

# DELICATE EMPIRICISM AND ROMANCE IN EDUCATION FOR SUSTAINABILITY

- Maria Ilhéu and Mariana Valente

The education for sustainability must start with the awareness of our relationship with the natural world. The absence of direct and sensorial experience with the natural world, leads to a narrow understanding of environmental phenomena and a weak awareness of their relationship with human life. In this article we explore the concepts and methods of Goethe's "delicate empiricism" and Whitehead's "romance", which we applied in the project Education for Sustainability - ID-Natura (University of Évora). This project, involving teachers, researchers and pupils (from pre-school to secondary level education) from schools in Évora, Portugal, is based on the idea that experience in proximity with the natural world is an important basis of knowledge processes and of the development of environmental awareness. The testimonies of the pupils resonate with "romance" and "delicate empiricism". Their lived experiences and reflections portray the interconnected intellectual and sensory dimensions of an educational path to gain knowledge that recognizes the values that are fundamental to the caring for the Earth, our common home.

## prelude

Contemporary society is confronted with important environmental issues related to a complex human crisis of separation from nature. This estrangement occurs mostly due to the absence of experiences of deep connections to the natural world which promote a sense of belonging to a greater whole. Although nature supports all material, emotional and cognitive life, the perception of this fact, is becoming increasingly more abstract, and largely mediated by artificial (e.g. media) and narrow representations, often meaningless. The absence of direct and sensorial experience of the natural world makes the perception and understanding of natural phenomena, and their consequent relation to human life, more difficult. Researchers in various fields are recovering the method for knowing nature, as elaborated and practiced by Johann W. Goethe (1749-1832) and are developing ways of seeing and knowing which bring us closer to nature and to a holistic consciousness (e.g., Bortoft, 1996; Bradley, 2011; Brook,

1998; Cameron, 2005; Seamon, 1998). The analytical and quantitative methodology of modern science enables us to conceive an order in nature, centred on mathematical causation. Goethe offers us a way to understanding nature holistically. Formal education mostly develops analytical, quantitative and abstract thinking. There is great urgency for the development of a culture that practices the “Goethean” way of seeing and knowing nature.

Henri Bortoft (1996) returns to and reinforces this mode of phenomenological knowing and nominates the product of this way of knowing as “the wholeness of nature”. What does this vision of the world consist of and what is its value? The answer to this question will be assembled throughout this text, convoking Goethe and other thinkers (as those mentioned above), and convoking experiences within the natural world. Bortoft (1996) resumes the two modes of knowing, firstly, modern science which makes phenomena calculable and secondly, the approach of Goethe, which makes phenomena visible and palpable. As we were educated, like so many others, to make use of an “account book” as the only way to know nature, we now feel that is very urgent to transform our relationship with the world. How can we learn and teach to see and know through this other view, in a culture that only trained us for the analytical way of thinking? How can we develop linkages between these two approaches? The potential answers to these questions can trigger long term action-research programs.

This paper about education for sustainability, highlights “delicate empiricism”, a Goethean concept, which has inspired many thinkers in different fields (e.g., Philosophy, Sciences of Landscape). As Bortoft (1996) teaches us, it is necessary to “read” Goethe by practicing what he practices and not in an intellectual way. In doing so, we will feel reverence and a profound connection to the natural world and the relevance of “care as much for the worlds of being as we do for the worlds of meaning” (Bergman 2002, p.146). David Seamon (2005) offers a single testimony of the value of Goethe's ideas; “as the natural world is more and more threatened, the biggest need is that we must learn again to love nature, and I have come to believe strongly that Goethe's method offers much in this regard” (p.99).

The holistic understanding of phenomena, the construction of knowledge and of new worldviews, implies learning to transform a passive way of seeing into a participatory, active one, “being see”, as in the practice of “delicate empiricism”. It is through the connection between science and poetry, through “romance”, in the sense of the philosopher Whitehead (1957), that we can cultivate a holistic view of the world; “without the adventure of romance, at the best you get inert knowledge, without initiative, and at the worst you get contempt of ideas – without knowledge” (p.33). It concerns a world of connections that can not be annihilated over the course of learning, on the contrary, these sensed and lived connections nourish the educational process of constructing knowledge.

Based on all the previous reflections we challenged pupils and teachers to experience new ways of knowing nature, with the project ID-Natura which is carried out by a network of researchers, teachers and pupils of various levels, from pre-school to secondary level (University of Évora, Secondary School Gabriel Pereira, Primary School Manuel Ferreira Patrício, in Évora). This project challenges all the participants to live moments of experience, involving them in practices of sensorial awareness, empathy and attunement... Following a delicate exploration of concepts and methods by incorporating our own experience, we will demonstrate how this

project can contribute to the growth of a culture inhabited by “delicate empiricism”, a culture that nurtures a transformative education for sustainability.

The titles of the following sections were inspired by musical expressions to evoke movement and rhythm and the masters' presence.

### **“masterpieces” – with Goethe, Whitehead and others**

What leaves, light, sounds, colours, stones, petals, wings, and landscapes construct the knowledge of each of us? What memories and dialogues echo when we dream about a river, about water flowing over rocks? What rivers do we hold within us?

In delicate empiricism; first we experience the phenomenon... a dancing leaf ... the tolling of a bell... water that flows...

Wondering and questioning, the impulse to learn by participating in the phenomenon, with curiosity. A rigorous perception presupposes a practice of conscious encounters with the phenomenon in its context and its poetry.

We want to know more, we want to get closer to the essence of the phenomenon, and the process continues until we “become utterly identical with [it]” (Goethe 1792, In Naydler, 2009, p.72). For this to happen, we have to practice “sensorial experience” and “exact sensorial imagination”, important phases in Goethe's method. Between “sensorial experience” and “precise sensorial imagination” a to and fro (motion) is established which enriches the experience and creates an intuitive space, bringing us closer to the phenomenon and allowing us to experience moments of fulfilling happiness; “intuition is linked to a transformation of consciousness” (Bortoft, 1996, p.67). Two further steps are involved in this process: “seeing in beholding; and being one with the object” (Brook, 1998, p.53).

Now we are the golden leaf that dances, and was once green, other... and that drifts down to earth, with many opportunities for new experiences still to come. That encounter with the subtle thread spun by the spider, which holds her aloft, allows us (as golden leaf) to discover a certain topology of the air, with its ever-changing forms ... Let us concentrate on this movement. Now it is a whole which reveals itself in these transformations, no longer is it merely air plus leaf.

All our attention is now focused on that granite rock, nearby that flowing water.

Cameron (2005) guides us, in a practice of Goethean science: approach the rock, eyes closed, feeling slightly self-conscious, feel the rock with my hands. It doesn't feel like a rock at all, more like a mini-forest of lichen, thick and rough to the touch. Fractures surprisingly deep and warm... (p.184).

After a long time dedicated to the granitic rock, he continues; “I started to get a feeling for this rock, of its life and presence” (p.184). Further, Cameron experiences another phase of “delicate empiricism”; the “exact sensorial imagination”. He no longer sees the rock isolated in space and time. He imagines this rock in its past and its future; “the fissures will break the rock, the lichen will cover all of its surface” (id., p.185). That's the moment to imagine precise transformations, making us feel in attunement with this rock...

Now, by William Blake's hands, Isaac Newton (natural philosopher of XVII century) came and sat down on this rock. This rock is not a "matter of concern" for him. Newton is here, without being here, very absorbed in the construction of the so-called universal laws of nature (Figure 1).

Through Cameron we glimpse at poetic writing, a kind of romance, which is also a characteristic of Goethe's "delicate empiricism". Through Newton we glimpse a mathematical synthesis of the world.

We must learn to be delicate. Delicate in the way we apply our concepts, delicate in the effort of the encounter between thought and phenomenon, so that the phenomenon can reveal itself of its own accord.

We inhabit the "Era of knowledge", but what is it that we speak about when we speak of knowledge? Why does this knowledge not serve equity, the well-being of all beings or the sustainability of life? What kind of knowledge is constructed in the education of young people and of all citizens?

For centuries, we have been living in a knowledge paradigm based on separation and fragmentation, shaped by a modern science and an (educational) ideology of boundaries. This disembodied science, causal factor and producer of facts, is dry and cold, and in that sense, "nature" does not easily become a "matter of concern".

64

The questioning of education we express here, partly resides in the conjunction of the ideas of some authors of the past (e.g., Goethe, Whitehead) with the urgent needs of our contemporary world. Whitehead questions the aims of education, particularly for only being focused on precise scientific "fact", and with little meaning for the learner. His philosophy is inspired by science and poetry. As he would say, the experience of the scientist joins the experience of the poet in an embodied view of the world, which resonates with what we have been doing. Allan (2012) returns to Whitehead ideas to demonstrate its contemporary relevance;

"Whitehead argues that the first stage of learning should be that of Romance, in which students are encouraged to explore, in as wide ranging and adventurous a way as possible, the natural and cultural worlds in which they live" (p.9).

Underlying this approach to the natural and cultural world, is a holistic experience of active, participative seeing, which, with Goethe and others, we have already experienced and described. What does this wide ranging and adventurous way of knowing the natural and cultural world entail? According to Whitehead (1957), all educative acts must have rhythm which consists of three movements; "romance", "precision" and "generalisation", together as a whole, underlying even the smallest educational act. "Generalisation" is mature romance, in which the mind has already passed through "precision", the analytical phase of learning theories, concepts and methods of systematic enquiry. It is during "generalisation" that worldviews emerge and that we come to appreciate the value of ideas immersed in an embodied world. The flame of "romance" should always be present. It is through "romance" that we cultivate a holistic view of the world;



Figure 1. William Blake (1795-c. 1805), Newton.  
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65

For everything we encounter, there is a 'more' it conceals, a terra incognita still to be disclosed, a world vivid with novelties, a world of such unbounded plenitude that nothing can be noticed without whatever is next to it, catching our attention and evoking our response (Allan, 2012, p.10).

It is the discovery of this "world vivid with novelties" that nourishes the learning of the "precision" phase.

Furthermore, Goethe challenges us to a shift in consciousness; "this shift in consciousness entails no longer seeing the object simply as an object but also as a spiritual subject" (Goethe, 1807, In Naydler, 2009, p.48). It is in this process that the mind of the researcher, educator, or apprentice, becomes one with the phenomenon.

Education needs to embrace perspectives like those of Goethe, without disregarding those of Newton; with Goethe we live the value of sensibility, multiplication of experiences, imagination, the desire to know and the value of its relevance. And all this, is the "romance" of Whitehead; the "romance" demands a "transfiguration of imposed routines", infused by joy and reverence. Allan, (2012, p.13) explains this with an example of a teacher giving his pupils the assignment to look at the stars through a telescope. He suggests that nothing of interest will happen if he does not help to create a connection between the pupils and the universe. If he presents the experience as an opportunity of free access to the "glory of the heavens", he will create the conditions for "romance" to happen. Thus, the teacher plays a crucial role to trigger the flame of "romance".

This connection to the stars can be a good example of holistic consciousness, related also by Bortoft (1996).

We see this night time world by means of the light "carrying" the stars to us, which means that this vast expanse of sky must all be present in the light which passes through the small hole of the pupil into the eye. Furthermore, other observers in different locations can see the same expanse of night sky (p.5).

Formal education rather infrequently adopts such approaches and continues to be very much marked by the success of a modern science which creates a "bifurcation of nature", and to disregard qualities of experience of the world that are not quantifiable. Nature is perceived in a very simplistic way, without the awareness of connections underlying the cycle of life and alienated from the human being. Moreover, the natural world is frequently a mediated and entertaining abstraction, with a low value for learning.

#### andantino

In nature, everything is connected, with each living and non-living being cooperating in a network of visible and invisible relationships, which affords this superorganism a dynamic equilibrium. Let us therefore find inspiration in the natural world, in the connections between mystery, beauty and knowledge, learning anew how to work in cooperation and how to revere the other, human and non-human. Let us find inspiration in Goethe's "delicate empiricism" and in Whitehead's "romance", on the path towards a new paradigm for education, in which

knowledge is Vernunft (profound and clairvoyant understanding).

It is with this aim that we imagine the project of education for sustainability ID-Natura, based on experience in connection to the natural world, through an intertwining of the sensorial, affective and cognitive dimensions, with the objective to re-connect the cycle of life with the cycle of learning.

Living and learning within Project ID-Natura, the whole process of connecting and learning is elaborated on the basis of field trips in riverine environments. This connectedness and experience in proximity to the natural world becomes the stage for learning with a crossing of multiple ways of knowing, in a dialogue between objective and subjective knowledge. From these connections emerge interrogations and reflections, that allow the development of the awareness of the existing world and of its transformations.

The experiences from the field trips are the impetus for the development of activities in the classroom, where different thematic areas are investigated in the stage of "precision", but always nourished by the "romance" of sensorial and sensitive experiences lived in the field. A variety of creative expressions, including the visual arts, narrative, poetry, drama, are used as streams of consciousness.

In this educational approach, praxis is not distanced from the concrete context of the natural world and its intimate connection to human life in all its varied dimensions. Natural phenomena, such as floods or drought, are perceived and understood in context, the context of living, feeling and questioning.

The "transfiguration of imposed routines" is always present in project ID-Natura. The words spoken at the start of the field journeys, aims to induce a free access to the experience of the natural world by multiplying experiences, in the sense of "delicate empiricism" and to trigger the flame of "romance". The distance of subject-object may now be diminished by stimulating a shift of perspective, towards one of subject-subject. The immersion in the experiences of the natural world, brought about by this project, is shown in the awareness that the pupils demonstrate at various moments of reflection. Together with pupils and teachers, we have experienced actual moments in which a reverence for the natural world became palpable, as we present below. We use the term reverence here in the sense so well defined by Walker (2000) "Reverence is the attitude where something of great value is recognized" (p.140).

In one of the classes in which we evoked and reflected with the pupils on the experience of being in the stream of Valverde (Valverde-Évora), we acknowledged that many of them lived in the countryside. It was important to understand if their experience was enriched. Their regular experiences with living in the country were very functional; tending the kitchen garden, hunting, fishing, etc. Usually there is mostly a practical-functional relationship (with the land) through the activities that are carried out in these spaces. But now this relationship reveals itself to be much more than that, through the way it is narrated by the pupils. One secondary level pupil, B., 16 years old, testifies:

I already had a connection to this stream before the visit, since it passes through the village where I live; it passes right behind my house, and sometimes, when it is silent, I can hear

its water flowing. But this visit awakened me to some details that had passed me by before. Maybe it was due to a lack of attention or maybe I simply ignored them. Today I returned to the places that I thought were lost in my memory, I saw anew the trees I admired so much the first time I went there, I felt once again, like the teacher says, “the spirit of the place”. Each time I go there, I experience different feelings, sensations, even if these are exactly the same places, exactly the same stone I sit upon, in the shade of the same tree, ... It makes me sad to see some changes, the fact that each time it is emptier ... At this moment, while I write this reflection, it is raining, and I think of the rain that is now filling the stream and watering the soil.

We sense an emotion which we feel the need to cherish and nurture. The recognition of the value of that which is present, is founded on this testimony. Apparently, an emotion emerges in the expansion of their experiences. J., a 15 years old pupil, expressed the need to talk about a place that he likes very much, and which also has a stream. His awareness of a loss moved us in a particular way: “(...) there was an old stone road and it was destroyed by the passage of tractors. No one cared about that”. A reverence of the place stands out which is communicated to all.

Many pupils mentioned a feeling of freedom, as well as the value of experiencing in the natural world as this one;

68

*The visit to the river was fantastic, it helped me to be freer, more feeling. We are not always given the opportunity to explore reality so minutely. We do not always have the opportunity to observe the waterfalls and the lakes ... it felt good to have seen so much biodiversity (J., 11 years old).*

Several of the testimonies remind us Michel Serres (2000) regarding the becoming of “our new home”, the Earth;

nous avons assez agi sur les choses, nous avons tenté d’examiner ses objets, il est temps de connaître le monde; je préfère parler, plutôt, de nature, non point aux sens ordinaires, mais dans le pur sens étymologique, puisqu’elle est en train de naître, tout à fait nouvelle pour nous, nos connaissances et nos actes globalisés. Elle revient elle-même comme condition de connaissance, d’action et même de survie derrière les nouveaux sujets, plongés en elle, dès lors que ceux-ci agissent sur elle (p.15).

The lessons, experienced in a continuous manner, in proximity with the natural world, were moments of “delicate empiricism”; first we experienced the phenomenon, the light on a tree trunk... the sound of water... The wondering, the curiosity, and the questioning. We wanted to know more, go further, almost “[becoming] utterly identical with it.” Some of the students testified that;

the contact with nature during this visit woke something up in me, opened my perception of this world and what is beyond it ... One of the more special moments for me happened at the first site, where we started to draw what surrounded us, retaining the information it provided, during the minutes of silence, while looking at all that was around us. It was during

these moments of silence that I understood that everything is connected; the water that nourishes the vegetation, the water that runs between the rocks, eroding them... and what stood out in all of that, was that ... everything is interconnected, even man’s knowledge is interconnected with everything, what we see, what we do. Even outside of this planet, in the stars, even in Uranus there are elements that interconnect us (D., 16 years old).

Whitehead’s romance was also present in pupils’ testimonies, even in the smallest’s ones;

(...)some surpassed themselves, overcame their fear, either of insects or of heights. Whatever it was, we all surpassed it. And this happened because we were in harmony with each other and with the earth, the water, the leaves (V., 15 years old).

Another pupil, F., 14 years old, remarked on the beauty of the place: “I loved the water and the rocks... If I had to grade this visit, I would grade it as beautiful. I felt good, I did, I was well received by nature.” In this testimony a creative freedom to value the experience stands out, and a kind of recognition of nature as subject (the stream received the pupil during the visit). It is from the recognition of this bi-directional relationship between humans and non-humans, that a new vision of the natural world may be constructed; the natural world as a subject in its own right, in the sense of “Natural Contract” (Serres, 1990, p. 67). In this return to delicate dialogue with the natural world, we will have the opportunity to rethink and practice a relationship of symbiosis and reciprocity.

69

The lived experiences also pave the way for the redemption of a memory which is both individual and collective, and which interweaves the present but through a continuity between the past and the present, as a fundamental course of action for sustainability. Some pupils, reflecting on the observed and sensed phenomena, mentioned intimate moments in their personal story, mirroring the broadening of connections between the past and the present, between the sensitive dimension and the objectified one. J., pupils, 15 years old, remembered that;

the smells were tangible, I was always attentive; sometimes I became a little distracted, but ... (this is also good), I was always looking at everything, I can memorise things in my head. I lost my grandfather, I used to accompany him to the fields, he explained everything to me. And here it was like that.

Another pupil, S., 13 years old, remarked on the value of the river as an element of connection between the present and a happy past:

What I liked best was the river, it made me feel happy and relive the past where I had been happy. I liked the sounds of nature, I liked the living beings, I liked the plants I did not know, and that I came to know (I brought plants, ferns). I learned new things and I hope that people like me make this visit, to value nature.

The connections that are sensed and recreated nurture the formation of the ecological subject (sensus Carvalho, 2004); a subject with the ability for “feeling, reading and interpreting” a complex world in constant transformation, and for acting in a critical manner. The experiences in an adventurous way of feelings and of perspectives are the point of

departure for new adventures in the context of the classroom, where the stages of Whitehead's educational rhythm should be exercised. This opens up a field of action where new motivation, and new desires for discovery and learning are made possible, as this pupil's testimony show us;

This visit, very different from what we are used to, which took us into the midst of nature, surrounded by its sounds and everything it holds, indeed opened my mind to new thoughts and ideas, and revealed to me all the beauty and enchantment that may reside in the tiniest thing, in the tiniest song of that small stream. I express it this way, because I was really dumbstruck by something I had never witnessed and apart from it having been such a pleasant experience, I can also say that the things that we were taught there, because of the different way in which we learned them, have remained much clearer in my mind (J., 16 years old).

The work that was carried out and the testimonies of the pupils, give an account of opening up for reflection, and for the development of a consciousness that will give rise to attitudes and actions, integrating multiple dimensions of knowing, of a knowledge inhabited by sensitive experience and reverence, for the care of our common home, the Earth.

### fuga

A curriculum designed to take Goethe's "delicate empiricism" and Whitehead's "romance" into account, presents a challenge for a school that dares to ask questions such as:

what leaves, light, sounds, colours, stones, petals, wings and landscapes make up the knowledge of each one of us, and of all in a collective of varying degrees? What memories and dialogues echo when we dream of a river, with water flowing over stones? What river do we carry within us?

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