# The multiple fonts of knowledge

Vea Vecchi

Rationality and imagination, cognition and emotion: not only have we heard various authoritative figures place these processes in necessary relationship to one another for some time now. I have myself observed them closely bound up with each other in my daily work with children as they think, play and deal with solving problems. They are elements which seem so obviously inseparable that I feel it is hardly necessary to speak on behalf of an approach which firmly believes in and promotes their close relationship. Yet what prompts me to write is the conviction that in going from theoretical formulations to educational practice something happens to distort our actions and thoughts. Every day we witness a form of knowledge which divides, categorises, separates, and struggles to make connections (or maybe does not want to) between different disciplines.

I agree with Edgar Moren when he says that the problem is not so much opening up the boundaries of the various disciplines, but making sure that those boundaries are not created. When we are born we are a whole, and the whole of our senses strains to relate with the world around us in order to understand it. Very quickly, however, we find ourselves 'cut into slices', a phrase used by Loris Malaguzzi to define the state of separation in our culture which forces us to pursue knowledge on separate paths. In contemporary culture and society, which promote specialisation in various fields, this condition is becoming more obvious. We need to reflect seriously on how much individual and social damage is being caused by education and culture which prefer to separate than to work on connections. We know that the brain has extremely plastic qualities and we know also how much its structural formation is influenced by individual experience. Knowing this ought to inspire us with a great sense of responsibility towards children because the most genuine and radical way of changing the distortions that are present in society (there are so many of us who believe this) is to dedicate thought, care and informed decisions to education.

How much does the exaggerated use of categories lead to a way of thinking which prioritises differences rather than similarities and connections? How much

does a school which works with decontextualised objects and situations lead to thinking in separate fragments and mistaking information for knowledge, which is only obtained by organising and placing parts in relation to each other? How much does ignoring the fact that emotions are an integral part of learning and educational processes distort the global process of knowledge building? We could continue this type of questioning, highlighting how hierarchical and discriminatory is our school culture when dealing with different languages, with teaching/learning processes and with children's general approach to exploration, understanding and construction of reality. In his book Mind and nature, Gregory Bateson, who asserts the connectedness of all things, reflects on the importance of an aesthetic approach as a great connector of elements of reality. In a discussion with young people in an art college, he clarifies a point with a statement I have always found beautiful: "by aesthetic I mean: sensitive to structures which connect". To define artistic thought in this way, I believe it has to relate to things with intensity and empathy. There can be no doubt that this kind of approach can help us to discover and investigate the hidden structures behind reality, to weave maps capable of holding together processes of logic and emotion, of technique and expression. It is an excellent curriculum for learning.

This was the guiding philosophy behind the introduction of the atelier – a studio – and the atelierista – a person with an artistic background – into the municipal schools of Reggio Emilia at the end of the 1960s, together with a variety of materials, diverse techniques and a contemporary vision of the relationship between mind and hands. We were aware how greatly school culture discriminates against the so-called expressive languages (visual language, music, poetry, dance and so on,

though in fact every language has an expressive ability), so the atelier was introduced as a guarantee, to defend the complexity of knowledge-building processes. Our intention was to use imagination as a unifying element for the various activities and to consider the aesthetic of knowing (Malaguzzi speaks of an 'aesthetic vibration') as "an energy which has its origins inside us and leads us to choose between models of action, thought, imagination".

The ateliers in the Reggio municipal schools did not choose visual language as a separate discipline, concentrating exclusively on the practice of some traditional activities like drawing, sculpture and painting. Rather it was chosen as a means to build bridges and relationships between different experiences and languages. At the same time, we are fully aware that to speak and act out any language competently there has to be a specific and thorough apprenticeship and we consider this to be an important factor, something we should always keep in mind. We are equally convinced, however, that a language which is truly learned and refined must be equipped to relate to other languages, it should feel the necessity of drawing on them and creating dialogue with them. In the same way we are convinced that function cannot be separated from expression: reducing diversity and the number of components in all languages means they are impoverished and less capable of evolving.

It is the clear awareness of the complex threads uniting all things that leads us periodically to critically review the organisation of our work. We modify it where possible, so that it is in harmony, in an enlivening relationship, with the theory and teaching methods which are at the roots of our way of working. The same critical process is carried out when thinking about the school environment

which we have always considered to be an integral and vital part of education. This special attention to the environment and its educational value led to the publication in 1998 by Reggio Children of Children, spaces, relationships: for a culture of children's habitats. This book was the result of research on the theme of suitable environments for childhood carried out with architects from the University of Milan's research centre, The Domus Academy. This exchange between different professional cultures was indicative of our way of working in Reggio: it was an evolutionary approach to a significant theme which dealt with several issues using different perspectives, by creating a dialogue between different types of competency. It is the same approach which has guided projects coordinated by Reggio Children in recent years for the professional development of pedagogistas and atelieristas, and in joint initiatives for promoting women's job opportunities. It is the same approach that will guide future projects.

We do not propose simply putting together a collection of experts from different disciplines. We wish to underline the care we take in giving priority to academics and professionals who are capable of an approach which traverses diverse languages. We confirm our commitment to working on connections, whilst at the same time seeking to evolve our theories about learning and our school projects.

Only those who are convinced that:
- the roots which generate knowledge are multiple;
- the process of learning is not linear;
- reality has many points of view;
- things dance together;
will be able to understand the role that the atelier has played inside the municipal schools in Reggio.

It would be too naive to think that simply introducing a figure like an atelierista into a



Opposite page top left to right:
Child working with light.
Mathematical investigation around zero.
Large painting in the Atelier.
Diana nursery school.

Opposite page bottom: Little Horses, photographic documentation process for the construction of a horse using clay.
Diana nursery school.

This page: children of four and five years document their work on the draft for Ariosto Theatre stage curtains sketch, digital photographs by the children.
Diana nursery school.

# ...we soon realise how much the logical part and the expressive part co-exist...

school community is enough to really modify the education process. The change must begin at the roots, with pedagogy and atelier working together on connecting languages. One of the main tools for doing this is the important daily task of observation and visual documentation carried out in nurseries and nursery schools, which has enabled us to gather great quantities of material for analysis, interpretation and discussion. When we talk about making processes visible we are aware of the difficulties involved (some people maintain it is impossible). But the fragments we gather are so precious, and reflection on them by the teachers is so important, that we consider this work of documentation to be a unique source of knowledge and evolution for our profession. Precious material for teachers, but also for the children, for the families and for whoever wishes to get closer to the strategies used in children's thinking. We have recently carried out research with a group of experts from Harvard University's 'Project Zero', and published a book together called Making learning visible: children as individual and group learners (Reggio Children, 2001). In this work we explored one aspect more deeply. We tried to clarify and make visible how individual learning is tied up and related with learning in a group; how individual learning is advantaged by the group; and how

learning by individuals and groups tends to travel along multiple, intertwined pathways.

I would like to complement these brief reflections by presenting just two examples from our archives of documentation work. I invite the reader to consider and interpret these episodes as a testimony to the theories we have discussed, and to look at the images we show (which are only a small selection of the material we have) not as an illustration to the text but as a communicative choice where text and images dialogue together.

## Do people have a measurement?
(From the archive of Diana nursery school. Project by Laura Rubizzi, Vea Vecchi, 1996 )

Francesca (five years) has chosen to draw a table with people sitting around it. She begins by drawing two people in profile - an obvious conceptual and formal rotation is taking place which will require more time and other occasions to evolve. She then draws a figure seen from behind, and to finish she draws the head of the person opposite. [1]

She stops and comments out loud, "this person is floating in the air!" She thinks for a minute and then rises, places the paper face down against the window, and on the reverse side, against the light, completes the last of the figures which she had just begun [2]. Having established the level of

the ground and anchored her figure to it, Francesca returns to her place, turns the paper the right way up again and copies the outline of the figure onto the front - but only the part of the body which is visible above the table [3].

Approximately one week later we propose doing a real life drawing of some people sitting around a table. Francesca makes a drawing (I have included a detail) [4] with a similar problem: it has an isolated hand suspended in the air. When I ask "why have you left an empty space between the body and the hand?" she looks at me with a slightly pitying air and says: "I couldn't see the arm so I didn't draw it, but I know the arm is there so I had to leave a space, otherwise, excuse me but where would it go?" I have found this type of solution, together with similar comments, offered by other children in different contexts when presented with the same problem.

Too often in schools drawing is devalued and its potential ignored so that few contexts are created in which it can fully evolve as a language. But drawing is an extraordinarily acute instrument for posing questions, for inquiring into and interpreting reality. If in a drawing, rather than considering only the formal result, we learn to make the processes visible, we soon realise to what extent the logical part and the expressive part coexist, intertwined, with both contributing to creative invention.

This page: People sitting at a table Francesca, five years. The process of graphic representation, Diana nursery school.

Opposite page: Exploration of rainbows, Diana nursery school.
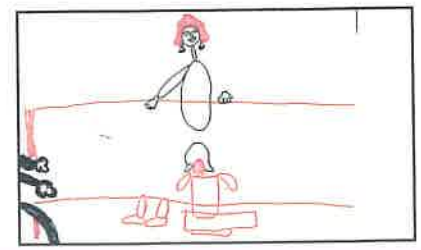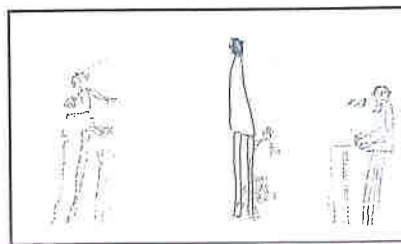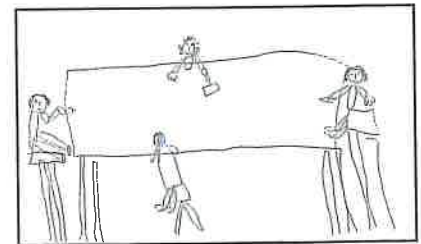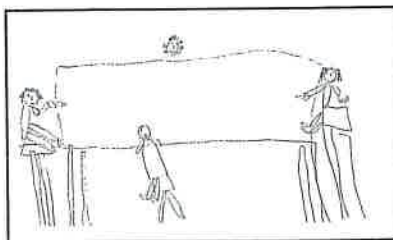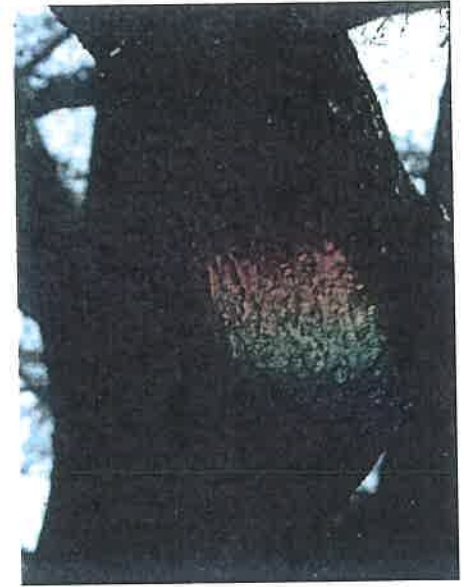
## Science or magic?

(From the archive of Diana nursery school. Project by Marina Castagnetti, Vea Vecchi, 1993 )

When teaching we often choose to look at problems from different points of view and using different languages, hypothesising that this approach gives greater depth to our knowledge of the subject and the context being explored. Three children, between the ages of five and six years old are given a glass dish, a jug of water, a torch and a mirror, and a challenge: is it possible to create a rainbow using these objects? The children begin to experiment and to put the items into different combinations. There are many trials, much insistence, exciting results. In the course of their inquiry the children discover that by submerging the mirror in the dish of water at the right angle they obtain the refraction of light, the rainbow which is reflected on all the surfaces.

An important intuition then leads them to substitute the torch light with sunlight and they are overjoyed at the idea of creating rainbows in the outside world, on walls, on trees. They begin to formulate theories on how this phenomenon of physics is created. They design a great installation capable of creating rainbows, using all the discoveries they have made, the rules they have guessed at and with their visionary ability to see possibilities. They say "we're going to rainbow the world!" To the previous elements – sun, water, mirror – the euphoria of research adds a straw and some white paper. The rainbow reflects onto the white paper: by blowing gently through the straw into the water, in time to the rhythm of music, the movements of the water's surface start

the rainbow in a surprising dance with curves and chromatic peaks. Magic, science, aesthetics; physics and imagination, chance and repetition and many other things move together, inextricably linked, and make this physics-related phenomenon – all too often handed over to children as a simple exercise together with its solution – into a pathway for investigation and discovery, full of curious things, emotions and beauty.

Information technology has introduced logic and fantasy, exploration and imagination in differing measures. Above all it has widened the range of possibilities in some areas and modified working times. The speed with which the children can vary shapes, sizes and colours in pictures that they have first scanned and of which they are usually the artists; the possibility of layering, moving and making compositions in many different ways, keeping track of these various phases – these are maybe some of the elements in information technology which most modify the processes of image building. With the introduction of these new means of expression, we have seen confirmed the importance of an approach – working on connections – which creatively guides the use of instruments and materials.

We immediately abandoned computer programmes formulated for children because they were practically all based on simplified procedures which ask little and offer little to the children's intelligence. It was observation and documentation of strategies used by children in learning to use adult programmes – like Photoshop and Page

Maker – which helped us to develop ideas where the creativity of the children could be exercised and evolved. I would invite other teachers to observe and document processes involving both traditional and modern technological instruments and tools in order to compare them and to see how, and how much, the different learning processes influence each other.

Documentation carried out up to the present day on very different themes and projects is of extraordinary interest. It is research that must be continued. The ideas of imagination, logic, sensory perception and mental images, the construction of metaphors and of relationships with reality must be updated using the opportunities and the processes which new technologies allow. The important thing is to continue to use the new and old materials and tools side by side, placing them in relationship and dialogue with each other, whilst children and teachers together pursue a spirit of curiosity and inquiry.

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