

The Passage to Abstraction — The Role of the Imagination, or “Going Out,” the Key to Culture

When one thinks about preparing children to go out of the closed environment where they have been educated up to the age of seven years, a vast panorama comes to mind. To go out of a classroom to enter the outside world, which includes everything, is obviously to open an immense door to instruction. The event is comparable to the appearance of Comenius' *Orbis Sensualium Pictus* in the history of pedagogy.

Before Comenius, scanty knowledge was passed on by the exclusive use of words. Comenius conceived of offering the universe to children by means of pictures—and it seems that it was the initial building block of a new method of education. The amount of knowledge must have increased greatly because of this.

He assembled a book of pictures representing everything that makes up the world: plants, animals, rocks, peoples, geographic maps, historic facts, industry, commerce, medicine, sanitation, a reproduction of the first machines, the way in which they functioned, et cetera, each idea being represented by an image and a brief commentary in words. It seemed easy for the mind to embrace everything looking at the images in the book. It was really a first example of what later became an encyclopaedia, except that the encyclopaedia returned to the use of the word while *Orbis Sensualium Pictus* remains just about unique in the history of pedagogy.

And yet the idea has remained. A beginning was made to teach by using tangible objects adapted for handling. But just as ideas lose strength in becoming widespread, the method of Comenius—who knew everything—was weakened by the teacher who presented only her meagre knowledge put into pictures.

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Later, it was thought that representation in only two dimensions is insufficient for the child's comprehension. Then he was offered objects of knowledge in their natural form. But to overcome the difficulty of procuring and preserving objects, they were placed in museums. Every self-respecting modern school must have a museum. In this way enclosed objects may be found near confined children. The adult, underestimating the intelligence of the child, surrounds him with a depressing atmosphere, while what he needs is to *see* things in order to understand them. The capacity of childhood intelligence remains unsuspected. What we hope—we to whom the child has revealed the power of his intelligence—is to revise the idea of Comenius by bringing the world itself to the children.

When the child goes out, it is the world itself that offers itself to him. Let us take the child out to show him real things instead of making objects which represent ideas and closing them in cupboards.

In its entirety, the world always repeats more or less the same elements. If we study, for example, the life of plants or insects in nature, we more or less get the idea of the life of all plants or insects in the world. There is no one person who knows all the plants; it is enough to see one pine to be able to imagine how all the other pines live. When we have become familiarized with the characteristics of the life of the insects we see in the fields, we are able to form an idea of the life of all other insects. There has never been anyone who has had all the insects of the universe available to his view. The world is acquired psychologically by means of the imagination. Reality is studied in detail, then the whole is imagined. The detail is able to grow in the imagination, and so total knowledge is attained. The act of studying things is, in a way, meditation on detail. This is to say that the qualities of a fragment of nature are deeply impressed upon an individual.

After seeing a river or a lake, is it necessary to see all the rivers and lakes of the world to know what they are? The imagination, afterward, is able to form a concept of the world. A machine, a man who fishes, a man who works—these are all details that go to form knowledge. This is a universal means of organizing culture. It is self-evident that the possession of and contact with real things bring with them,

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above all, a real quantity of knowledge. The inspiration engendered by it revitalizes the intelligence that was interested and wished to know. From all these things new intellectual interests arise (climates, winds, et cetera). Instruction becomes a living thing. Instead of being illustrated, it is brought to life. In a word, the outing is a new key for the intensification of instruction ordinarily given in the school.

There is no description, no image in any book that is capable of replacing the sight of real trees, and all the life to be found around them, in a real forest. Something emanates from those trees which speaks to the soul, something no book, no museum is capable of giving. The wood reveals that it is not only the trees that exist, but a whole, interrelated collection of lives. And this earth, this climate, this cosmic power are necessary for the development of these lives. The myriads of lives around the trees, the majesty, the variety are things one must hunt for, and which no one can bring into the school.

How often is the soul of man—especially that of the child—deprived because one does not put him in contact with nature. And when this contact is considered, it is only for reasons of health. How could a child describe the difference in nature as seen in daylight and as seen at night when, in our time, he must inexorably go to bed in the evening?

I heard a comment from the mouth of an eight-year-old child which profoundly impressed me: "I would give anything to be able, one night, to see the stars." He had heard them being discussed but he had never seen them. His parents thought it necessary not to allow the child to stay up a single evening on any pretext whatever. All that hygiene, centred on the physical person, has made the world neurotic. It is noted that mental health has diminished in spite of the progress which improves physical health. If tension among adults has increased abnormally, it is because they have formed an erroneous idea of life. These prejudices create as many obstacles in the intellectual life of the child. What harm would come from allowing a child to rise later if, as an exception, he were to be allowed to satisfy the interest he takes in discovering the stars or the sounds of the night? The mind of the child is found to be at this age on an abstract level. He is

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not satisfied with a mere collection of facts; he tries to discover their causes. It is necessary to make use of this psychological state, which permits the viewing of the things in their entirety, and to let him note that everything in the universe is interrelated. Thus when the child wants to understand the causes of a whole complex of effects, the world, which he has before him, can fill that normal need.

But it is not always as easy to present the whole as it is to present a detail. Then it does not suffice for the teacher to limit herself to loving and understanding the child. She must first love and understand the universe. She must therefore prepare herself and work at it. Certainly the child is still central. But the teacher must now appeal to that part of the child which finds itself in the world of the abstract. When the child was very small it was enough to call him by name for him to turn around. Now we must appeal to his soul. To speak to him is not enough for this; it is necessary to interest him. What he learns must be interesting, must be fascinating. We must give him grandeur. To begin with, let us present him with the world.

In Genesis it says: "God created the heavens and the earth." It is a very simple statement but it has grandeur, and the mind stays awake. When details are presented as being parts of a whole, they become interesting. The interest increases in proportion to the gain in knowledge. In addition, the knowledge presented now must not be on the same scale as before. It must not be purely sensorial anymore. Now the child must have constant recourse to his imagination. Imagination is the great power of this age. Since we are unable to present everything, it is up to the child to use his imagination. The instruction of children from seven to twelve years of age must appeal to the imagination. A configuration of reality must spring from the imagination. It is necessary therefore to be strictly precise. Exactness, as a numeral and as all that makes up mathematics, will serve to build that configuration of reality. Now what is it that strikes the imagination? Above all, grandeur and, next, mystery. The imagination is then able to reconstruct the whole when it knows the real detail.

Imagination was not given man for the simple pleasure of fantasizing any more than were the four characteristics

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common to man (language, religion, death rites, and arts) given to let him live on contemplation. Imagination does not become great until man, given the courage and strength, uses it to create. If this does not occur, the imagination addresses itself only to a spirit wandering in emptiness.

Obstacles abound in the world. But man's spiritual life gives him the strength to surmount them to accomplish his task. Love of the homeland is based on imagination. Is it not that which gives us the idea of what our country is and who our compatriots are? Our fight on behalf of children also needs imagination, because we ourselves know only very few children.

The homeland, and those children we thus imagine, do indeed exist and we know it.

He who does not possess the world of the imagination is poor. But the child with too much fantasy is a disturbed child. We do not know how to calm him. We do not say: "Let us suppress the imagination of that child's mind," but rather: "*The child's imagination is insufficient for his mind.*" We must nourish the other facet of his intelligence, that which has to do with the external world and his activity. It is in this way that we will help him grow in discipline.

The child's imagination is vague, imprecise, without limits. But from the moment he finds himself in contact with the external world *he requires precision*. The requirement is such that the adult would be unable to impose it. Its full potential lies within the child. When a child's interest is aroused on the basis of reality, the desire to know more on the subject is born at the same time. At such a moment exact definitions may be presented. Children express the desire for such definitions in their own way. For example, in one of our schools there was once a seven-year-old boy who chose to study the Rhine. The teacher had prepared a map of the river and its tributaries, but the child was not satisfied with it. He wanted to know the relative length of each of the tributaries. (Here we see the idea of mathematics awakened.) He used graph paper to draw a better map. It was in this way that the sense of proportional size and the interest in study were born in him at the same time. He remained at the same task, by his own choosing, for more than two months. He was not satisfied until he had

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meticulously completed it. His satisfaction came with his being able to express these concepts in mathematical terms.

Let us draw a parallel here with the smaller children who by touching objects trained their hands to greater lightness of touch. The exercise seemed to satisfy something inside of them. Touching for the younger child is what imagining is for the older one. On the former age level we would have worked on the sensorial plane as, for the latter, we work on the level of the imagination. Thus at different levels we encounter parallel phenomena. With the little children the response was infantile. But it is still true that knowledge may truly be developed by awakening the interest. A detail of physics or chemistry is enough to produce the awakening. At the same time, a number of experiments and conclusions arise which bring learning in depth and detail.

The mind bases itself on the imagination, which brings things to a higher level, that of abstraction. But the imagination has need of support. It needs to be built, organized. Only then may man attain a new level. He is penetrating the infinite.

A study outline here presents itself: *to bring the whole by means of the presentation of detail*. Thus, when we wish to consider the study of living beings, the most important thing is first to establish the classification. It has been an error to have sought to suppress it. It has seemed too dry and too difficult, even though it constitutes a precise key for the study of the whole. Not only does the classification help in understanding, but it also aids the memory. Therefore it constitutes a base which one should establish first of all.

Would that the teacher allowed herself to be imbued by the grandeur of this whole to be able to transmit it to the child. It is not only the classification of a few details that must be the point of departure, but the classification of the Whole. And this Whole, emerging at the same time, will serve as the base so that each detail comes to be located in the mind. For example, let us say that the world is this globe on whose surface we live. But let us say immediately that this planet receives reflections from the world of the stars. One cannot, then, isolate it from the whole; one cannot content oneself with observing it all alone. Considered in the abstract, we can

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envisage it as the empire of three kingdoms—animal, vegetable, and mineral. We show a globe, entirely different from the one used for geography. We only represent in brown what depicts the land, and in blue what depicts the water. This globe does not serve in the study of geography, but is intended to stimulate the imagination, which starts working around this kind of globe.

To speak of animals, of vegetables, of minerals is an abstraction. But we will say here: "Man lives in the world and man must conquer it." The intelligence of man must conquer the world as the intelligence of the little child has conquered the environment.

All is strictly interrelated on this planet. And one notes that each science studies only the details of a total knowledge. To speak afterward of the life of man on the surface of the globe is to speak of history. And each detail holds the child's interest by reason of its strict relation to the others. We may compare it with a tapestry: each detail is a piece of embroidery; the whole constitutes a magnificent cloth.

To give the child of seven to twelve years the idea of a whole in nature, for example of the planet on which we live, we must begin by bringing him numbers.

To do well, it is necessary to aim at giving an idea of all the sciences, not in precise detail but only as an impression. The idea is to "sow the seeds of the sciences" at this age, when a sort of sensitive period for the imagination exists. Once the idea has been presented, we must show that a science extends from each branch: mineralogy, biology, physics, chemistry, et cetera. And, as we have seen, the examination of a detail triggers the study of the whole.

It is understood that one is obliged to begin by the study of a detail. But since nothing exists that does not constitute a part of the whole, it is sufficient to choose any one detail which will then become a point of departure in the study of the whole.*

* Later Dr. Montessori prepared a slightly different globe for small children in the Children's House. On it the land portions were covered with real sand (glued on) and the water parts by smooth, blue enamel paint. This more sensorial globe thus added a tactile impression to the visual one (cf. the rough-smooth exercises with touch material).—TR.