grammar symbols.

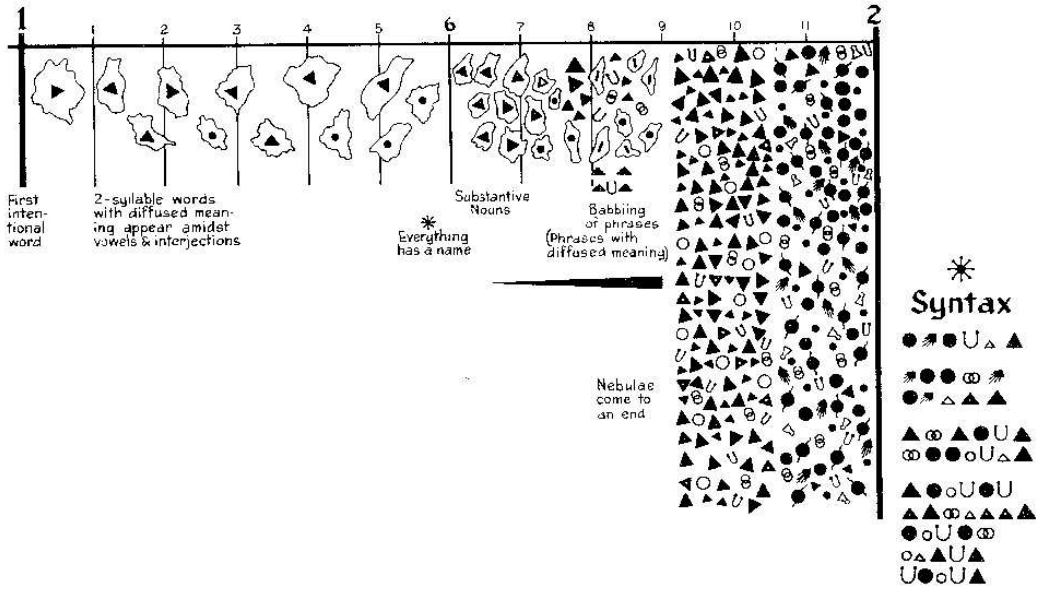


Table 3 (Montessori 1995: 138-139)

3.4.1. Pre-language stages

3.4.1.1. Cooing

Studies by Papousek and Papousek show that the infant is able to use a wide range of means of verbal and nonverbal communication. Even in the early stages of their development babies are capable of communicating with their environment. Various forms of crying and establishing eye contact with his caretakers are only two ways a baby can create a sense of communication. During their research both authors could prove that babies communicate with adults with the help of their hands. By positioning and shaping their hands in a certain way babies signal inner feelings and needs. (Holtz 1999b: 122)

According to Montessori, the infant pays attention to the human voice at about two months of age. At four months he starts to attentively watch the lip movements of the person who is speaking and tries to copy them. In contrast to Aitchison, Montessori's

chart and her writings do not suggest that the infant at this stage of his language development is capable of producing any language-like sounds. It becomes clear that Montessori does not regard crying and cooing as a form of language. Montessori (1995: 122) believes that the child is "unable […] to make a single sound of speech" before the age of six months.

Although there is variety of different types of crying depending on the situation the baby is in, such as hunger, pain or pleasure, Aitchison (1998: 76-77) shares Montessori's view that crying should not be considered a language phase but rather an instinctive form of communication in order to draw attention. In her opinion, cooing, which is also called mewing or gurgling in some textbooks, however, should be regarded as a stage in language development. Although the child produces vowel-like sounds which differ from the vowels produced by adults these utterances help the child learn to control his vocal organs. Cooing which seems to be universal among all young language learners together with babbling and the imitation of intonation patterns are therefore often referred to as "pre-language phases" (Aitchison 1998: 77) that allow the child to practice speech.

The German psychologist Stern whose book *Kindersprache*[14] is regarded as the first classic in researching children's language development argues that there is no language at all during the first year of a child's life. Stern calls this phase in language acquisition the "preliminary stage" (Ingram 1989: 39) during which the child inhibits three different behaviors: babbling, imitation or echo-babbling and rudimentary understanding.[15] According to Stern, the first stage of language acquisition begins when the child consciously utters a word with meaning, which usually happens around the age of one year (Ingram 1989: 39-40).

3.4.1.2. Babbling

As already mentioned above, Maria Montessori believes that with the babbling phase, which starts around the age of six months, real language begins. According to Stern,

[14] For an in-depth description of Stern's study see Ingram 1989: 38-47.
[15] Early researchers tended to confuse the two stages of cooing and babbling, which may be the reason why Stern did not include cooing in this stage (cf. Aitchison 1998: 77).

there are two reasons why the child starts babbling: the infant's desire to socialize with the people around him and his need to express himself (Ingram 1989: 39). Maria Montessori agrees with Stern regarding the latter. In Montessori's opinion (195: 121-122), babbling marks an important stage in a baby's language development. Up until this point in time the child has unconsciously prepared the movements of the lips and tongue that are necessary for the production of language. When he finally starts pronouncing repeatedly the same syllables he becomes aware of his own power to produce sounds; at this time, he is able to create speech because he knows how to use the "machinery" (Montessori 1995: 122) which is now at his disposal. In contrast to Stern, however, Montessori believes that the infant does not recognize that language has a purpose until he is approximately ten months old. According to her (1995: 122), during the babbling phase the child interprets adult speech as merely "music coming from a person's mouth".

Linguists define babbling as utterances of vowels and consonants attached together. In the beginning the child produces separate syllables that are later connected. At this stage in his language development the child makes the consonants with his lips or teeth creating sounds like *ma-ma-ma, da-da-da, pa-pa-pa or di-di-di.* Sequences like these are the reason why the words *mama* and *papa* for 'mother' and 'father' are widely used in different languages all over the world. Recent investigations indicate that the variety of sounds produced during this phase is rather limited. As this is a phase in language development when the child gains control of and experiments with his vocal organs the noises he produces do often not resemble the language spoken by adults. Another possible reason for the fact that children's babbling sounds are different from the language they are learning may be that infants only hear a mixture of noises and are unable to make a distinction between similar sounds like P and B, for example. After some time children gradually realize such differences and begin to utter sounds that are part of the adult language he hears around him. Aitchison (1997: 44) calls this a "babbling drift" which is a sign that the babbling stage is coming to an end. (Aitchison 1998: 77-79)

3.4.1.3. Rudimentary understanding and intonation patterns

As one can see in her two diagrams above, it is Montessori's opinion that the infant becomes aware that language has a purpose around the age of ten months, when he realizes that the speech addressed to him has a meaning. The child comes to understand that "these words are meant for him, and he begins to grasp that we are saying them intentionally" (1995: 122). Nevertheless, according to the Italian educator, the baby does not yet comprehend that he himself is able to communicate his wishes and desires. Although "he has created speech […], for the moment, this is nothing but babbling, a simple repeating and combining of sounds" (1995: 122).

This view is shared by Stern. He believes that children at this age possess rudimentary understanding which they demonstrate by responding to certain words, for example waving 'bye-bye', clapping hands to social action games like 'pat-a-cake' or covering their eyes with their hands when playing 'peek-a-boo'. Nonetheless, Stern is very clear in his writings that he believes that real language only begins when the child utters his first intelligible word at the age of one year and not when he starts to associate utterances with particular actions and situations. Stern writes: "This first understanding of speech has at first nothing to do with an intellectual grasp of the logical significance of words, in fact months pass before this stage is reached." (Ingram 1989: 39-40)

Another interesting fact that researchers have noticed during this phase in language development is that eight or nine month old children start to imitate intonation patterns which makes their babbling sound like speech. According to Aitchison (1998: 79-80), English speaking parents have found that their offspring frequently produces an intonation used in questions. The child's rise in tone at the end of a sequence of sounds may be a result of the parents' inclination to ask the infant a lot of questions, like 'Do you want some juice?' or 'Are you sleepy?' etc.

3.4.2. One-word utterances

At approximately one year of age the child speaks his first intentional word. This point in time when, according to most researchers, real language begins is called the one-word stage. Modern linguists and psychologists agree with Montessori (1995: 122) who sees this milestone in the child's language development as the first indication of conscious intelligence. It is now becoming clearer to the baby that language is connected to his environment, and he feels the need to be able to speak in order to communicate with others. Although the toddler is able to produce words with meaning he still continues babbling for some time until it gradually diminishes and more and more comprehensible language develops. In the beginning of his second year of life the child acquires only a limited number of words, ranging from four or five to fifty. Between the age of one and a half and two years, however, he starts to add a massive amount of new expressions to his vocabulary, which can increase to several hundred words (Aitchison 1998: 80).

When the child consciously utters his first intelligible words, the communication between child and adult takes on a new dimension. At one year and three months the child understands the meaning of most words and he himself uses a language that mainly consists of exclamations and expressions that he hears in his environment, such as names of people and things. From this point in time onwards the child is able to communicate and convey his needs more easily. Although this is the first sign of a presence of conscious intelligence, the child is limited by his restricted intellectual and lingual abilities. He still has to learn the words and terms that are necessary to know in order to be able to use them in a language which is comprehensible for adults.

Before the age of one and a half years the child forms nouns. He discovers that everything has a name and he can differentiate between various concrete nouns. When the child realizes that words can be labels for things he has reached an important milestone in his development. According to Aitchison (1997: 44), before the naming insight, the words children utter are mainly related to a location and are often connected to a whole scene. As a result, the child uses the word *da*, for example, to name a toy duck, referring to a particular duck floating in a particular bath. After some time has

passed, the meaning of *da* will be extended to label a duck in a different surrounding, then later all ducks, and maybe other birds that can swim or even boats.

As the toddler is only familiar with nouns at this point in his language development, he starts to use "one-word sentences" (Ingram 1989: 41) or "diffuse Woerter" (Montessori, 2000: 115), by expressing a whole sentence with only one word, a noun. In this way, one word can have more than one meaning and may be used to express several ideas. The word *mummy* can mean for example 'Mummy, come here!', 'That is my mummy.', 'Mummy is coming!', 'I want my mummy!' or 'Mummy should do that!' etc. Apart from these nouns the child also produces onomatopoetic and made-up words, such as *yum-yum* for 'eating', *meow* for 'cat' or *woof-woof* for 'dog'. This is a difficult phase for the communication between the child and the people in his environment, because the child's statements may have several different meanings and, therefore, are often not understood by adults.

The reason why a child at this language stage uses the same word to name various different objects may simply be due to the fact that he does not yet fully understand the meaning of the word. However, a more satisfying explanation for most researchers is that there often is a semantic overgeneralization or overextension of word forms because of the child's limited vocabulary and his great need for lingual expression. As toddlers do not yet have the appropriate resources to express themselves, they often name, for example, all four legged animals *dog* or all round objects *ball*. Researchers have found that most children overextend words between the ages of one and a half and two and a half years. Some overgeneralizations only occur for a short period of time, while others may continue to be used for several weeks or longer. (Clark 2003: 88)

Research shows that most overextensions seem to be caused by similarities regarding shape, size, texture, taste, sound or movement between particular objects.[16] According to Eve Clark (1993: 33-37), there are two different types of overgeneralizations, namely over-inclusions and analogical extensions. Over-inclusions are words that children use to refer to numerous objects of the same category as for instance the term *dada* for

[16] Remarkably, color is absent in this context, as it seems not to be a reliable indicator of category membership (Clark 2003: 89).

addressing both father and mother or *apple* for naming all round fruits like oranges, melons etc. In this case words are misused not only because of a perceptual similarity but also because the objects belong to the same or a similar conceptual domain. Analogical extensions, on the other hand, refer to words that are overextended because of the objects' resemblance of a certain physical feature. As an example Clark mentions *comb* for a centipede or *ball* for the moon, an onion or other things that have a round shape. Studies indicate that usually the overgeneralization of vocabulary comes to an end when the child reaches his second birthday and has learned to use the words in their appropriate context.

In the beginning children generally tend to acquire words which consist of sounds that are also included in their babbling repertoire. This supports the idea that early vocabulary acquisition is strongly influenced by the child's ability to develop the articulatory skills necessary for the production of words. Thus, motor development plays an important role during the single-word stage. Early on the co-ordination of face muscles, vocal cords, tongue, teeth and lips to produce a word is still a difficult task for the child to accomplish which may be one reason why the vocabulary is very limited (Clark 1993: 27).

Once the child is aware of the fact that the things around him have a name, a "naming explosion" (Aitchison 1997: 45) sets in. Together with this rapid growth in vocabulary the child shows the sudden desire to learn the names of things. He starts to ask questions like '*That*?' (Ingram 1989: 41). On the one hand, one could argue that the child has finally comprehended that language is a symbolic system. On the other hand, this could also be regarded as an evidence of the child's articulatory readiness for the production of more complicated words exceeding the sounds of his babbling range.

3.4.3. Two-word utterances

Montessori's and Aitchison's diagrams show that between the ages of one and a half and two years a sudden increase of words takes place. By saying single words closer together and diminishing the time periods between them the child gradually begins to construct two-word sentences. One problem researchers have is that it is difficult to make a distinction between a combination of words and a sequence of one-word utterances. As a

result, linguists have come to the agreement that after the child has uttered at least 25 identifiable syntactic multi-word combinations the two-word stage has officially begun.

Lois Bloom observed the gradual proximity of one-word utterances when studying her daughter Allison. She distinguishes 'chained' consecutive single-word combinations "in which each utterance refers to its own event or activity" from 'holistic' successive one-word utterances that "are both referring to the same activity" (Ingram 1989: 238-239). As an example of a chained utterance Bloom mentions a dialogue with her daughter in which Allison says *cow* when picking up a toy cow, then *chair* when putting the cow on the chair and finally *mama* when asking her mother for help. In this case each word represents its own activity. As an example for a holistic sequence Bloom refers to a conversation with Allison when she said the words *up*, *neck* and *zip* with the purpose of asking her mother to help her zip up her coat. Holistic utterances indicate that the child has advanced in his understanding of syntax as *the* single-word utterances refer to one context. Bloom's investigations show that these holistic sequences only occur during the very end of the single-word stage. (Ingram 1989: 238-239)

Close to his second birthday, the toddler starts to produce two-word utterances. Throughout this explosive phase the child slowly becomes able to group words together to form new combinations. Whereas during the one-word stage the individual's main focus is on the complex task of learning the names of things with their correct pronunciation, the two-word stage presents the additional challenge of putting the words together with regards to the syntax of the language. As the child has to learn the difference between object- and action-words and needs to arrange them in the correct order, this is a stage in language acquisition when he becomes aware of most of the basic syntactic rules. Therefore, the two-word stage plays an important role for the acquisition of grammar later.

Children's utterances at this stage in language development obviously do not show complex structures and only contain information about topics which the child finds especially interesting and important. This concerns, in particular, his desires, wishes and needs. In order to really understand utterances like *read book* or *kiss mummy*, which are typical of the two-word stage, one also has to take the actions accompanying these word

combinations into consideration. As the child makes such an utterance only in a concrete situation in which he is reading a book or watching daddy kissing mummy one may argue that he may not regard it important to say who is reading the book or kissing mummy.

As already mentioned previously, according to Chomsky's theory of Universal Grammar, children are born with a set of language principles and have to figure out the patterns and structures underlying the language they are learning. By observing the language they are exposed to, children set switches accordingly. Hyams argues that children's early omissions may be due to the fact that a switch has been temporarily set the wrong way. In his opinion, young language learners at the two-word stage leave out subject pronouns and auxiliary verbs since they "have wrongly assumed that English is a 'pro-drop' language like Italian – which optionally drops pronouns at the beginnings of sentences" (Aitchison 1998: 140-141). An alternative explanation for children's omissions during this early stage in language development comes from Aitchison (1998: 141) who proposes that children may leave out grammatical items because of the simple fact that they are not stressed in adult's speech. Another theory offered by Radford suggests that children at the two-word level omit auxiliary verbs like *is* and *are* because they can only deal with 'full' words, such as nouns and verbs in their base forms, and do not consider the grammatical 'little' words important and meaningful (Aitchison 1998: 141). This seems to be a fairly reasonable explanation as tenses, plurals and inflections belong to those aspects of language that are acquired at a much later stage.

While analyzing two-word utterances like *want baby*, *get ball*, *there book* and *daddy do*, Martin Braine observed that children follow definite rules when combining words. They showed, in particular, the tendency to place certain words only in determined positions. Braine, who coined the term 'pivot grammar'[17], concluded that each child has two different word categories in his speech, namely the 'pivot class' and the 'open class'. The pivot class refers to a small number of words that the child selects which never occur alone, are used frequently and in a fixed position. The open class contains a lot more words that occur less often, in any position and are occasionally used by themselves. According to Braine's theory, the child chooses words from both classes to form two-

[17] For a detailed description of pivot grammar see Ingram (1989: 263-267), and Aitchison (1998: 115-117).

word utterances. For example, from the above mentioned word combinations *want, get, there* and *do* are pivots, which always occur either in the initial or the end position, while *baby, ball, book* and *daddy* belong to the open class (Aitchison 1998: 116). It is necessary to point out that each child has his own set of pivot words since the linguistic information available to each child is different. (Ingram 1989: 264- 265)

Although, at first sight, pivot grammar seems to be useful to describe the underlying rules children apply to form two-word combinations, it is in fact only applicable for a small portion of children's utterances. Two-word phrases like *mummy sock*, *daddy car* and *kitty ball*, which are used often in children's speech do not fit into Braine's concept of pivot grammar, as these are two words from the open class that are combined. Moreover, some pivots may be often found on their own without a word from the open class to accompany them such as *no* or *more* (Aitchison 1998: 116).

Recent studies suggest that children's language is in fact governed by rules and not just an unsystematic accumulation of words. As soon as young language learners form two-word utterances they seem to realize that there is a certain order between these two words. According to Aitchison (1998: 118-119), English speaking children automatically know that there are various relationships of possession and location as well as the fixed structure of subject-object in a sentence; they are also aware of the "actor-action relationship" and constantly form expressions with the actor coming first and the action second as in *mama come*, *kitty play* or *papa go*. The following list devised by Brown is taken from Aitchison (1998:120). It shows clearly that children at the two-word stage are capable of expressing different categories of meaning relationships.

Relations	1	Agent action	*MUMMY PUSH*
	2	Action and object	*EAT DINNER*
	3	Agent and object	*MUMMY PIGTAIL*
	4	Action and location	*PLAY GARDEN*
	5	Entity and location	*COOKIE PLATE*
	6	Possessor and possession	*MUMMY SCARF*
	7	Attributive and entity	*GREEN CAR*
	8	Demonstrative and entity	*THAT BUTTERFLY*
Operations	9	Nomination	*THIS (IS A) TRUCK*
	10	Recurrence	*MORE MILK*
	11	Non-existence	*ALLGONE EGG*

Table 4 (Aitchison 1998: 120)

Children's early utterances do not provide evidence of specific knowledge of grammar, but they show that youngsters are aware of the fact that meaning relationships need to be conveyed consistently. Young language learners appear to look for regularities in language and display an instinctive understanding of hierarchical structure as shown by numerous tests devised by various linguists (Aitchison 1998: 124-126). Although children all over the world seem to follow similar patterns when producing multi-word utterances, it would, however, be an overstatement to say that there is a universal framework, which underlies early speech, like the pivot grammar Braine proposes.

In her diagrams shown earlier Montessori describes in some detail the types of words that children acquire during this time. According to her, apart from nouns, the child begins to use also prepositions, verbs and adjectives. From the age of two onwards the child's language is completed by the use of prefixes and suffixes, conjunctive, conjugated verbs and adverbs. During this period the child starts to form subordinate sentences and to use verbs in the future tense and the conjunctive form. Unfortunately, in her writings Maria Montessori is not explicit about the language she is referring to. Obviously, the sequence of acquiring grammatical forms must vary for different languages. For example, children who learn to speak Roman languages like Italian and German will acquire specific grammatical items in a different order than children learning Chinese.

Research has found that there is indeed a consistency of order in the acquisition of grammatical items among children learning the same language. In *The Articulate Mammal* Jean Aitchison (1998: 81) provides a table that shows that English speaking children follow a certain sequence when acquiring grammatical forms between the ages of two and three. In her opinion the actual age at which each grammatical form is acquired is not important, but the order of its acquisition matters.

Age 2	Progressive –ING	*I SINGING*
	Plural –S	*BLUE SHOES*
	Copula AM, IS, ARE	*HE IS ASLEEP*
	Articles A, THE	*HE IS A DOCTOR*
Age 3	3rd person singular –S	*HE WANTS AN APPLE*
	Past tense –D	*I HELPED MUMMY*
	Full progressive AM, IS, ARE + -ING	*I AM SINGING*
	Shortened copula	*HE'S A DOCTOR*
	Shortened progressive	*I'M SINGING*

Table 5 (Aitchison 1998: 81)

It is an interesting fact that children learning English also have a tendency to acquire more complicated structures such as negatives and questions according to a specific order. As an example, Aitchison (1998: 82) mentions the studies of Klima and Bellugi who found that all young language learners between the ages of two and three pass through three different stages before perfectly acquiring WH-questions, i.e. questions starting with WHAT. WHO, WHY, WHERE, etc.

3.4.4. Language development beyond the two-word stage

Maria Montessori believes that the rudimentary language acquisition is completed by the age of two and a half. At about this age the toddler uses words to express his thoughts and has generally mastered the essential features of the language of his environment. In Montessori's opinion, a new phase in the child's language development begins. She writes:

> Die Altersgrenze von zweieinhalb Jahren bezeichnet in der Bildung des Menschen eine Grenzlinie der Intelligenz. Danach beginnt eine neue Periode in der Gestaltung der Sprache, die ohne Explosionen in ihrer Entwicklung fortschreitet, aber mit grosser Lebendigkeit und Spontaneitaet. (Montessori 2000: 106)

According to Montessori the basic process of language acquisition comes to an end by the age of 3. She believes that during the second phase of development, from 3 to 6 years of age, the child only perfects and reinforces his mother tongue. Axel Holtz disproves this theory with reference to the acquisition of the German language. He calls attention to

the fact that usually children do not master the art of declension and case formation before the age of 4 when they are finally able to competently connect sentences with each other. (Holtz 1999: 124)

Jean Aitchison (1998: 83-84) shares Holtz's view. According to her, before the age of three English speaking children produce correct sentences including questions and negatives. By the time they are around the age of three and a half they are able to form the majority of grammatical structures and to speak in a reasonably understandable way. Aitchison points out that although by the age of five children appear to have learned their mother tongue more or less perfectly, including complex and rare constructions[18], language acquisition still continues at a slower rate. The discrepancies between child and adult speech usually persist until puberty when, apart from vocabulary, the child's language development reaches its end.

Montessori's research with children indicates that between the ages of two and a half and six years there is a great sensibility within young language learners to learn new words. As a result, depending on the child's lingual environment, he can expand his vocabulary from 200 or 300 words to up to 5,000 words (Montessori 1992a: 102; Helming 1997: 104). Research shows that children between the ages of two and six learn approximately ten new words a day (Clark 1993: 13) and have acquired a vocabulary of at least 2,000 words by the age of five (Perera 1988: 101). According to Aitchison (1997: 62), the majority of English-speaking children knows around 3,000 words by the age of five and continues to add more lexical items very quickly over the next years, until the total increases to 20,000 words by the age of thirteen, when there is a leap in vocabulary, and to 50,000 or more around the age of twenty. This means that a native English speaker between his fifth and twentieth birthday, acquires a remarkable average of more than 3,000 words a year.

Throughout the course of language acquisition, the passive vocabulary remains greater than the active one. Children tend to understand more words than they produce. This

[18] Children at that age are aware of and use constructions like the passive, for example *The man was hit by a bus*.

difference between language comprehension and production continues all through life which can be seen when acquiring a second language. (Clark 2003: 16)

Maria Montessori (2000: 78) believes that the border-line age of two and a half years also marks the transition period of the child's psychological stage from unconsciously absorbing to consciously perceiving and analyzing his environment. From this point in time onwards, the state of the absorbent mind, which is active until the child's sixth year of life, starts to dwindle and the toddler gradually begins to consciously examine the previously unconsciously absorbed impressions with his power of reasoning. Throughout this period the child continues to develop and perfect all the language skills that he has subconsciously acquired during his first three years of life, until they are finally stabilized in his personality at the age of six years (Montessori 1992a: 101). He practices the spoken language not only by interacting with the people around him but also by spontaneously turning his attention to objects in his environment and actively exploring his surroundings with the help of his hands. As a result, the objects and their names are consciously imprinted on his memory. By means of working with things in general, the child gradually builds up his intelligence and his memory (Montessori 2000: 24). Due to the fact that the child's mind during this stage of life is in transition from unconsciously absorbing to consciously analyzing his environment, the child can now be influenced educationally.

4. The acquisition of writing and reading

It has to be pointed out that since the focus of this paper is on early writing and reading, advanced stages in children's reading and writing development as well as the corresponding Montessori materials, especially for grammar acquisition, will not be discussed here. The purpose of the following chapter is to briefly give some findings of current research in the field of early writing and reading and show the relationship between the acquisition of the spoken and the written language by exploring the most important similarities and differences. The rest of this chapter will examine Montessori's concept and her materials for learning to write and read.

4.1. Acquisition of speech, writing and reading: Similarities and differences

Interestingly, similar to the acquisition of speech children pass through various milestones when learning how to write and read. Beginning with single letters, they then write and read individual words and by gradually adding other lexical items they manage to write and read sentences and longer texts. Maria Montessori takes this development into consideration and incorporates it in her educational concept. As will be discussed later in section 4.6.2., she particularly applies it to the acquisition of reading and provides a number of materials for the purpose to gradually help the child in his reading process.

There are some similarities between the acquisition of reading and speech. In contrast to writing, reading and speech cannot be taught because their development is genetically predetermined by various processes in the brain. Before reading comprehension ability develops numerous other procedures need to be carried out first: the development of "visual association, cross-modal integration provided by the angular gyrus, mnemonic capacities of the sensory and cognitive systems and links between language and non-linguistic knowledge and experience". Only when "the cognitive systems have increased dramatically in their capabilities over the early stages" (Scholes 1999: 106) does the child understand what he reads.

Like the development of the spoken language, the acquisition of reading is environmentally triggered. While the acquisition of the oral language needs a linguistic environment to activate the language process, learning to read requires the presence of a print environment. Even though the child will somehow learn to speak and read in impoverished linguistic and print surroundings, he clearly has more benefits from an exposure to a variety of language and reading resources. (Shores 1999: 103-106)

Children growing up without language or print will not acquire speech or reading at all. In agreement with Montessori, linguists like Carol Chomsky, Read and Clay (Teale & Sulzby 1980: 260) believe that there seems to be a sensitive period for the acquisition of the written language, i.e. when children are very interested in learning how to write and read. However, in contrast to the acquisition of the oral language, this is not a critical period in the classical sense, since the ability to write and read can also be learned at a later stage in life, as numerous adult literacy programs confirm.

4.2. Findings in current research

Although more research has been done on reading than on writing, several investigations have tried to find the point in time when on average a child's writing and reading initially emerges. Teale and Sulzby (1988: 260) point to "the growing realization that in order to understand reading we must understand writing, and vice versa".

Some investigators see the roots of writing in the time when the child begins to learn to speak. A study done by Carol Chomsky supports Montessori's view that children should learn to write first and read later. In contrast to the traditional belief that the acquisition of writing ought to take place when children attend kindergarten[19] or first grade, preferably after the acquisition of reading, she thinks that they are capable of this task well before the age of five. In her opinion, this is due to the fact that speaking and writing are similar in that they both are forms of producing language and can develop simultaneously together. Other researchers who focus on the implements of writing,

[19] In English the term 'kindergarten' means 'Vorschule'. In the USA children start school at the age of five when they attend kindergarten. The German expression 'Kindergarten' is translated as 'preschool' which children attend from three to five.

namely the child's use of a pen or pencil, argue that writing should have its origin in drawing. (Barton 1994: 155)

The majority of children begins to read around the age of five or six when they start school. According to Scholes (1999: 101-103), there are three different activities that are referred to as 'reading'.

1. The ability to convert graphics to sound, independently of the words' meaning, a skill that is also known as 'decoding'.
   This graph-to-sound correspondence is used in phonics, a reading method which will be discussed in great detail later in this chapter.
2. The activity of converting written language to spoken language, or 'reading aloud'.
   While decoding does not require the child to understand the words, reading aloud does. Currently this is the most common method of how children are taught to read in traditional schools.
3. Understanding a written sentence or text, which is also called 'reading comprehension'.

Based on worldwide studies Krashen claims that the more reading resources a child has available the better he is able to read and write. Reading exposure, which includes reading for pleasure and reading out loud to children, "is an effective means of developing language skills" (Krashen 1994: 100). Studies suggest that pleasure reading improves reading comprehension and writing style and helps the development of grammar. Similarly, children, who are read to, become fascinated by books, are more eager to read by themselves and turn out to be better readers because they are already accustomed to the structure of written prose. (Krashen 1989: 100-103)

The ability to write and read leads to a greater awareness of the grammatical structures of the spoken language. Studies show that only literate users of a language know which combinations of morphemes are acceptable by the rules of syntax and which are not. Pre-reading children and illiterate adults have difficulties in recognizing the difference between well-formed and grammatically incorrect sentences, such as *Nathalie goes to*

school and *Nathalie put the book*. Instead of rating sentences as correct or incorrect according to the syntactical rules of the language, adult illiterates make their judgment based on the events indicated by the most important words of the utterance, in other words on the meaning of the sentence. While they would regard a sentence like *Nathalie hit Noelle* as incorrect, because hitting someone is not a good thing to do, the utterance *Noelle was gived a cake of Nathalie* would be deemed correct, as giving a cake to somebody is considered to be a nice gesture. (Scholes 1999: 43-44)

Vitally important to children's progress in reading acquisition is their attitude toward reading. When reading is considered a fun and enjoyable activity children are more likely to be motivated to read. Krashen (1989: 109) believes that when children read for genuine interest and pleasure they are educated in the best way possible.

4.3. Problems children encounter

Analysis of children's early writings has found that young children especially have problems with spelling and word boundaries (see Appendix, Figures 1 and 2).

Charles Read looked at children's invented spellings, namely spellings that children impulsively make up by themselves, and found that children make intelligent guesses about the nature of language, just as they do when learning to speak. What teachers often misinterpret as spelling errors are actually reactions to problems that children encounter. By writing for instance *yot* instead of *yacht, jragin* instead of *dragon* or *sep* instead of *ship* the child is making hypotheses based on his understanding of the English sound system and, according to Barton (1994: 155), "is coming up with a more reasonable spelling than that which is actually utilized in the spelling system".
Another aspect of writing that proves to be difficult for children is trying to find word boundaries, that is how and where to separate the stream of writing into individual words. Some children choose to leave spaces between words, while others decide to split the words up by dots. This phase may last for a few months. (Barton 1994: 155)

Studies have shown that in general children successfully recognize word boundaries at the end of third grade. Fourth graders, children ages nine and ten, typically have acquired enough knowledge in orthography to be able to correctly identify individual words in texts that are purposely printed incorrectly. (Scholes 1999: 31)

In agreement with Montessori, Barton (1994: 156) believes that learning to write engages two processes: "learning the mechanics of writing, or becoming a scribe, and deciding what to write, or becoming an author". He argues that the difficulty of holding a pencil and forming letters often stops children in their attempt at handwriting. In addition, children are often confused by the orientation of the letters *b, p, q* and *d*.[20]
He proposes that children should be allowed to use computers with simple keyboards in order to overcome these mechanical problems of writing. (Barton 1994: 156)

Another problem that children are confronted with concerns the acquisition of reading. Children need to recognize letters as symbols, which requires two steps: they need to pair the sound with the letter (phoneme-grapheme correspondence) and then comprehend the meaning of the letter (symbol-meaning correspondence). (Baron (1993:194)

An approach to reading that has become very popular in the USA and Great Britain under the name of 'phonics' tries to help children in their attempt at learning how to read. The method teaches children to decode words into their components and encourages them to develop an understanding of the relationship between these components. Phonics tries to use what the child already knows about the spoken language as a bridge between sight and meaning. By converting letters into sounds and combining them together a word that the child knows in its spoken form may be identified in its written form. (Underwood & Batt 1996: 75)

As will be discussed later in 4.6.1., Montessori uses the same approach in her educational concept for reading. In her opinion, however, decoding or 'mechanical reading', as she calls it, is used by the child only during the word-stage, in the beginning of the acquisition of reading. The Italian educator looks at decoding only as the first step

[20] As we shall see, Montessori developed materials that help children deal exactly with this aspect of writing.

in the child's reading process, since his needs and interests change in the course of his development. In support of Montessori's view, after having examined several instructional studies Jeanne Chall suggests that an early emphasis on phonics helps the child in the acquisition of reading and should therefore be preferred to approaches that do not put emphasis on phonics. Like Montessori she compares "the first step in learning to read one's native language" to "learning a printed code for the speech we possess" (Chall 1967: 83).

Followers of the whole-word approach[21], like Stephen Krashen (1989: 121-122), argue that this way of teaching to read may result in the child's habit of striving to comprehend every word that he reads, which he has to overcome eventually in order to develop fluency. In response to that argument, on the other hand, it is necessary to point out that children who are beginning to read find joy in their being able to decode a word and in finding its meaning. It gives them the feeling of accomplishment and joy which is a very important motivating factor in learning to read. If phonics programs, however, focus entirely on the letter sounds the child's attention is diverted from the meaning of the words (Krashen 1989: 123), which makes the whole process pointless.

Underwood and Batt (1996: 76) point to another aspect of phonics. They claim that phonics may work well with languages that have regular orthographies such as Italian[22], which is Montessori's mother tongue; however, problems with this reading method occur when applying it to a language like English with its numerous irregularities and exceptions. As will be discussed later, Montessori's method of learning how to read is based on the concept that phonetic words are learned first. In that way, the child is already able to read a great variety of words and is introduced to irregular and more difficult words, including lexical items that contain phonograms and diphthongs, later on in the reading process.

[21] When using the whole-word approach in learning how to read, children memorize individual words without taking them apart into their components (letters) and then recognize them by sight. For a full discussion on the debate about phonics versus whole-word approach see Baron (1993: 1997-200).
[22] Since Italian is Maria Montessori's mother tongue she originally designed her reading method for this language.

4.4. Learning to write and read by using the Montessori Method

4.4.1. 'The pedagogic analysis' and the sensitive periods

In contrast to the spoken language which develops naturally in humans, the acquisition of writing and reading requires specific instruction. As a consequence, Montessori sees it as "kuenstlerische Erwerbung, die ausschliesslich ein Werk der Zivilisation ist" (Montessori 2001: 207).

> Hier handelt es sich eindeutig darum zu „unterrichten", und ein solcher Unterricht hat mit der Natur des Menschen nichts mehr zu tun. Wir haben den Moment erreicht, wo es noetig wird, sich in der Erziehung an das Problem der Kultur zu wagen.
> (Montessori 2001: 207)

Although the acquisition of reading and writing is thus not a natural process, Montessori tries to find a way to incorporate it into her educational concept to help the child acquire this task according to his natural development. The Italian educator strongly disapproves of the commonly held opinion that the acquisition of writing and reading is a difficult task that involves a lot of hard work and should not be taught to the child until he is ready for elementary school. Instead, by using a method she calls the 'pedagogic analysis' Montessori tries to uncover the mechanisms that lie behind the process of writing and reading to help the child acquire these two important abilities in the most natural way possible. Maria Montessori defines pedagogic analysis as the dismantling of a complex action, like writing or reading, and breaking it down into its individual elements. In her book *Grundlagen meiner Paedagogik* the Italian educator writes:

> Die Analyse ist ein Aufloesen in Elemente [...] Das Individuum, welches eine bestimmte Sache lernt, ist gezwungen, Hindernisse verschiedenen Grades zu ueberwinden. Die Gesamtheit der dabei gemachten Anstrengungen fuehrt es schliesslich dazu, sich den Kulturfaktor anzueignen, den wir gewoehnt sind, als ein unteilbares Ganzes anzusehen [...] Betrachten wir irgendein Kulturfaktum, so kommen wir mehr oder weniger zu demselben Resultat: die einzelne Handlung ist das Ergebnis verschiedener Taetigkeiten des Organismus. Die Trennung dieser Schwierigkeiten bis zur aeussersten Grenze des Moeglichen nennen wir in unserer Paedagogik Analyse. (Montessori, 1996a: 35)

Maria Montessori is not interested in the theoretic analysis of these different elements, but rather in the practical implementation of the gained insights into her pedagogy.

According to her, the problems children often encounter when acquiring writing and reading in a traditional learning environment occur because the individual elements hinder each other. A child, for example, who cannot hold the pen correctly, will have a hard time to learn to write, although he knows all the letters and how to move the hand when writing them down.

Die Handlung, ein Wort zu schreiben, bietet Schwierigkeiten ganz mechanischer Art, wie z. B. das Halten des Schreibinstrumentes und seine leichte Fuehrung. Weiter gibt es eine mechanische oder Bewegungsschwierigkeit, naemlich, es so in der Hand zu fuehren, dass es die Form des Alphabets, die zur Bildung eines Wortes noetig sind, widergibt. Eine Schwierigkeit anderer Art besteht darin, dass ein Wort sich gerade aus bestimmten Buchstaben zusammensetzt und dass aus diesem Wort ein Sinn hervorgeht. Das ist eine Arbeit der Intelligenz, die ganz unabhaengig von der mechanischen Handlung des Nachmalens der Schrift vor sich geht. Jedoch vermengen sich diese verschiedenartigen „physio-psychologischen Komponenten“ der Schrift bei der Handlung des Schreibens eines Wortes. Wer ein Wort schreibt, ueberwindet daher […] Schwierigkeiten verschiedenen Grades. (Montessori 1996a: 35)

As a result, Montessori (1996a: 36) demands that every element must be practiced and learned individually, independent from the other parts of the complex action, by separately offering a complete and interesting exercise for each element to the child. These activities will be discussed in great detail throughout this chapter.

Apart from the pedagogic analysis the possibilities and effects of language education and instruction, according to Montessori, also depends on the point in time when the child encounters writing and reading for the first time. If the acquisition of reading and writing takes place during the child’s sensitive period for learning how to read and write, which is, as mentioned above, between the ages of three and six, the child can be supported in the best way possible. Contrary to the general opinion of developmental psychologists (Standing 1957: 243), who believe that the process of reading and writing should be taught when the child starts school at the age of six, Montessori says that, according to the sensitive period mentioned above, the learning of reading and writing should take place in pre-school and kindergarten.

4.5. The acquisition of writing: 'The method of spontaneous writing'[23]

4.5.1. Direct and indirect preparation for writing

Maria Montessori's observations show that the sensitive period for learning the necessary writing movements starts approximately at the age of four. At this age, the child's hand is still uncoordinated and pliable in its function, because the movements and coordination of the hand are not yet stable (Montessori 2001: 228).

Writing demands a secure coordination of the eyes and hands as well as the correct registration of shapes and acoustic analysis of speech and its classification. In order to understand these complex processes, Montessori takes the action of writing and breaks it up into its main elements. By doing so, she discovers two facts which are independent of each other: the intellectual activity of putting single letters together to form words and the necessary movements of the hand, which Montessori calls 'die motorischen Mechanismen des Schreibens' (Montessori 2001: 227).

> Die eine, die mit der Handhabung des Schreibgeraetes zu tun hat, und die andere, bei der es sich um das Zeichnen der Form jedes einzelnen Buchstaben handelt. (Montessori 2001: 226)

On the grounds of this analysis, Maria Montessori designs didactic materials with which the child is able to develop and perfect the single skills separately. According to her discovery about the two different hand movements which are connected with writing she differentiates between a direct and an indirect preparation for writing.

The isolated movements that are needed for the correct handling of the writing utensil like the 'three finger grip', the 'light hand' and the 'firm hand' (Montessori 1972: 206) are indirectly practiced with the help of the Sensory Materials and the Exercises of Practical Life. In particular, the exploration with the 'Cylinder Blocks', ultimately prepares the child for writing by developing the three finger grip.

[23] This term refers to the way children in Montessori schools learn to write. After having prepared the necessary hand movements, children start spontaneously to write without any further instruction. For more information see Montessori (2001: 217).

After this, the child is directly prepared for handwriting by working with the 'Metal Insets' the 'Sandpaper Letters' and the 'Moveable Alphabet', materials developed by Montessori. The metal inset exercises strengthen the three finger grip, coordinate the necessary wrist movements and advance proficiency in lightness of touch and evenness of pressure through drawing activities (Montessori 2001: 231-232).

The Sandpaper Letters guide the hand for writing in so far as the child traces the letter forms by following the style and direction in which they are written. Using the tactile and visual senses and the motor awareness, the sounds that are heard are associated with the respective letters. After learning the letter sounds with the Sandpaper Letters, the Moveable Alphabet is used by the children for the writing of words. By decoding, i.e. by pronouncing the phonetic sounds separately, with the help of the Moveable Alphabet, eventually words are assembled. By working with the Sandpaper Letters and the Moveable Alphabet, the letters and words are finally imprinted in the child's memory (Montessori 2001: 277-278, 285). The child's enthusiasm for the alphabet, which is present between the ages of three and six, enables the child to spontaneously record this phonetic analysis of word building sounds in his brain (Montessori 2001: 245). Montessori's method for the preparation of writing therefore takes place in three stages:

1) Practice and preparation of the writing hand
2) Getting to know the single letters
3) Analysis of words with the help of writing symbols

4.5.2. The explosion of writing

As soon as the child is in command of all the necessary writing movements and the knowledge of the alphabet, suddenly he voluntarily and spontaneously begins to write words according to their sounds. Montessori calls this phenomenon the 'explosion of writing' (Montessori 2001: 245; 1996a: 37).

[Da] die Vorbereitung nicht nur zum Teil, sondern vollstaendig erfolgt, das Kind also zum Schreiben alle erforderlichen Bewegungen beherrscht, entfaltet sich die geschriebene Sprache nicht nach und nach, sondern explosiv; d. h., das Kind kann alle Woerter schreiben. (Montessori, 2001: 247)

A challenge, such as writing on the wall, on a piece of paper or on a self-fabricated drawing is often sufficient reason to activate the child's willingness to start writing. In most cases, however, the child feels encouraged to write because he sees his friends and fellow students writing and therefore starts writing himself.

When the child has practiced the hand movements, when he knows the letters and can put words together, he is capable of writing not only words, but also word-groups and sentences without any further preparation. After the indirect and direct preparation for the process of writing, the child himself decides the point in time when he begins to write and does not need any further instruction or demonstration from the teacher.

4.6. The acquisition of reading

4.6.1. Mechanical reading, interpretative reading and reading aloud

For Maria Montessori (1972a: 229), reading and writing are two separate processes that do not happen at the same time. She looks upon writing as a psycho-motor activity, whereas she sees reading as a purely rational activity and as "the interpretation of an idea by means of graphic symbols".

> A child who has not heard a word spoken but who recognizes it when he sees it put together on a table in moveable letters and knows what it means […] really reads. The reason for this is that what is read in writing corresponds to what is heard in speech and is a means of understanding others. A child does not read until he receives ideas from the written word. (Montessori 1972a: 229) [24]

Reading is therefore much more abstract than writing, because the child must grasp the meaning of the words and sentences that are joined together by graphic symbols. As a result of her observations, Montessori establishes her didactic principle 'writing before

[24] Today this is called 'sinnentnehmendes Lesen' or 'interpretative reading'.

reading'. She argues that writing should be taught before reading as the different processes involved demand each a different level of mental maturity.

Montessori (2003a: 121) categorizes the preliminary stage of interpretative reading which signalizes the beginning of the reading process as 'mechanical reading'. At this stage, children recognize the letters and are in command of putting the sounds together, but do not understand their meanings. Writing demands the comprehension of matching sounds to signs, but the child must now, in the process of learning to read, recognize the appropriate sound that matches a sign. Therefore, he must remember the correct sounds. Children who are able to write words and sentences are capable of reading what they have written, but cannot automatically understand the meaning.

The process of learning how to read is closely connected to the development of the spoken and written language. With the help of the Moveable Alphabet, the child can break down the written word into its sound components that, with the correct accentuation and speed of speech, then reveal their actual meaning to him. At the beginning, in order to guarantee the child's feeling of achievement, it is important to read short words that only consist of pure phonetic sounds. By pronouncing and hearing words together repeatedly and interpreting the respective graphic signs, the reading- and writing process melts together (Montessori 2003a: 121).[25]

According to Montessori, interpretative reading can therefore only take place if the mechanism of reading and the inherent logic of the language have been imprinted in the child's brain. Difficulties arise here, not only with the 'phonograms'[26], but also with the function of the individual parts of speech and the parts of the sentence, because of their position in the sentence as a whole. These three problematic aspects of the written language will be discussed later in this paper when looking at the respective materials. Nevertheless, when writing the child does not pay attention to these problems at first.

[25] As it was already mentioned, today this approach is called phonics.

[26] Phonograms are letter combinations consisting of two or more letters that only produce one sound when pronounced. Examples in the German language are: /sch/, /pf/, /ch/, /au/, /eu/, /ei/. Examples in the English language are: /ee/, /ar/, /ou/, /oo/, /ai/, /ie/, etc.
Working with the phonograms is not only important for the acquisition of reading but also for the development of grammatical awareness. According to Montessori, the child starts to be fascinated by grammar between the ages of six and nine years; between the ages of nine and twelve grammar is then perfected. At the age of 13 and 14 the acquisition of grammar is finally complete.

Between the state of being able to write and learning how to read there may be a time lapse of weeks or even months. According to Montessori's experience (2001: 260), the child usually needs approximately 14 days from the time he begins to write until he begins to read. The confidence in reading, however, is usually gained after the perfection of writing.

As learning to read is a developmental process, one can, in Montessori's opinion, support the child on an educational level but never teach the actual activity of reading with the aid of materials. The child must voluntarily acquire the ability to read. For this reason, Montessori (2001: 256) sees no sense in the traditional teaching methods and exercises that are used when teaching children to read. The conventional school method of practicing reading aloud, using reading books to improve the articulation and to enable the teacher to oversee the child's reading process is, in Montessori's opinion (2003a: 121), "krankhaft und verhindert die Entwicklung des richtigen Lesens".

> Das Kind wird so um die Interpretation der geheimnisvollen Zeichen und um faszinierenden Enthuellungen gebracht. Es ist nur mehr gezwungen, seine Zunge zu trainieren, damit sie richtig ‚arbeitet'. (Montessori, 2003a: 121)

The child that reads out loud in class and is constantly interrupted and corrected by the teacher in order to improve his pronunciation and to make the text comprehensible to him, is not going to learn reading correctly. Montessori (2003a: 122) considers the act of reading aloud as "eine Vermischung von zwei Kommunikationsmoeglichkeiten". In other words, reading aloud is a mixture of the spoken and the written language which makes this form of reading an extremely complex activity.

Linguist Robert Scholes (1999: 104), on the other hand sees this implication as beneficial. According to him, reading aloud does not teach the child so much about reading but rather about certain aspects of speaking. He writes, "It is through reading aloud that children learn that written English has a spoken analog – speech that captures in articulation some of the aspects of the language that are indicated in writing." Scholes points to the fact that students learn for instance that the different speech sounds ending the words 'played' and 'raided' look the same when written down. In his opinion,

reading aloud may help children to acquire better speech patterns and gain knowledge in orthography. "[It] can be seen as a technique for creating a classless form of speech as well as instruction in the grammar of the language" (Scholes 1999: 105).

4.6.2. The acquisition of reading: A step-by-step process

In the course of her studies, Montessori realized that the child acquires reading in four stages: first the letter stage, later the word stage and finally, the sentence- and text stage.

As the child stays on the word level for a long time, the majority of the Montessori reading materials are orientated on this level. With the help of these materials, the child can initially process the exact sounding, by using the 'pink-blue boxes', and then the orthographically more difficult words, that, for example, include phonograms, by working with the 'green boxes'[27] or 'Phonogrammkommoden'. These words are separately learnt according to their sound and their degree of difficulty (Montessori 2001: 262). In doing this, the child starts to learn to classify words and word groups, at first with the help of concrete objects and then with the help of pictures and wordlists.

In this context, the meaning of other areas of learning for the acquisition of language becomes clear, for example Cosmic Education, especially in regard to the expansion of vocabulary. With the help of the 'nomenclature', which is the matching of name cards to specific objects or pictures, the child learns the meanings of different terms and increases his ability of reading by finding connecting factors and physically and mentally putting them into a certain order (Montessori 2001: 262-263). These cards are used by the child to identify and classify objects, people and things but also to establish an inner order, a hierarchy of terms that can comprise all kinds of areas of life (for example the term 'fruit' is hierarchically above 'orange', 'banana', 'apple' etc.).

On the sentence level, the child organizes pictures of sentences or reads short commands, which he then carries out quietly. If the child gets much practice in reading sentences, he

[27] The green boxes were designed to specifically address the problem of phonograms of the English language. Children work on 15 Phonograms, namely /ea/, /oa/, /o-e/, /sh/, /ar/, /i-e/, /a-e/, /ch/, /ee/, silent /e/, /or/, /ai/, /ir/, /er/, /u-e/.

gets a lot of joy out of matching pictures to short texts or reading picture books or specialized books with little text passages. As time passes, the child's interest in reading is finally aroused and he wants to read longer texts or books.

4.7. The conscious acquisition of grammar

> We must come to understand that the child reaches his knowledge of grammar by himself. (Montessori 1995: 123)

According to Maria Montessori, the child between the ages of six and twelve years shows a special sensibility for learning grammar. While up until this point in time the child has learned the grammatical structures of the language on a subconscious level with the help of the absorbent mind, he now works towards acquiring grammar on a conscious level, generally after having learned how to write. His first attempts at reading are simultaneously coupled with his interest in grammar, which is why Montessori believes that the child is ready to begin the conscious learning of grammatical rules at approximately the time when the child starts school (Standing 1957: 118).

The Italian educator combines these two aspects, reading and grammar, and forms them into a didactic principle: In contrast to traditional teaching methods, the grammatical analysis, that is the distinction between the different parts of speech and the parts of a sentence, actually takes place during the process of learning to read and not until after the acquisition of reading. (Montessori 1998a: 231). Axel Holtz, a teacher of special needs children, sees this method of teaching as a way to arouse a definite enthusiasm for learning grammar.

> Die Genialitaet von Montessoris „Paedagogik der Grammatik" liegt in der konsequenten Verwirklichung ihres Prinzips, die Schriftsprache fuer die Entwicklung des allgemeinen Sprachwissens und Sprachgefuehls als motivierende Lernmoeglichkeit fuer ein ueblicherweise motivationsschaedigendes Lernthema zu begreifen. (Holtz 1999: 146)

Parallel to the natural process of learning to read and write, Montessori starts the instruction of the grammatical structures beginning with words and later moving on to sentences.

4.7.1. Word-analysis – the parts of speech

The language materials used for learning the parts of speech and for analyzing sentences have a special feature: they are universally applicable to all standard languages, without having to make big changes to them, as the different parts of speech are represented by symbols. This makes these grammar materials also interesting for the teaching of foreign languages and offers a possible alternative to the traditional methods used in schools.

The active work with certain objects serves as a basis for learning the individual grammar symbols of the different parts of speech. For instance, a small farm made of wood and some plastic or wooden farm animals serve as a language resource in the Montessori classroom. Noun labels and grammar symbols are assigned to concrete objects. In that way the child actively gains his first experience in learning the different parts of speech and in reading. With the help of the grammar symbols the child is able to organize the enormous amount of words and to mentally put them in order. As a result, he understands their different functions on a sensorial level and consciously becomes aware of the structure of the language.

Montessori differentiates between dynamic and static parts of speech. The primary parts of speech, the noun and verb, are labeled with big symbols. The noun is represented by a big black pyramid, symbolizing the object's characteristics of being compact and static. For the actual work itself the child uses a two-dimensional representation of the pyramid, a big black equilateral triangle. All parts of speech that belong with the noun, such as the article, adjective, numeral and pronoun, have the shape of a triangle, each of which is smaller in size than the noun and has a specific color. The verb symbol is a big red ball or circle that represents mobility and dynamics. The part of speech that belongs with the verb, the adverb, is symbolized by a small orange circle. (Montessori 1998a: 234-239)

As a rule, the first part of speech that the child is introduced to is the noun. Starting with the child's own name and some concrete objects in the student's environment, he becomes aware that the names of all the things and persons around him are nouns that may be represented by the symbol of the big black triangle. Step by step, the other parts of speech and their symbols are introduced so that the child can successively put the grammatical structure of the language in order.

4.7.2. Sentence-analysis – the parts of a sentence

After the child has gained some experience with and knowledge about the various parts of speech, the educator introduces him to the sentence analysis materials by means of which the student learns to analyze the various parts of a sentence and their functions. Montessori sees as the central part of the sentence the verb in its role as the predicate. By playing the game 'Hunt for the predicate' the child becomes aware of the meaning of the predicate and its position in the sentence. This approach corresponds with modern linguistic grammar models that also accentuate the special positioning of the verb in the sentence (Olowson 1997: 31).

After having introduced the child to the predicate, the educator gives the student an overview of the different parts of the sentence by means of a material called 'Sentence Analysis Set'. This material helps the child to recognize the word order in sentences and the functions of the individual constituents of a sentence. In addition, it encourages the student to develop a good writing style and to produce longer texts.

To gain more insight into the names and functions of the various parts of the sentence the student is encouraged to work with sets of arrows and circles, in order to reconstruct the star-formed sentence analysis set. This material, as well as all the other language materials, is characterized by the feature of slowly progressing from concrete awareness to abstract understanding of sentence structure. By initially asking about the part of the sentence the child becomes aware of its function; later, when he is ready for more abstract learning, he is told its grammatical term.

4.8. The language material

4.8.1. General information on the language materials

> Das aeussere Material muss sich ... den psychischen Beduerfnissen des Kindes wie eine Leiter darbieten, die ihm Stufe fuer Stufe bei seinem Aufstieg behilflich ist; und auf diesen Stufen werden notwendigerweise die Mittel zur Kultur, zur hoeheren Bildung angeordnet sein. (Montessori, 1996b: 84)

Until entering a Montessori institution, usually between two and a half and three years of age, the child has subconsciously gathered many language impressions of his mother-tongue, which are at this time muddled up and not in the correct order. In order to establish a system in this chaos of language experience and to help the child to make connections between the various impressions, the Italian teacher created the assorted developmental materials which consist of the following three groups: the Exercises of Practical Life, the Sensorial Materials and the Didactic Materials (the materials for language, math, geometry and Cosmic Education).[28] The Language Materials serve the purpose of making the function of sounds, words and structures of his mother-tongue plain to the child. Step by step, the child's language development is expanded by guiding him from the concrete object to abstract thinking.

At first the child can understand and isolate the separate observations by practicing the Exercises of Practical Life and by using the Sensorial Materials. The Didactic Materials are loosely connected to the Exercises of Practical Life. The materials for language development, writing and reading and those that introduce the first experiences with different parts of speech are normally used at pre-school age. The material for the conscious learning of the grammatical structures (Grammar Boxes, Satzstern, etc.) can only be used when the child can read a little and has a basic understanding of the parts of speech. The young child needs concrete objects for his orientation, whereas the older child is satisfied with picture cards, as his tactile sense has been sufficiently developed for him to imagine the real object. The elementary school student, however, has had adequate experience to be able to understand the written word in its most abstract form (Anderlik 1999: 29).

[28] For a more detailed investigation of the Montessori Materials see Eichelberger (1997).

As the central topic of this paper is the acquisition of early writing and reading the materials that are used in Montessori schools for this purpose during the child's sensitive phase from 3 to 6 years of age will now be closely examined.[29]

4.8.2. The indirect preparation of writing and reading

> Der naheliegende Wert einer Erziehung und Verfeinerung der Sinne gibt durch die Erweiterung des Feldes der Wahrnehmungen eine immer zuverlaessigere und reichhaltigere Grundlage fuer die Entwicklung der Intelligenz. Durch Kontakt mit der Umgebung und ihre Erforschung baut der Verstand diesen Schatz wirkender Gedanken auf, ohne die seineem abstrakten Funktionieren Grundlagen und Praezision, Genauigkeit und Inspiration entzogen waeren. Dieser Kontakt wird durch die Sinne und die Bewegung hergestellt. (Montessori, 2001: 112)

When taking a closer look at Montessori's concept of teaching language according to the natural rhythm of the child it becomes clear that the Exercises of Practical Life and the Sensorial Materials do not only help the child learn a certain activity and establish a mental structure, but also play an important role in language education. Experiences with these materials are of great importance, in particular, for the acquisition of the spoken and written language.

Working with these materials is mainly done during the pre-school phase, because of the benefits at the time of the formation period and because possible deficits like problems in the development of fine motor movements, color blindness, visual or hearing problems are detected early and can be accounted for. Nevertheless, it is also possible to use them at the elementary and even secondary-school-age level.

The Exercises of Practical Life and the Sensory Materials do not only have the function of balancing out the deficits which may exist, but, because they involve physical activity and sensory work, they also bring variety into otherwise monotonous mental activities. Therefore, the materials help the child to relax and rest; they encourage the student to

[29] All the Language Materials are included in Haspel (1994a: 1-59).

find inner peace and to balance his thoughts. These factors result in the child's ability to achieve the deep concentration that is so important for learning.

4.8.2.1. The Exercises of Practical Life

The Exercises of Practical Life contain all the daily activities that one undertakes to establish, maintain, and embellish the living environment. That also includes the care of others and the self, as well as the ceremony and ritual of courtesy and hospitality. The Exercises for Practical Life, such as, for example, plaiting hair, tying a shoe, polishing metal or cleaning a table, support the child in his yearning to become independent and to take on self-responsibility.[30]

The materials have many qualities, although this may not be immediately apparent to teachers who do not know the Montessori Method. The Exercises of Practical Life encourage the practice of coordinating and perfecting certain movements, and many of the materials prepare the child's arms and hands for writing; in particular, the writing direction, holding of the writing utensil and the position of the hand whilst writing are practiced. Activities such as spoon exercises or folding cloths, both involve movements that go from left to right. When he is introduced to the spooning activity, for example, the child is taught to always spoon the beans or rice from the left bowl into the right one. (Haspel 1994b: 31-32)

Moreover, during the spoon exercise the child not only practices the firm grip but also a simultaneous relaxation of the wrist and arm. These movements will be required later when holding a pen and learning how to write with it. The spooning activity also contains an important preparation for reading because the child trains his eyes in repeating the left-to-right movement.

According to new scientific discoveries, activities which encourage the child to move and cross his hands rhythmically over the center of his body, as for example in plaiting hair, provide a very important experience which is relevant for and has an extremely

[30] For a detailed description of all the Exercises of Practical Life see Eichelberger (1997: 39-48).

positive effect on language development and learning to write because they activate and stimulate the right and left side of the brain equally. (Haspel 1994b: 32)

After having repeated an exercise several times, the terms for objects (nouns), actions (verbs) and descriptions (adjectives) are taught. As the child has learnt certain terms by actually getting to know and using concrete objects during a concrete activity, he can expand his vocabulary, build up grammatical connections and put them in the correct order. By consciously experiencing the different parts of speech, like nouns, verbs, and adjectives, he also learns to understand the underlying structures of his mother tongue.

4.8.2.2. The Sensory Materials

> [Die] Entwicklung der Sinne geht der einer hoeheren intellektuellen Taetigkeit voraus. (Montessori 2001: 159)

Because of the extremely varied sensory impressions that surround us every day and which are imprinted in our minds, we do not only produce our own personal reality, which is unique from person to person, but we also build up our own personality and intelligence. A deficit of sensory impressions, therefore, inevitably manifests itself in a reduced sense of reality, which is why Maria Montessori considers the training of the senses as being one of the most important principles of human education. If one neglects the training of the senses,

> knowledge of the properties of physical bodies become [sic] simply a part of our general culture, which is strictly limited to things that we have learned and remembered, and this is something sterile. In other words, when a teacher has taught the names of the colors according to the other method, she has given information on determined qualities, but she has not trained one to take an interest in colors. A child will know these colors, but he will forget them again and again, and his knowledge will at best remain within the limits of his teacher's lessons. (Montessori 1972a: 169)

For this reason, Montessori (2001: 190) does not see the mediation of education as the educational aim for the early stage of childhood but the teacher should be concentrating on being helpful to the child's development by awakening the child's interest and

providing materials that are going to build up and develop his personality. The materials that are beneficial for the sensory development are mainly of use during the pre-school phase and enable the child to be aware of the huge amount of experiences he has made in his environment up until his third birthday.

The Sensory Materials should not necessarily provide any new impressions but should help the child develop a system in order to be able to put these senses into a certain order. In Montessori's opinion, the child has no other possibility of recognizing objects except by their characteristics. By isolating a single character in the materials, the child's abilities of differentiation and registration are encouraged and the improvement of the senses is positively influenced. Montessori (1972a: 177) describes the sensory materials, in this context, as being "materialized abstractions" because of the abstract terms that are used, such as color, shape, dimension, composition of upper surface, weight, temperature, sound, smell and taste, and because theses things can be felt by the child, enabling him to analyze and classify these characteristics.[31]

Montessori considers the actual touching and handling of the materials as the basis for every mental development; in her opinion, this is the only way to understand abstract things and their connections. The refinement of the sensory perception and its conscious awareness, are closely connected to the general language development. Sensory perception is not only important for the acquisition of the spoken language, as practicing with the materials also involves constant verbal commentary, but also for the learning of both reading and writing (Haspel 1994b: 32-33). The conscious and concentrated work with the Sensory Materials is especially beneficial to the optical perception which is important for the process of learning to write and read. With the help of the sensory materials that aid the development of the audio-perception, the child learns to consciously differentiate between noises and sounds. In training the acoustic sense, the child's language-perception of his own language and that of others around him is refined. The large amount of various sensory impressions that the child receives from his different sensory organs, leads to a wide range of possible lingual expressions. Therefore, a large variety of experiences leads to a wide selection of language. When practicing the exercises for the development of the tactile sense, the child consciously

[31] For a detailed description of the Sensory Materials see Holtstiege (2000: 104-107).

touches and feels objects. Thereby, he learns the differences in the surfaces of the materials (such as smooth, rough, cold, warm, hard, soft, heavy, light, etc.) and in dimension (such as large, small, long, short, fat, thin,…), gaining a sense of his own environment. After repeated work with these materials, the child is taught the verbal expressions that correspond to each of his sensory experiences by means of the three-period lesson, as mentioned in 2.2.1.2. During the lesson the child learns the term (adjective) for an abstract character trait of the object that up until now he has been working with only on a sensory level.

Terms that have been learned by using the sensory perception are more easily transported to the active language use, because the contents of the language lesson are directly related to the concrete sensory experience and the abstract description. As already mentioned, several of the Sensory Materials indirectly prepare the child's hand and arm for the writing movements and for the writing posture, direction of writing and the holding of the writing implement in particular.

The position of the hand and the sensual perception with the 'Rough and Smooth Graduation Tablets and Boards' reinforce the training of 'the relaxed arm' and 'the light hand', because the child learns to apply a light touch with his fingers on the rough sandpaper areas of the trays. These sensory exercises therefore form a direct preparatory stage for working with the Sandpaper Letters.

Sensory Materials, such as the 'Cylinder Blocks' and the 'Geometric Cabinet' serve the purpose of indirect preparation of the child's hand for holding a pen, as the child holds the small button in the center of the cylinder and other geometric insets automatically with the three-finger-grip.

Moving the fingers around the figures of the Geometric Cabinet and the leaf-shaped insets of the 'Botany Cabinet' prepares the hand for guiding the pen on paper. This activity not only relaxes the child's wrist but also, because of following the shape of the figure, the hand is moved in a certain way and therefore his writing mechanism is activated. Finally, by drawing around the figures with a colored pencil, then copying the

figure onto a piece of paper the child learns to produce a conscious and steady movement of the pencil.

4.8.3. Direct preparation for writing

4.8.3.1. ‘Metal Insets’

This material consists of two boards containing ten metal insets and frames: five figures with straight lines (square, right-angle, triangle, pentagon and trapezium) and five figures with bent lines (circle, ellipse, egg-form, flower-shape, circularly arched triangle). The insets are each cut out of a separate square metal plate (14 x 14) into which they can be put back again. The metal plate is pink and the figure which fits into it is blue. (See Appendix, Figure 3.)

If a geometric figure is taken out of the frame and put on a piece of paper, the child draws around the inner edge of it with a colored pencil. After this, he puts the fitted figure on the paper, so that it completely hides the drawn shape and draws around the form with another colored pencil. Now the child can crayon in the drawn figure from top to bottom with parallel strokes.

The grip with thumb, index finger and middle finger, known as the tree finger grip that has been formerly prepared with the assorted Sensory Materials, in particular with the Cylinder Blocks (see Appendix, Figure 4), is practiced here again when the Metal Insets are taken out of the frame by their buttons. With the help of these materials, the child can develop the necessary eye-hand coordination. The exercises serve the purpose of preparing the child’s hand for writing, because the hand moves around the set form of the given figure (this movement is later found in the letters made of sand paper). In the process of producing the small lines on paper the child also learns to draw exact independent lines and gains sound control of the pen movement. The ability to do this will enable him to enjoy writing and usually leads to a more fluent and beautiful writing-style later on. Apart from this, the child develops the necessary movements in producing

the letters and develops a feeling for colors and shapes. While doing this exercise, the child does not think concretely about writing and enjoys the fun of drawing.

4.8.3.2. 'Sandpaper Letters'

The Sandpaper Letters (see Appendix, Figure 5) are language materials that are directly concerned with writing, because they are used to practice the actual production of graphic signs. The single letters of the alphabet are cut out of sandpaper, large in dimension and each of them is glued onto a piece of pink or blue cardboard; vowels, because of their signaling quality onto blue, consonants onto a pink background.

This material does not only serve the purpose of getting to know the letters but also of directly preparing the child for writing and reading and building up words. The main focus here is put on the tactile and kinesthetic experience of letters. The child absorbs the shape of the letters not only with his eyes and ears but also with his sense of touch and the memory power of his muscles. Exercises such as those on the 'sand-tray'[32], writing with fingers or writing on a variety of materials can be done in addition, parallel to doing the exercises with the Sandpaper Letters.

The teacher shows how to follow the letter in the writing direction with the index and middle finger and pronounces the sound clearly.[33] The child, who is doing the exercise, touches the sandpaper letter lightly with his writing hand, in the course of the movement. He can check his own mistakes while doing so, as his sense of touch tells him when he has slipped off the letter with his fingers, since the surface of the cardboard is smooth and that of the letter is rough. In doing this exercise, the respective movements of the arm and hand are developed and become competent of reproducing the sign that the eye can simultaneously see. As a result, the writing symbol is registered in the brain in three ways: by looking at it, touching it and hearing it. Therefore, there is an association of the alphabetic sound with the letters which take place by activating the visual, audio and

[32] The sand-tray is a tray filled with sand in which the child can write letters and numbers with his index and middle fingers.

[33] When saying the letter aloud the teacher and the child only pronounce the phonetic sound and not the name of the letter in order to avoid confusion when the child begins reading and writing later on. The letter /b/, for example, is pronounced [b] instead of [be:]. For a more detailed account cf. Seldin (2000: 23).

tactile perception in combination with the muscle awareness. Because of the activation of these four feelings, the child imprints the letters simultaneously in his visual, motor and audio memory.

> Die Sprache muss materialisiert und gefestigt werden. Deshalb sind geschriebene oder durch Schriftzeichen dargestellte Worte erforderlich [...] Waehrend der Laut bei der Entwicklung der gesprochenen Sprache unvollkommen wahrgenommen werden konnte, fixiert nunmehr das dem Laut entsprechende Schriftzeichen waehrend des Unterrichts – der darin bestehnt, einen Buchstaben aus Schmirgelpapier vorzulegen, ihn deutlich auszusprechen und ihn dann anschauen und beruehren zu lassen – nicht nut ganz klar die Wahrnehmung des gehoerten Lautes, diese Wahrnehmung wird vielmehr mit zwei weieren asoziiert: der motorischen und der visuellen Wahrnehmung des geschriebenen Zeichens. (Montessori 2001: 277-278)

This teamwork of the senses enables the child to recognize the form of the writing symbol in a much shorter time than is possible when using conventional methods in which the child only learns the visual picture. It is only by frequently tracing the shape of the letters and by saying the respective sounds that the child can mechanically register a connection between the letters of the alphabet and their sounds (Montessori 2001: 279).

In order to isolate the sound of the separate letters, the teacher will name words, if the child does not do this on his own accord that begins with the respective sound: e.g. [m] for ‘man’ or [d] for ‘dog’. Now the child can be motivated to find words that have the respective sound at the beginning, in the middle or at the end of the word. The isolation of sound plays a deciding role in the preparation of learning how to write. In order to be able to write a word, the child must know how to separate the sounds of every letter. In the course of doing so, one achieves that children isolate vowels earlier than consonants. This leads to the fact that children do know that ‘Arnold begins with [a:] but that they still believe the word ‘Barbara’ begins with [ba:] and not with [b]. This phase is the beginning of the isolation of sound.

In order to help the child isolate the various sounds, Montessori developed the so-called ‘Lautkommoden’ for the beginning, middle, and end sounds of words. For example, in the ‘Anlautkommode’ concrete objects that begin with the same sound (fish, feather, film, etc.) are stored. These exercises prepare the child for both writing and reading, as

they help him to recognize sounds at the beginning, later in the middle and eventually at the end of a short phonetic word.

4.8.3.3. The 'Moveable Alphabet': phonetic word analysis

When the child has become acquainted with the Metal Insets and the Sandpaper Letters, the time has come to introduce the Moveable Alphabet (see Appendix, Figure 6). This material contains loose letters of the alphabet that are of the same size as the Sandpaper Letters and are cut out of cardboard, synthetic material or wood. Again, the vowels are pink and the consonants are blue. With this material, the child can put letters together and form words by taking a spoken word, analyzing its sounds and then putting the respective letters together to form the word. Here, it is important that the words have phonetically accurate letter combinations[34].

> Der dritte Faktor beim Schreiben, den ich in meiner Methode beruecksichtige, also die Zusammensetzung des Wortes, beinhaltet ja gerade die Analyse des Wortes mit Hilfe von Gegenstaenden oder Schriftzeichen. Das Kind zerlegt also das gehoerte Wort, das es als Ganzes wahrnimmt und dessen Bedeutung es auch kennt, in Laute und Silben, um es in das mit dem beweglichen Alphabet gebildete ‚Wort' umzusetzen.
> (Montessori 2001: 277)

The heard word is hereby taken apart into its own sound components and put together again, using the respective letters of the alphabet. As this exercise deals with the analysis of sound and its conversion into graphic signs, the teacher may not call upon the child to read the emerging word out loud. The idea behind this material is that children, with the help of the Moveable Alphabet, can write without actually having to write themselves. In order to get the writing process started, the writing takes place with the help of this medium.

To motivate the child to assemble words with the Moveable Alphabet at their own accord and then write them in their writing booklet, one can stimulate him by using concrete objects or pictures that, in the beginning, must be phonetically accurate. With

[34] This means that the words are exactly written as they are pronounced.

the help of the sound analysis, which directly results in spontaneous writing, the mechanical writing as well as the spoken language is perfected. Consequently, the phonetic analysis of the word is an important pre-condition for reading.

4.8.4. Direct preparation for reading

4.8.4.1. Phonetic primary reading material

Generally, primary reading materials are phonetic, which means that the words are exactly written as they are pronounced; therefore, every written letter represents a sound.

The 'Pink and Blue Boxes' are the first reading material that the child encounters in a Montessori classroom. The student works on a consecutive three-stage basis, first of all with words with single syllables (pink boxes) and then with words with double syllables (blue boxes), that are classified according to the stem vowel and the accented syllable. To see an example for the 2nd stage of the pink boxes (in the German language) look at Appendix, Figure 7.

1st stage: five concrete objects and five small matching word cards
2nd stage: five small picture cards and five small matching word cards
3rd stage: six reading charts featuring several words, sorted according to their length

Other reading materials comprise reading tags that the children are told to match to concrete objects in their surroundings and phonetically accurate reading boxes that contain pictures and small word cards, which have been put into order according to their amount of syllables. Another way for the children to improve their reading ability is the phonetic reading classification material where small picture cards are matched with their respective word cards. The picture cards which have the written word on the reverse side have the function of enabling the child check his own work.

4.8.4.2. Working on phonograms

Letter combinations, which are articulated as one sound, are a big problem for the child in the process of learning how to spell and read. In the German language there are between 24 and 36 phonograms and only six of them are perceivable. These six phonograms (/sch/, /ch/, /pf/, /au/, /eu/, /ei/) are very important for the child's spelling development, because he needs these letter links in order to be able to write and read comprehensively. As a consequence, German-speaking Montessori environments provide separate exercises for the work with these phonograms. Apart from the sandpaper letters for the alphabet there are also sandpaper letters for phonograms, which are also called 'Double Sandpaper Letters'. They are available for a number of languages. Montessori commissioned some of her English-speaking teachers to develop a reading program for the English language. Part of it is a set of sixteen double letter combinations for the English language which are made of sandpaper and glued on green card boards. They include the phonograms /er/, /ee/, /ar/, /ou/, /oo/, /ai/, /or/, /ue/, /ie/, /au/, /oa/, /sh/, /ch/, /oy/, /th/ and /qu/.

The child comes into contact with phonograms in the course of writing and reading, so there are a number of possibilities to work on them:

1. **Sandpaper Letters:**

   If a child wants to write 'Schule', 'Pferd', 'Auto', etc. the teacher will introduce the respective phonogram by working with the sandpaper letters.

   For instance, in order to introduce the phonogram /sch/ to the child, the teacher goes to get the sandpaper letters /s/, /c/, /h/ and hides the sandpaper phonogram card /sch/ under the work carpet. After a short presentation of the three single letters (three-stage-lesson) the teacher presents the phonogram /sch/:

   Teacher: 'There is a certain order. First the /s/, then the /c/ and lastly the /h/. If I put all the three letters together, (the teacher pushes the sandpaper letters together, in doing so, the clapping sound must be audible), then the result is something quite special (the teacher gets the /sch/ card from under the carpet, which should have a surprising effect). That is a /sch/!' (See Appendix, Figure 8.)

   The other phonograms are demonstrated in the same way.

2. Phonogram Exercise Booklets:

If children come across phonograms whilst reading and find them difficult to understand, the teacher will offer them the possibility of compiling a phonogram exercise booklet.

The material for the first phonogram exercise book is a box that comprises five objects; one of them contains a phonogram and all the others are phonetic words, for example: 'Rose', 'Hut', 'Bild', 'Kerze', 'Fisch'. The objects are laid on the floor vertically in a straight row, the object with the phonogram being the last. The teacher slowly writes the name of each object on a piece of paper, and the child matches the correct name tag to the correct object. In this case the word 'Fisch' contains the phonogram /sch/ written in red to contrast the other letters. The child now needs reading material in order to carry on working.

3. 'Phonogram Chest of Drawers' or 'Phonogram Boxes':

This material is built up in the same way as the pink and blue boxes (3 stages: 1st - concrete object and reading card, 2nd - picture and reading card, 3rd - phonogram list). The isolation is the special feature in this case: All the words are phonetically accurate and only contain one phonogram, for example 'Seil', 'Pferd', etc. On the small reading cards and lists every phonogram is written in red. (See Appendix, Figure 9)

4. 'Small Chest of Drawers with Various Phonograms':

This material represents the last stage in working on phonograms. There are a lot of assorted picture cards in a chest of drawers which are muddled up and the child must find the correct word card to match them. Now the words contain more than one phonogram, for example 'Pfeife', 'Schlauch', etc.

4.8.5. Grammar Instruction

4.8.5.1. The parts of speech

4.8.5.1.1. Grammar Symbols

As it is important to understand the structure of a language when writing creatively and comprehending sentences and texts when reading, Montessori finds it important to make the function of a word clear to the child. As soon as the child starts to put words together and reads he must be introduced to the parts of speech. With the help of the Grammar Symbols, the child can understand the single parts of speech on a sensory level and he learns the underlying structures and connections between the different words and terms.

At this stage in language development the child is introduced to the basic and most important parts of speech, which means that he will not learn the terms of and grammar symbols for e.g. auxiliary verb, participle, verb-copula, abstract noun and spiritual noun. Montessori believes that these terms are far too advanced for children beginning to read and will therefore be taught much later at the secondary-school level.

As it has already been mentioned, one of Montessori's fundamental principles is to use what the child already knows as the basis for learning a new concept. Therefore, the first part of speech which the child works on is the noun, because he has already become familiar with the idea that each object and person has a name. This name, the noun, is now supplemented by a symbol, a large black triangle.

Montessori distinguishes between static and dynamic parts of speech. Static parts of speech are the noun, article, adjective and pronoun which are represented by triangles, varying in shape, color and size.[35] The symbol for the article is a small blue or light brown triangle. The adjective and the numeral' symbol have the same shape, a triangle that is a little bit bigger in size than the grammar symbol for the article; the adjective's

[35] Unfortunately there is a discrepancy between colors of the grammar symbols and the advanced grammar materials for the analysis of the parts of speech, such as the grammar boxes and the grammar command boxes. As a result many Montessori schools decide to adjust the color of the symbols to those of the grammar boxes.

symbol has a blue or dark brown color, while the numeral's is dark blue or grey. The pronoun is represented by a purple or green isosceles triangle. Dynamic parts of speech, on the other hand, are the verb, adverb, preposition, conjunction and interjection; they add life and movement to a sentence. The verb is represented by a big red circle, the adverb by a little orange or pink circle. The symbol for the preposition is a green or purple crescent, while the conjunction is represented by a small pink or yellow strip and the interjection by a gold or blue keyhole-shape. (See Appendix, Figure 10)

All parts of speech are presented separately with a symbol and a name description. There are 10 different grammar symbols, each representing a specific part of speech, which are consecutively learned in a certain order: first the noun, then article, adjective, numeral, verb, preposition, adverb, pronoun, conjunction and interjection. The teacher may choose to wait several weeks or even months before introducing the child to a new part of speech. Meanwhile, with the help of different other materials, for example creating a parts-of-speech exercise booklet, reading exercises, etc., the child is able to understand and to become more familiar with the respective part of speech.

4.8.5.1.2. Grammar Boxes

This material consists of eight boxes that help the child develop the skills of grammar analysis and interpretive reading. Beginning with the article/noun box the child successively works with the other seven boxes, each of which adds a part of speech to slowly aid the child in the ability of analyzing grammar. The sloping compartments are printed in the colors that highlight each part of speech and correspond to the grammar symbols. (See Appendix, Figure 11)

1ST BOX: **ARTICLE + NOUN**

2ND BOX: NOUN + ARTICLE + **ADJECTIVE**

3RD BOX: NOUN + ARTICLE + ADJECTIVE + **NUMERAL**

4TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + **VERB**

5TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + VERB + **PREPOSITION**

6TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + VERB + PREPOSITION + **ADVERB**

7TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + VERB + PREPOSITION + ADVERB + **PRONOUN**

8TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + VERB + PREPOSITION + ADVERB + PRONOUN **+ CONJUNCTION**

9TH BOX: NOUN + ARTICLE + ADJECTIVE + NUMERAL + VERB + PREPOSITION + ADVERB + PRONOUN **+** CONJUNCTION + **INTERJECTION**

This material also includes phrase and sentence cards with accompanying grammar cards which are printed in the same colors as the respective parts of speech. When working with the Grammar Boxes the child reads the phrase and sentence cards and lays out the grammar cards in such a way that he constructs the particular phrase or sentence. Then he matches the Grammar Symbols to the individual parts of speech by putting them above the grammar cards. Afterwards he writes the phrase or sentence and draws the matching Grammar Symbols in a booklet. (See Appendix, Figure 12)

The work with the Grammar Boxes connects the Grammar Symbols with a written text. By doing these activities over and over again as he works with all eight boxes the child eventually learns the names of the individual parts of speech. Since the child himself can correct his mistakes by looking at the phrase and sentence cards and does not need a teacher to do so, the Grammar Boxes are ideal for working independently during Freiarbeit.

After the introduction of the different parts of speech and working with the Grammar Boxes, the child can analyze short texts by matching the respective symbols to single words in a sentence. By putting the Grammar Symbols above the individual words, the word order and structure of the sentence becomes clear (see Appendix, Figure 13). These materials are therefore of great help to the child in learning reading and composing his own texts, as they not only explain the function of the different parts of speech but also make the variety of sentence structures (affirmative clause, interrogative sentence, imperative sentence, etc.) apparent to the child.

By analyzing the sentence the child gains a deeper language comprehension and is able to develop a good writing style. The child also becomes conscious of the construction of thoughts and of the inter-connections in language. All theses factors are important in order to be able to understand the meaning of reading material and to develop a creative, independent writing style.

4.8.5.2. The parts of a sentence

4.8.5.2.1. Hunt for the predicate

When the child knows the Grammar Symbols well and has worked with the Grammar Boxes he is ready to explore how sentences are constructed. Since according to Maria Montessori, the sentence only comes to life with the verb, the predicate is used as the starting point for the activity of sentence analysis in the Montessori Method. Step by step, beginning with the predicate the child analyzes the remaining constituents of a sentence. The first activity a child will be confronted with when learning the parts of a sentence in a Montessori environment is the game 'Hunt for the Predicate' (see Appendix, Figure 14).

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The teacher writes a sentence on a slip of paper, for example 'Bring a book!' After having read the command silently the child gets up and carries it out. The teacher asks, "Which part in the sentence told you what to do? Where is the action word?" The child points at 'bring'. The teacher then places a big red circle above the verb and tells the

child that the verb in a sentence has a special name; it is called predicate. Afterwards the teacher writes other sentences on slips of paper, including declarative and interrogative sentences. By placing the verb symbol above the predicate of various sentences the child realizes that the position of the predicate changes according to the type of sentence.

4.8.5.2.2. Sentence Analysis Chart – the 'Satzstern'

The Sentence Analysis Chart has the purpose of making the sentence's word order as well as the function of the individual parts of a sentence visible to the child. Furthermore, it encourages the student to write longer texts and to improve his writing style.

This material consists of a square board, on which the symbols of the different parts of a sentence, that is circles and arrows, are printed. The symbols are arranged in such a way that they take on the form of a star, which is the reason for the material's German name 'Satzstern'. The basic parts of a sentence, the subject, predicate and object are positioned on a horizontal axis with the predicate in the center, the subject to the left and the direct object to the right. Above and below, organized in a star-formed direction around the predicate, are the additional secondary parts of the sentence: the indirect object and the various adverbs. All the parts of speech are connected with the predicate by arrows that have questions printed on them, which indicates that the parts of the sentence are directly related to the predicate. By building sentences and utilizing language in a playful manner, the child recognizes that the separate parts of the sentence are arranged in a certain order and relate to each other in a specific way. Through questions used for sentence analysis, such as Who?, What/Whom?, Where?, When?, etc., the student is guided from concrete awareness to abstract understanding of the structure of a sentence.

The following is an example of how a Montessori teacher would introduce the Sentence Analysis Chart in class. The mother tongue in this case is English. Usually the instructor gathers two or three children around him and shows this material to them at the same time. (See Appendix, Figure 15)

1. The students are asked to give the name of an action verb, for example ‘writes’. The teacher writes ‘writes’ on a slip of paper and puts it on the red circle in the middle of the board.
2. He then asks, “Who writes?” The children answer with a noun, e.g. ‘Nicole’. The teacher writes ‘Nicole’ on another slip of paper and puts it on the big black circle to the left of the predicate.
3. Now looking for the object, the teacher asks the question, “What does Nicole write?” – ‘a letter’ is placed on the smaller black circle to the right of the predicate.
4. The teacher asks, “To whom does Nicole write a letter?” – ‘to her friend’ is put on the small black circle above the object.
5. “Where does Nicole write a letter?” – The teacher puts ‘in the garden’ on the orange circle at the end of the arrow saying ‘Where?’
6. The teacher asks, “When does Nicole write a letter?” – ‘in the morning’ is placed on the orange circle at the end of the arrow saying ‘When?’
7. “How does Nicole write a letter?” – The teacher puts ‘cheerfully’ on the orange circle at the end of the orange arrow that has ‘How?’ written on it.
8. The teacher continues to ask questions to find other possible parts of the sentence and with each answer the sentence grows. It is important that the children and the teacher repeat the whole sentence again and again in order to keep track of its meaning.

After the children have been introduced to the Sentence Analysis Chart they are encouraged to build sentences on their own. As a next step the students take the individual slips of paper from the Satzstern and try to arrange the parts of the sentence in different ways. By transposing the words they come to understand the syntax of the language. The students become aware of the word order of the respective language and of the fact that the constituents of a sentence may each consist of one or more words that can only be moved together as a whole. An English speaking child, for instance, would find out that subject, predicate and object have to remain in that order to make sense. A German speaking student, on the other hand, would be made aware that regardless of how the sentence is reconstructed the predicate is always the second constituent of the sentence. Furthermore, the child apprehends that the part that is in the beginning of the

sentence always puts emphasis on the sentence. By rearranging the words the student realizes that the meaning of the sentence changes. (See Appendix, Figure 16)

The Sentence Analysis Chart helps the child to create longer texts. Written expression is helped greatly by extending a simple sentence. This is done by inventing answers to the different questions expressed in the arrows, writing them down and adding them to the existing text. Usually the result is a lot of information, but poor writing. Consequently, the student is encouraged to sort the information, arrange it in logical sequence and add appropriate verbs. A sentence such as 'My father fried a fish.' Can be made into an imaginative composition by giving answers to 'how', 'where', 'when', 'with whom', 'why', etc., and then adding attributes and appositions. In that way the child produces his own short story, essay or diary of events.

4.8.5.2.3. Sentence Analysis – First work with arrows and circles

The first work with arrows and circles introduces the child to the subject, predicate and object. It assists the student in analyzing the basic parts of a sentence and in identifying their function. This material consists of a chart and a box with wooden circles and arrows with the printed questions 'Who is it that…? What is it that…?' and 'Whom? What?' (See Appendix, Figures 17 and 18)

The teacher writes a sentence consisting of subject and predicate on a slip of paper, e.g. 'Peter runs.' He reads it aloud and asks for the action word. The children say, "runs". The teacher puts the red circle on the table and cuts off the predicate 'runs', which he puts on the circle. Then he asks, "Who runs?" – "Peter". The teacher places the black arrow with the question 'Who is it that…? What is it that…?' written on it to the left of the predicate and the big black circle next to the arrow. He puts the subject 'Peter' on the black circle.

This activity is not commented on since the focus should remain on the visual perception. The main purpose of this exercise is that the child learns to ask correctly for the basic constituents of the sentence. Right now the student needs the printed arrows to

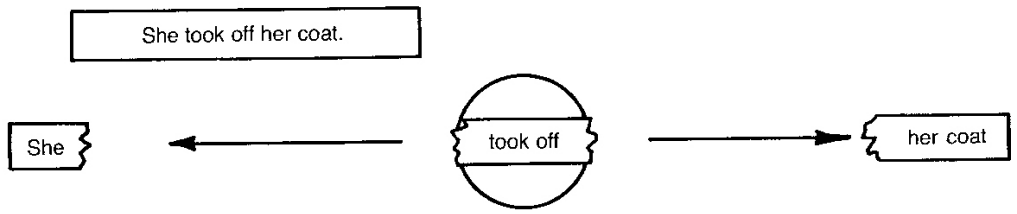
fulfill this task but after some practice he will be able to do this without having to read the questions. At a later stage, the child will be introduced to the names of the various parts of a sentence.

The student is then encouraged to work on his own with a variety of other sentences that have already been prepared by the teacher. From then on, step by step, the teacher will introduce a series of different sentence types. When working with them, it is vital that the child is able to recognize one and the same function of parts of a sentence, for instance if the sentence consists of two subjects.
The following types of sentences are analyzed independently by the child in the same way as above:

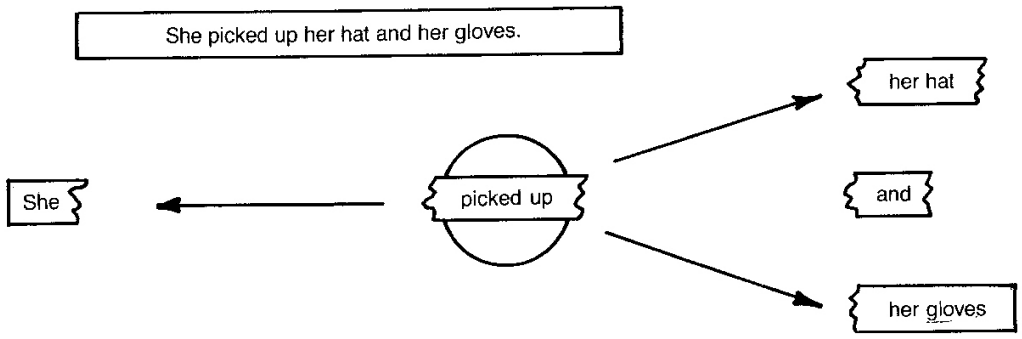
- 1 subject and 1 predicate
- 2 subjects and 1 predicate
- 1 subject and 2 predicates
- 1 subject and 1 predicate and 1 object
- 1 subject and 1 predicate and 2 objects
- 2 subjects and 1 predicate and 1 object
- 2 subjects and 1 predicate and 2 objects
- 1 subject and 2 predicates and 1 object
- 2 subjects and 2 predicates and 2 objects

The next examples are taken from Motz (1994: 131) and show how children work with the following sentence types.

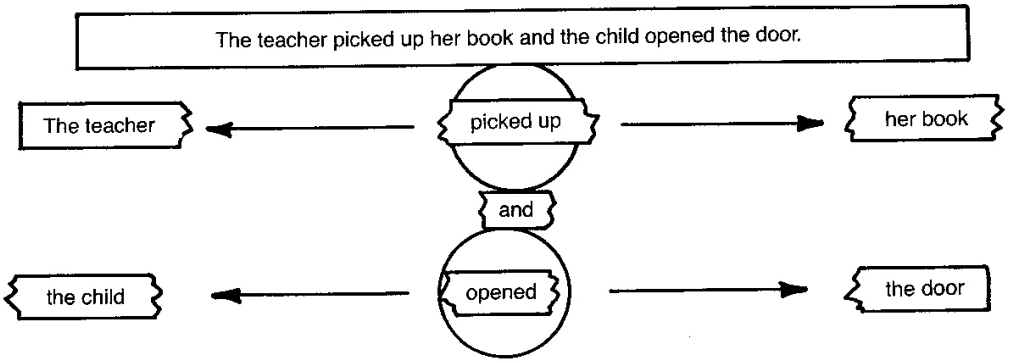
- 1 subject, 1 predicate and 1 object:



- 1 subject, 1 predicate and two objects:



- 2 subjects, 2 predicates and 2 objects:



It is important to mention that in this paper the first work with arrows and circles is used as an example to show how sentences are analyzed in a Montessori environment. There are more advanced materials for sentence analysis, namely other charts and boxes with arrows and circles, with which the child can reconstruct the Satzstern and is able to learn the names and function of the different parts of a sentence. Since these materials are usually used at a later stage in language development when the child is much more advanced in reading and writing, they will not be discussed here.

5. Conclusion

The concern of this thesis has been the Montessori Method and first language acquisition, in particular early speech, writing and reading.

While the first chapter discussed Maria Montessori's overall educational concept to explain the underlying principles of her theory, the second chapter dealt with first language acquisition and various linguistic theories, including Noam Chomsky's Universal Grammar. The aim was, in particular, to examine Montessori's views on language acquisition in comparison with existing linguistic theories and empirical findings. By analyzing and comparing Montessori's opinion with those of other linguists it became apparent that, although Maria Montessori looked at the acquisition of the spoken language from an educator's point of view, she, nevertheless, had some fascinating insights about how children learn their mother tongue. Interestingly, Chomsky and Montessori claim that language is innate and triggered by biological factors. However, in contrast to Noam Chomsky, a follower of the content approach, who believes that children are born with a blueprint in their mind, the so-called Universal Grammar, Maria Montessori thinks that language in human beings is not inherited but that children are endowed with a mechanism that helps them to absorb language from their surroundings. She calls this apparatus absorbent mind. Therefore, like Dan Slobin, Montessori clearly is a supporter of the process approach. It is a fascinating fact that both, Montessori and Chomsky, propose that the human mind is made up of various separate mental organs, one of which is specifically used for language. In Montessori's view after the individual psychic organs have fully developed they unite to create the child's overall cognitive intelligence. Chomsky does not talk about this notion in his writings, probably due to the fact that his main concern is the process of language acquisition and not the child's overall development. When taking Jean Aitchison's analysis about content and process approach into consideration it becomes apparent that it is unlikely that children are born with preordained information about language which is activated by only a limited amount of language exposure. Two reasons give an explanation for this assumption: children do not seem to have strong preceding expectations about the spoken language and they create sentences that are not viewed as linguistically correct utterances. By examining Lenneberg's proposition that language is

a biologically controlled behavior it could be demonstrated that language is indeed innate. It has been pointed out that although language is a behavior that is innately guided careful nurturing is essential in order to reach its highest potential. As a result, the linguistic environment and its influence on language acquisition were looked at in greater detail. In particular, the role of caretaker language and correction, expansion and extension were discussed. Even though studies suggest that motherese is preferred by infants to adult conversation and attracts children's interest, linguists agree that this way of talking to children does not seem to be vital for language acquisition. It has been pointed out that early exposure to a verbally rich environment is crucial in learning language; however, research confirms that adult input has only limited effect on learning one's mother tongue, a notion that was supported by the fact that correction and expansion are ineffective tools in language learning. It was demonstrated that extensions, on the other hand, are successful because they provide a rich lingual environment. As a consequence, it can be argued that language uptake matters more than language input. After having discussed the role of critical periods in language acquisition and introducing Montessori's concept of three consecutive sensitive periods, the various stages in the development of speech were examined. Since the focus of this paper is on the acquisition of early speech, special emphasis was put on the one- and two-word stages. Important topics such as the naming insight, the use of overextensions, omissions, pivot grammar, the beginning of awareness of syntactical structures and the types of grammatical items that are acquired during that time were discussed.

Part 3 of this thesis finally concentrated on the acquisition of early writing and reading with special regard to the Montessori Method. The intention of the first part of this chapter was to explore some topics connected with writing and reading and look at similarities and differences between the acquisition of the spoken and the written language, always with Maria Montessori's concept in mind. Regarding the acquisition of writing, Carol Chomsky, comes to the same conclusion as Montessori, namely that writing should precede reading. Wile Chomsky explains her proposition with the fact that speaking and writing are similar in that they both are concerned with the production of language and can be learned together at the same time, Montessori argues that writing is less complex than reading and naturally tends to be acquired first. They both agree on the fact that learning how to write should take place in preschool. Three problem areas of

early writing were discussed: invented spelling, word boundaries and the activity of handwriting. By analyzing children's early writing one may draw the conclusion that by inventing their own spellings and not being aware of traditional word boundaries children make intelligent guesses about the nature of language, in the same way as they do when learning how to talk. When looking at the issue of handwriting it became clear that writing consists of two different processes: the movement of the hand while holding the writing instrument and the intellectual activity of putting letters together to form a word. In contrast to Barton who argues that children should simply be allowed to use computers with keyboards, Montessori offers a different approach by providing exercises that train both of these activities separately. It was pointed out that similarly to the development of the spoken language the acquisition of interpretive reading cannot be taught. Furthermore it is an ability that is genetically predetermined and environmentally triggered. After examining these propositions in detail, the three different types of reading were discussed. Montessori refers to 'decoding', the graph-to-sound correspondence that is used in phonics, as mechanical reading. Interestingly, in contrast to linguists who argue whether phonics or the whole word method is an appropriate way of teaching children to read, Montessori considers phonics as an adequate approach in the beginning of the reading process, since she regards mechanical reading as the natural preliminary stage of interpretive reading. It has been shown that linguists, like Scholes, disagree with Montessori on the fact that the traditional school method of practicing reading aloud is not considered a successful tool in learning how to read. In Scholes opinion, reading aloud may lead to a better understanding and knowledge of speech patterns and orthography. Although the acquisition of grammatical structures is important for both writing and reading, Montessori's approach for learning about the parts of speech and the constituents of a sentence were only briefly examined, which is due to the fact that this paper only deals with early writing and reading. The second part of this chapter included various Montessori Materials designed to help the child learn how to write and read. By providing descriptions, pictures and examples of how the materials would be introduced to children the attempt was made to show the practical application of Montessori's theoretical concept of the acquisition of early writing and reading in a classroom setting.

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Appendix

FIGURES

Ich habe mich bemueht saemtliche Inhaber der Bildrechte ausfinding zu machen und ihre Zustimmung zur Verwendung der Bilder in dieser Arbeit eingeholt. Sollte dennoch eine Urheberrechtsverletzung bekannt werden, ersuche ich um Meldung bei mir (mpouzar@hotmail.com).

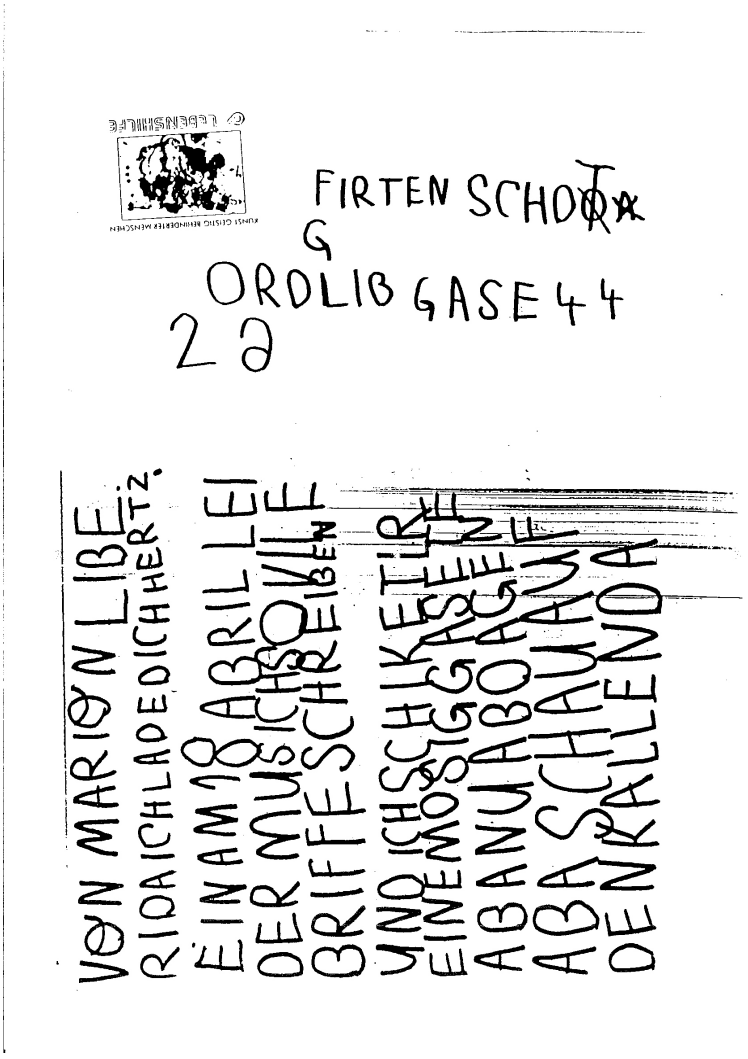

Figure 1: Problems with spelling and word boundaries (mit freundlicher Genehmigung Montessori Schule Huettelbergstrasse, Wien)

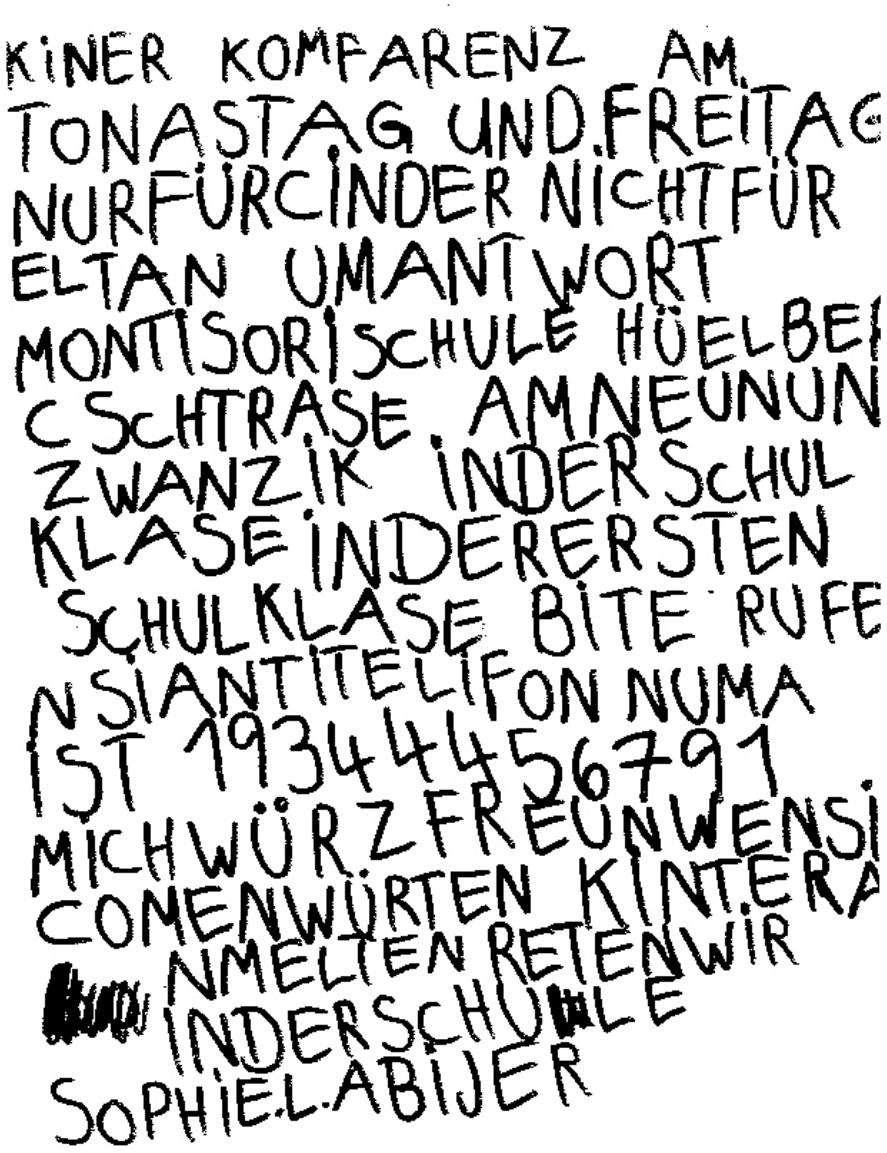

Figure 2: Problems with spelling and word boundaries (mit freundlicher Genehmigug Montessori Schule Huettelbergstrasse, Wien)

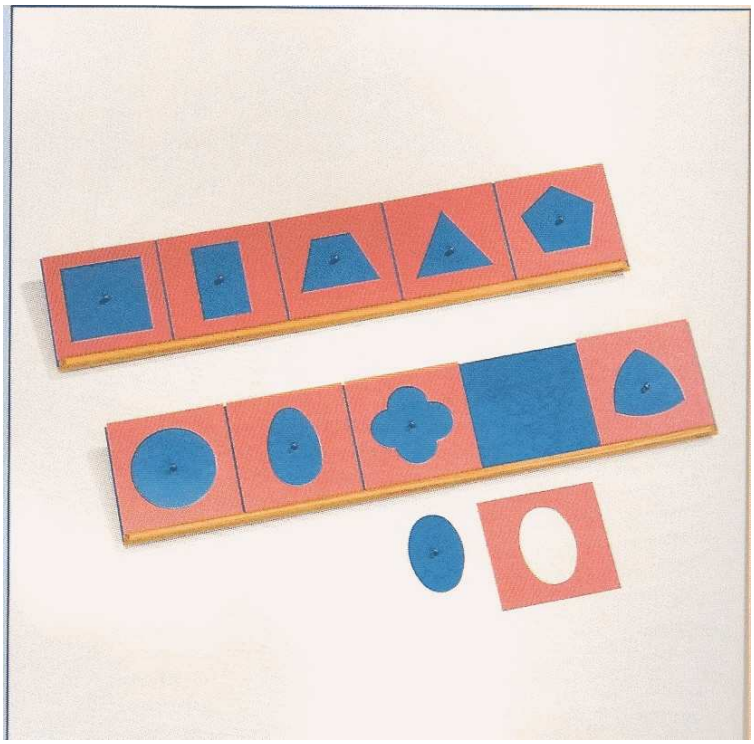

Figure 3: Metal Insets (Nienhuis Catalogue, 2006: 36)

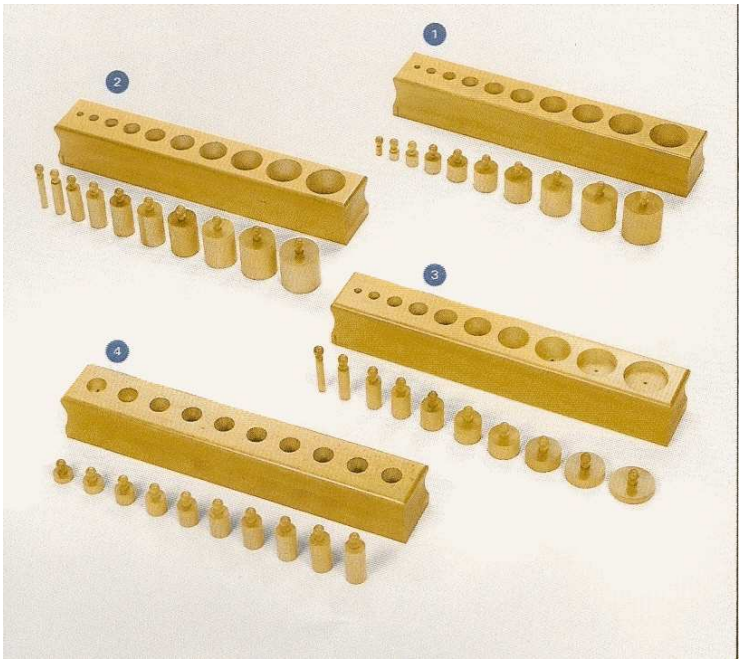

Figure 4: Cylinder Blocks (Nienhuis Catalogue, 2006: 20)

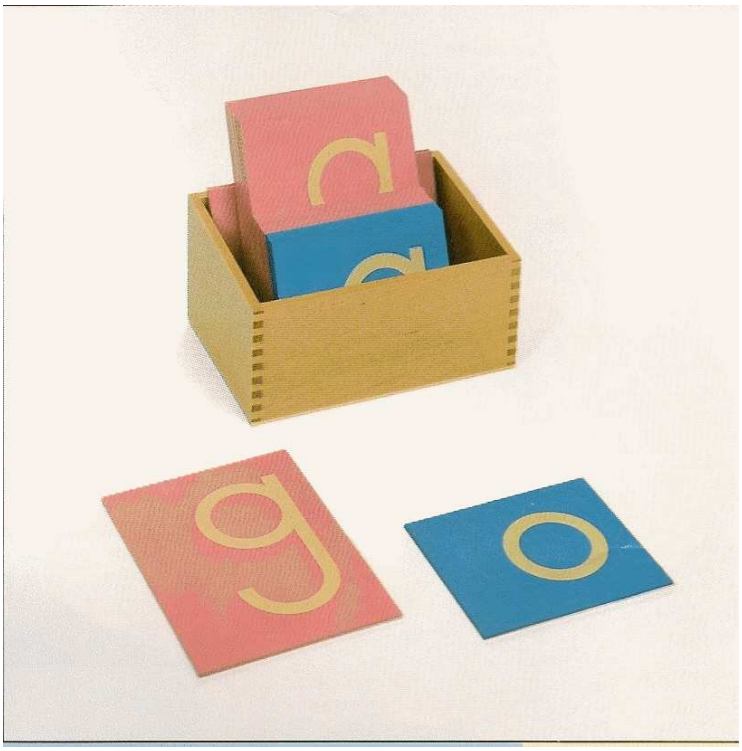

Figure 5: Sandpaper Letters (Nienhuis Catalogue, 2006: 38)

Figure 6: Moveable Alphabet (Nienhuis Catalogue, 2006: 40)

Figure 7: Pink Boxes, 2nd stage (photo taken by Tatjana Pouzar-Kozak)

Figure 8: Introduction of the phonogram /sch/ with the Sandpaper Letters (photo taken by Tatjana Pouzar-Kozak)

Figure 9: Phonogram Chest of Drawers (photo taken by Tatjana Pouzar-Kozak)


Figure 10: Grammar Symbols (Nienhuis Catalogue, 2006: 42)

Figure 11: Grammar Boxes (Montessori 2003a: Tafel 1)

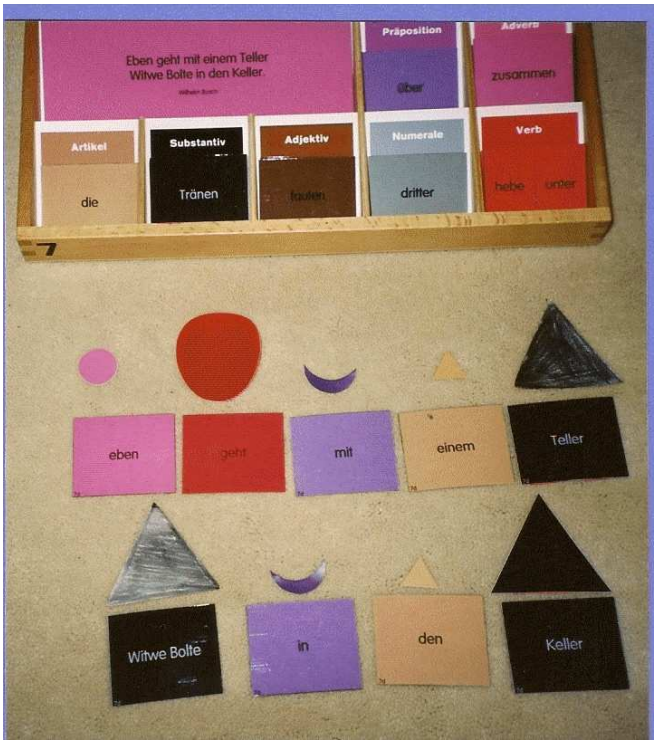

Figure 12: Work with the 6th Grammar Box (photo taken by Tatjana Pouzar-Kozak)

Figure 13: Matching Grammar Symbols to a text (photo taken by Tatjana Pouzar-Kozak)

Figure 14: Hunt for the predicate (photo taken by Tatjana Pouzar-Kozak)

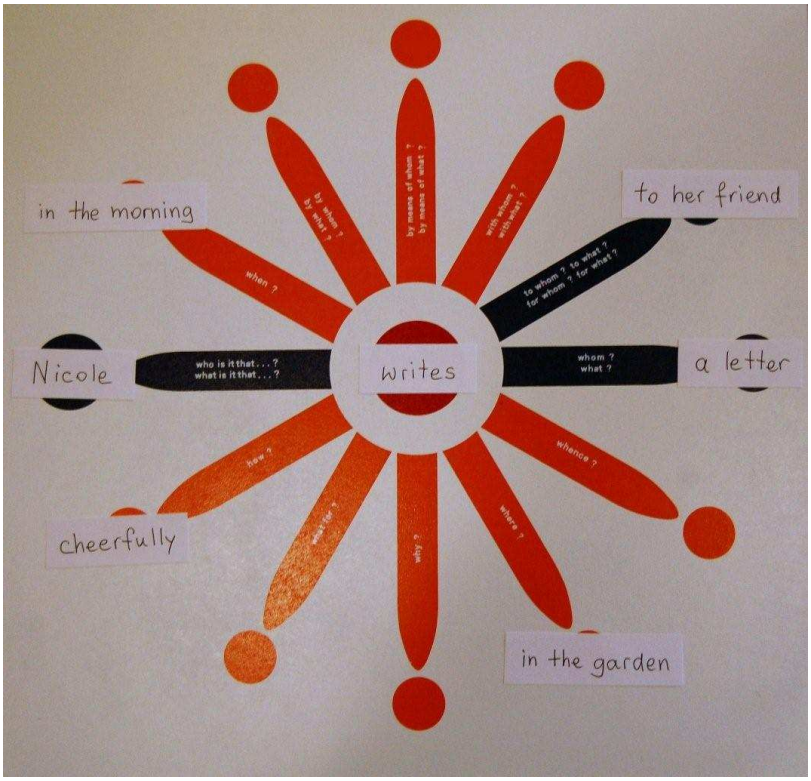

Figure 15: Sentence Analysis Chart (photo taken by Tatjana Pouzar-Kozak)

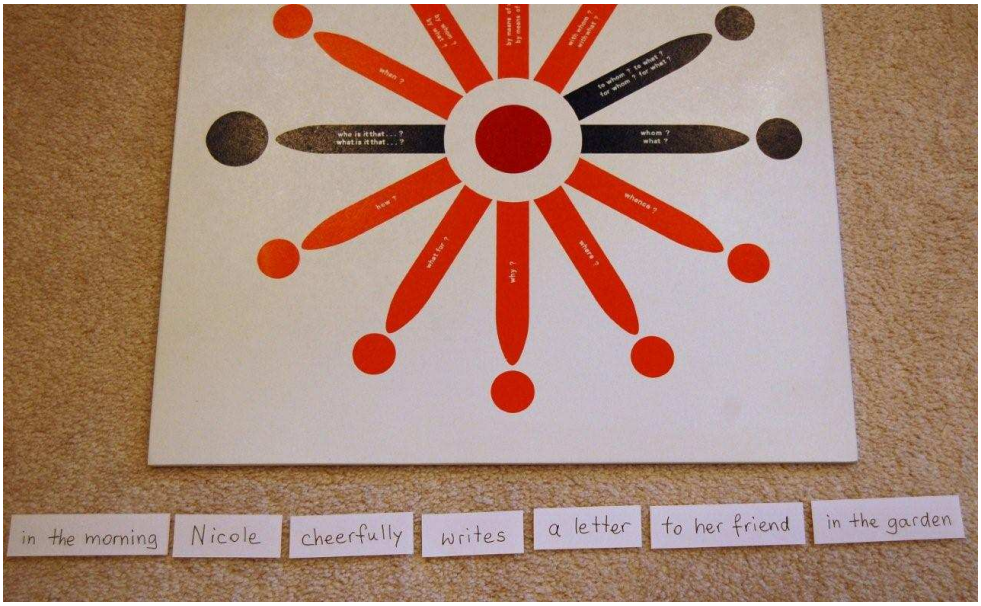

Figure 16: Transposing the sentence (photo taken by Tatjana Pouzar-Kozak)

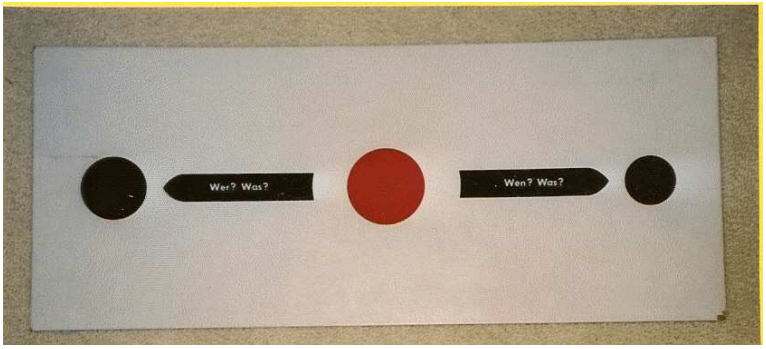

Figure 17: First work with arrows and circles – Chart (Photo taken by Tatjana Pouzar-Kozak)

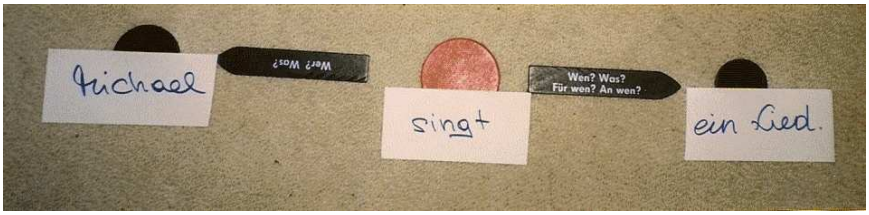

Figure 18: First work with arrows and circles (photo taken by Tatjana Pouzar-Kozak)

DEUTSCHE ZUSAMMENFASSUNG

Die vorliegende Diplomarbeit beschaeftigt sich mit Maria Montessoris Paedagogik und Erstspracherwerb mit besonderem Augenmerk auf die Anfaenge des Sprechens, Schreibens und Lesens.

Die italienische Aerztin Maria Montessori entwickelte zu Beginn des 20. Jahrhunderts anhand ihrer Erkenntnisse, die sie waehrend empirischer Beobachtungen und wissenschaftlicher Untersuchungen in ihren Kinderhaeusern gewann, eine Erziehungsmethode, die Kinder in ihrem individuellen Entwicklungsprozess begleitend unterstuetzt, und ihnen ermoeglicht, mit Freude und Begeisterung gemaess ihren Interessen selbsttaetig zu lernen. Ziel ihrer Paedagogik ist die Erziehung des Kindes zu einem unabhaengigen, selbstaendigen, verantwortungsbewussten und sozialen Menschen, der selbstbewusst die sich ihm stellenden Anforderungen im Leben meistert. Dieser kindliche Selbstbildungsprozess setzt das Zustandekommen einer tiefen Konzentration beim Kind voraus, die sich nur in einem entspannten Umfeld einstellt, das die sensiblen Phasen in der kindlichen Entwicklung beruecksichtigt. Fuer die verschiedenen akademischen Bereiche, also auch den Spracherwerb, entwickelte Montessori Materialien, mit deren Hilfe sich der Schueler unabhaengig vom Lehrer bilden kann. Dies erfolgt in der sogenannten Freiarbeit, in der das Kind durch das aktive Arbeiten mit konkreten Gegenstaenden abstrakte Lerninhalte begreifen lernt.

Im Vergleich mit sprachwissenschaftlichen Theorien zum Spracherwerb, zum Beispiel Noam Chomskys Universal Grammar, wird deutlich, dass Maria Montessori das Lernen von Sprache aus paedagogischer Sicht betrachtet. Andererseits findet man auch interessante Aehnlichkeiten zwischen Chomskys und Montessoris Auffassung davon wie Kinder ihre Muttersprache erlernen. So glauben etwa beide, dass die Faehigkeit Sprache zu erwerben angeboren ist; Chomsky geht sogar soweit zu behaupten, dass Kinder mit Informationen ueber universelle Sprachstrukturen, also mit ‚Universal Grammar', auf die Welt kommen. Montessori hingegen spricht nur von einem Mechanismus der dem Kind erlaubt Sprache in sich aufzusaugen, den sie ‚absorbent mind' nennt. Im Gegensatz zu kognitiven Theorien glauben Chomsky und Montessori, dass sich Sprache in einem separaten Teil des Gehirns entwickelt, unabhaengig von der Gesamtintelligenz des

Kindes. Beide sprechen von individuellen Teilen oder Modulen im Gehirn, die jeweils fuer die Entwicklung der verschiedenen Faehigkeiten, wie etwa Balance halten, sehen, mathematisch denken usw., zustaendig sind. Im Gegensatz zu Noam Chomsky glaubt Montessori, dass sobald die einzelnen Module fertig entwickelt sind, also auch der Spracherwerbsprozess abgeschlossen ist, diese Teile zusammen die Intelligenz des Menschen bilden.
In weiterer Folge wird im zweiten Kapitel analysiert welchen Einfluss die verbale Umgebung und die sensiblen Perioden auf den Spracherwerb haben und welche Phasen Kinder durchlaufen, wenn sie ihre Muttersprache erlernen.

Der dritte und letzte Teil der Diplomarbeit befasst sich mit den Anfaengen von Schreiben und Lesen und betrachtet im Detail Maria Montessoris Theorie und Materialien zum Schriftspracherwerb. Zu Beginn des Kapitels werden Aehnlichkeiten und Unterschiede zwischen dem Lautsprach- und Schriftspracherwerb hervorgehoben. Fuer Montessori sind Schreiben und Lesen zwei unterschiedliche Vorgaenge, die nicht zur selben Zeit stattfinden. So geht das Schreiben ihrer Meinung nach dem Lesen voraus. Mit Hilfe der paedagogischen Analyse zerlegt sie die beiden Prozesse in ihre einzelnen Bestandteile. Die Teilfertigkeiten werden mit Materialien getrennt voneinander vorbereitet. Das Lesen, das nach Montessori ein wesentlich abstrakterer Vorgang ist, da es dabei um die Interpretation von graphischen Zeichen geht, muss sich das Kind selbst aneignen. Sinnentnehmendes Lesen kann man nicht lehren, doch man kann das Kind langsam dahin fuehren.

In einer Zeit, in der Leistungsdruck und hohe Erwartungen oft zur Ueberforderung werden, stellt Maria Montessoris Methode, Sprache zu erlernen, einen lustvollen und interessanten Weg dar, bei dem das Kind in seiner natuerlichen Entwicklung begleitet wird. Beim Erwerb des Wortschatzes, der Schrift, des Lesens und der Grammatik wird auf die Beduerfnisse und sensiblen Phasen des Kindes Ruecksicht genommen, weshalb das Erlernen des Schreibens und Lesens, das oft als Huerde in der traditionellen Schule angesehen wird, mit Leichtigkeit erfolgt.

CURRICULUM VITAE

Name:	Tatjana Katharina Pouzar-Kozak
Date of Birth:	October 25th, 1970
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Course of Life, Education:

1977 - 1981	St. Andrae-Woerdern, Austria, Elementary School
1981 - 1989	Tulln, Austria, Secondary School: BG/BRG Tulln - Neusprachliches Gymnasium
1996 – 2001	Altenberg, Austria, work as English teacher of preschoolers and kindergartners at Montessori Kinderhaus Bunte Welt
1999 - 2001	Vienna, Austria, Institut fuer aktives Lernen auf Basis der Montessori-Paedagogik: Montessori Teacher Training Course for grades 1-6
July 2001	Graduation with Montessori Diploma
1989 - 2008	University of Vienna, field of study: Englisch/Russisch LA
2001 - present	Resident of USA, living in Louisville, Kentucky
2005 - 2007	Home-schooling my two daughters (grades 4 through 8) by using the Montessori Method