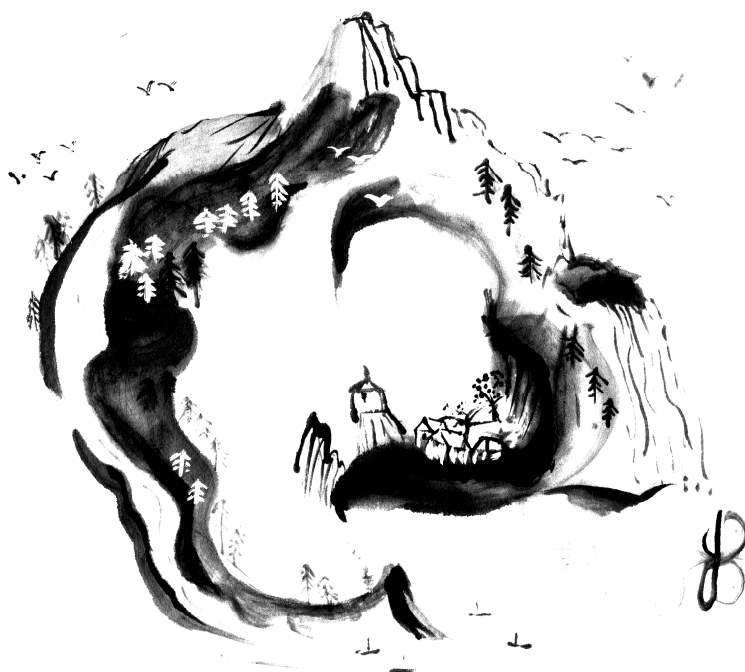


# Holistic Science Journal

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Flow, India Pg 36

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## *Gate of Wonders*

The Dao that can be told is not the eternal Dao.  
The names that can be named are not eternal names.  
Without name, heaven and earth's beginning,  
with name, the myriad beings' mother.  
Therefore ever without desire we contemplate its mystery,  
ever with desire we contemplate its boundaries.  
These two arise together, but have different names.  
Together we call them dark, the darkest of the dark,  
the door of all mysteries.

**Laozi**

*(English Translation Shantena Sabbadini. Available in Italian as: Tao Te Ching: Una guida all'interpretazione del libro fondamentale del taoismo, traduzione e cura di Augusto Shantena Sabbadini, URRRA/Feltrinelli, Milano, 2009)*

# ARIADNE'S THREAD

$$S = \int \frac{1}{4} F^2 + \frac{1}{2} (D\theta)^2 = \int \frac{1}{4} F^2 + \frac{1}{2} (\partial\theta - HeA)^2 = \int \frac{1}{4} F^2 + \frac{1}{2} (\partial\theta - m_A)^2$$

Biologists often need to kill the organism they are studying in order to gain access to the inner cells or genes they wish to explore. The map of this dead organism then becomes to the scientist, the reality of what they are exploring. It is then a total surprise in looking at living organisms, that the cells are not doing tidy little tasks in a mechanical way, but there is a messy freedom in how they combine to produce a coherent whole behaviour. It is this '**livingness**' of how things interact, communicate, cooperate which has been lost in the technologies and jargon that focus down to the minutest details of genes and cells as if they were the only and most important mechanical innards of life.

There is something in life which is not a property of all the dead components, but which indicates a subtlety of its own. Can we then read into scientific discoveries, evidence of this livingness? Take for instance the Higgs Boson, whose recent discovery was pointed to by mathematical reasoning such as the equation above. The Higgs boson, one might imagine from the press coverage, to be some static building block of the atom. But not at all- the Higgs boson has no existence of its own, but is the gateway of existence in the form of mass to the other particles. The principle of life in this case is the surrender of its own existence for the sake of the whole atom. There is no such thing as an isolated dead Higgs Boson, one finds a trace of it only in a living context.

The manifestation of the principle of the Higgs Boson to participatory dialogue is found in the way freedom is expressed by the particular. For instance at Spineto (*see article Journey School*), the initial uncertainty of people in their personal journeys and the doubt about what it is we are undertaking is reflected in the weather where a dark grey downpour resists showing any direction. At a certain moment on the second morning, a coherence enters into the process of the group. This builds up to the moment where Lubna Masarwa from Palestine gives voice to her own freedom, to see herself outside definition, in a struggle of this entity against this other entity, at the exact moment the sun finds to break through the clouds to fall into the centre of our circle.

The potential is broken by a choice that prefers a particular direction that leaves intact the tension of all the other ways we could have gone. Something is allowed to come into the potential that gives insight into that dynamic living flow that actually is what holds us together. From this moment, in other stories of the biology, physics and history all are held by this central understanding of how these other journeys come from the same source.

The first article by Shantena Sabbadini is based on the talk given in Spineto where this livingness is re-established as the foundational principle of science. That article leads into Adriana's invitation to go through a Magic Door, a Gate of Wonder, without reducing the world to a set of commonplace descriptions. .

This special, bumper issue then explores different paths of a living education - discovering along its banks, questioning communities, sprouting seeds, the experience of the earth, puzzling bees, exploring children and surprising woods. From the establishing of the primacy of experience, we re-engage with the flow out of our stuck-ness—from the example of Rajendra Singh regenerating rivers out of the desert, to experiments in education, Buddhist debate, Journey School, care of the elderly. Ways are explored for actively reinstating livingness back into our education.

*Philip Franses*

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**Ariadne's Thread: Affine Higgs mechanism :** [http://en.wikipedia.org/wiki/Higgs\\_mechanism](http://en.wikipedia.org/wiki/Higgs_mechanism)

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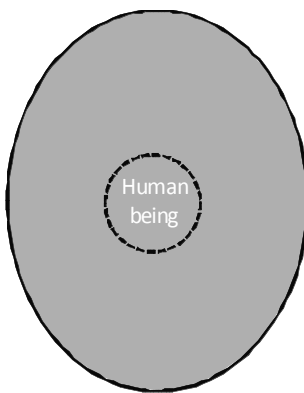
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### **Anima mundi**

The mind frame of ancient and traditional cultures has been described by the French anthropologist Levy-Bruhl as participation mystique

(mystical participation): that is a state of mind in which the 'I', the individual identity, does not have sharp boundaries, but is merged with its environment so that consciousness and world are deeply intertwined (Lucien Levy-Bruhl, *La Mentalité primitive*, Alcan, Paris, 1922.) In these worldviews, consciousness is not an exclusive attribute of the thinking subject: it permeates everything, it belongs everywhere. The whole world is animated; it has an anima, a soul. In ancient Greece, e.g., springs were nymphs, trees were dryads, winds and rivers had their specific gods, etc. In these cultures every act of everyday life, hunting, gathering, cooking, building a shelter, implies entering into relation with various forms and shapes of consciousness, entering a dialogue with the other, where this other is just as alive and conscious as oneself.



*Figure 1: Anima mundi. In this and in the following picture the large oval represents the cosmos and the grey colour represents consciousness or mind. In primitive cultures consciousness permeates the whole world and the boundaries of the "I" are permeable (dotted line): there is no sharp separation between I and world.(from Tarnas)*

Therefore, e.g., it is essential for the hunter to talk to his prey, not just to kill it, but to win it over as food to nourish his and his family's life, just as their life one day will be food for other forms of life. In this way of looking at the world, every act of daily life is sacred: every act partakes of the awesome mystery of the circle of life. The human subject is immersed in a circle of life, which is felt as ultimately much more real than one's individual existence.

### **Descartes & the separation of mind & matter**

While the history of the separation of the I from the world that characterizes modern consciousness is long and complex - it is the history of our culture - it may be convenient to focus just on one particular turning point, the Cartesian separation of mind and matter, which deeply influenced the development of scientific thinking in the following centuries. Descartes tackled philosophy from what we might call a scientific perspective. Science was then beginning to take its first bold steps, and the contrast between the progressive accretion of scientific work and the eternal reworking of the same fundamental problems by philosophy must have been already evident to an inquisitive observer. Descartes set himself the task of establishing philosophy on solid ground, of identifying a foundational statement that would be true beyond any possible doubt, and found the only inescapable evidence in his own thinking process. Nothing can be stated for sure about the external world. Nothing can be stated for sure about anybody else's experience. But the existential fact that in this very moment I am thinking, that is a certainty. "Cogito ergo sum" was Descartes' formulation: I think, therefore I am.

This withdrawal into the inner dimension of mind necessitated the introduction of a separate category for the outer world we apprehend through our senses. Descartes was therefore brought to consider two essentially different 'substances': *res cogitans*, mind, about which we have immediate and primary

evidence, and *res extensa*, matter, the external world, about which we can only reason by inference based on the input of our sense organs. He considered characteristic of the first that it is not located in space, while the external world we apprehend as having a spatial extension, whence the name *res extensa*.

### The scientific paradigm and reductionism

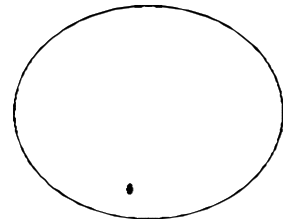
The Cartesian separation of mind and matter sealed the estrangement of the modern human being from the world, the isolation of the 'I' in its ivory tower surrounded by inert, insensitive, extraneous *res extensa*. Historically the most significant consequence of this split was that it became legitimate for scientific enquiry to focus entirely on the world of matter in order to discover its intrinsic laws, unencumbered by any metaphysical assumptions of a mental nature (e.g., Aristotle's idea that things fall because they are attracted to return to their natural place).

This endeavour occupied the scientists over the next three centuries, and they were remarkably successful at it. So successful in fact that by the end of the 19th century the *res cogitans* part of the Cartesian equation had become expendable. In the positivistic philosophy of science any intervention of 'life force', 'spirit', 'mind', 'consciousness', etc., in natural affairs became redundant, came to be considered as mere superstition. Mind, which was once Descartes' primary evidence, became an inessential addition on top of the closed universe of the *res extensa*.

The reductionistic paradigm keeps being the dominant one today, most significantly in the biological and medical sciences. In the neurosciences, e.g., it is commonly assumed that, once we will know all there is to know about the circuitry of the brain, we will have completely explained mind, or consciousness. In other words, all fundamental causal mechanisms take place at the level of neurons, synapses, etc. Consciousness is merely an epiphenomenon, a by-product of the material processes happening in the brain.

If the world is just inert matter, the whole world is there for us to plunder. But depriving

the world of a soul eventually leads to human beings losing their soul also. Then human life loses meaning and our relationship to our fellow humans becomes purely instrumental: the objectification of the world translates into the objectification of other human beings. If the world is reduced to its scientific description in terms of measurable quantities, the relationships between humans also get similarly reduced. Money, as the general abstract measurement of all material exchanges, becomes the ultimate criterion of all human exchanges. The servant becomes the master: our own invention turns around and enslaves us.



*Figure 2: The modern world. Human beings are no longer at the centre. Consciousness is only present in us (if at all, if it is not a mere epiphenomenon!) and it came about as a random outcome of purely biochemical processes. The universe is a vast inert assembly of matter devoid of ultimate purpose or meaning.*

### The quantum paradox

If demoting consciousness from primary evidence to a mere epiphenomenon of matter can be viewed as a first paradoxical development of Descartes' insight, the advent of quantum physics is a further turning point, of opposite sign and no less paradoxical nature. Because what happened is that by diving deep into the heart of matter, *res extensa*, exploring finer and finer levels of its structure, we finally were forced to realize that... matter does not exist. Or, to state it a bit more cautiously: matter does not resemble at all our naive intuitive notion of it. At the micro level it behaves in wild ways. And, perhaps more importantly, there does not appear to be a neat separation between what we call matter and what we call mind or consciousness. The two are inextricably linked.

The history of this realization is complex and controversial. But once again it may be useful

to focus just on one paradigmatic story: the story of the EPR experiment. Its origin is linked with the Bohr-Einstein discussions in the 1930's.

From the beginning experiments in subatomic physics had revealed the strange behaviour of what physicists called 'particles', constituents of matter on a microscopic level. These microscopic objects could be in various places at once, could be in different states at once and exhibited an intrinsic uncertainty in their properties. They seemed to settle into a definite state, or a definite place, only when they were observed and as a consequence of the act of observation. Such a counterintuitive notion is not easily absorbed - and in fact it has not yet seeped into our day-to-day consciousness, it does not yet inform the way we think and act in the world. Some of the creators of quantum theory themselves had trouble accepting it. The most strenuous critic of the lack of realism of quantum physics was Albert Einstein, who for eight years carried on a lively debate with Niels Bohr, the main person responsible for the so-called "orthodox interpretation" of quantum physics. In 1935 Einstein developed what he considered to be a decisive argument to prove the incompleteness of quantum physics. He devised a Gedanken experiment, a thought experiment, that evidenced an implication of quantum physics known as 'entanglement', a special kind of 'action at a distance' between quantum systems that brought the counterintuitive aspect of the theory to its extreme consequences, leading to results that seemed manifestly absurd. This imaginary experiment, universally known as the EPR experiment, from the initials of Einstein and of the two colleagues, who signed the paper with him, caused quite a bit of trouble to Bohr and to the supporters of the orthodox interpretation.

The technical means available in 1935 did not permit turning Einstein's thought experiment into an actual one, and the "EPR paradox", as it was sometimes called, lay dormant for about thirty years. In 1964 an elegant little theorem proved by the Irish physicist John Bell brought it back to the attention of the physics community. Bell's stroke of genius consisted in

disregarding the physics of the experiment and focusing merely on its logical structure. He defined two essential characteristics of matter as it was conceived in classical physics (and in Einstein's thinking) as 'realism' and 'locality'. 'Realism' means that the results of observations performed on a physical system are determined only by the intrinsic properties of the system itself: if we know those properties completely, we are able to predict the result of any observation performed on the system. 'Locality' means that physical systems exist in space (Descartes considered this so central as to be the very definition of matter: *res extensa*). It must be possible to think of them as occupying a certain portion of space and interacting with other systems only through some kind of action - what physicists call a 'signal' - propagating through space. By applying the assumption of realism and locality to the EPR experiment Bell was able to derive a certain constraint for the results. Such constraint is violated by quantum entanglement, therefore Bell's theorem provided a way to compare quantum physics with the requirements of a general local-realistic theory of matter. Quite surprisingly, an actual experiment promised to answer a philosophical question: is the world 'realistic and local'?

The experimentalists got to work to realize the experiment. It was performed repeatedly in the 1970's and finally and most cogently by Alain Aspect in Paris in 1980. The results fit the predictions of quantum theory perfectly and violated the constraint implied by locality and realism. What had appeared to Einstein so absurd as to manifestly discredit quantum theory turned out to be simply the way things are. Now we know that nature is not describable in local realistic terms. Our naive notion of matter (which is certainly local and realistic) does not apply on a micro scale. If we take locality and realism as definition of what we mean by a 'thing', the implication of Aspect's experiment is simply that the world is not made of things.

### ***Of traces and reality***

The next question that obviously arises is then why does the world appear to us as made of

things? Why do things appear to us as having intrinsic properties, being localized in space, behaving in all respects - except when we perform the cunning experiments of quantum physics - like the good old objects of classical physics? The problem raised by that question is technically known as the quantum measurement problem. It is still incompletely understood and opinions differ concerning the various proposed solutions. What I will say about it is therefore personal, it reflects the bias of my own work and would not necessarily be shared by all physicists. The phenomenon of quantum entanglement, although deeply challenging our intuitive picture of the world, is by now accepted as a fact by the physics community. People are even trying to build quantum computers based on it. But as soon as we come to the quantum measurement problem we are on much more controversial ground.

My understanding is that the problem is philosophically based. It arises from the Cartesian assumption that the world consists of two distinct substances, mind and matter. These two are actually inseparable, they jointly arise in the process of experience. What do I mean by experience? Within the entangled, inseparable quantum totality processes happen all the time that create correlations between subsystems. Some of these correlations enjoy a certain persistence, are recorded in some way, leave a trace. All our perceptions are like that. The trace can be thought of, e.g., as a neuronal state in our brain, the flickering of an impression or a memory. In quantum physics the trace would be a change of state in one of the systems involved in a 'von Neumann chain'. (A von Neumann chain would be, e.g. a micro system connected to a measuring device, connected to an amplifier, connected to a computer screen, connected to a printer - or to a human observer, etc.). From the point of view of physics the interesting point is the following: it can be shown that the existence of a trace hides the entangled totality and makes it appear as a world endowed with objective properties. (Sabbadini) But all our experiences of the world involve the formation of a trace,

of a physical change in the world (experience happens within the world!).

Let me call an experience an 'atom of subjectivity'. But what I just stated above amounts to saying that the formation of a trace is also an 'atom of objectivity', ie the observing subject and the observed object arise together in the act of experience. Before this co-emergence, there is only the entangled totality: no subject, no object. In the act of experience a subject arises as 'experiencing the world' and an object arises as 'experienced world'. These two co-arise: mind and matter are co-extensive, two sides of the same coin. Therefore, although quantum physics teaches us that the world is not made of things, the experienced world necessarily appears to us as made of things. About the world in itself of course nothing can be said. Quantum physics is only a model, a map. But what the model suggests about the 'un-experienced world' is interesting. It suggests that we cannot think of it by using the same categories that apply to the 'experienced world'. Indeed, we have no language to describe it. If we want to approach it, the metaphoric language of ancient wisdom comes closer to it than the objectifying language of our modern science.

### ***Laozi and the Dao***

Laozi's Daodejing is the foundational text of Daoism, dating to the sixth century BC according to Chinese tradition or to the fourth century BC according to modern scholarship. Its first chapter can be read as a lucid formulation of the co-emergence of subject and object from the primal totality that Laozi calls 'the Dao'. The emergence of a multiplicity of beings and things, standing in apparent isolation and objectivity, is what Laozi calls *ming* 'naming': 'naming' is the mother of 'the ten thousand things'. This process of 'naming' can be understood at many levels: on a rather immediate level it can be taken to refer to the discursive mind, that reasons and analyzes and classifies and separates the undivided flux of experience. But it can be taken one step further, it can be taken to refer to the inevitable subject/object split that is implicit in the law of experience itself: by creating a trace,

all experience in a sense betrays itself by creating the appearance of an objective world and of a subject contemplating it 'from the outside'.

As for the ultimate ground of reality, the Dao, the unnamed, it is ever present and ever unexpressible. It is 'unnamed' in a radical sense: it cannot be apprehended in terms of subject and object, in terms of mind and matter. But let us listen to what Laozi himself has to say.

**The Dao that can be told is not the eternal Dao.**

**The names that can be named are not eternal names.**

On one level these first two verses say: all discourse is contingent, all representations are only conditionally valid, all prescriptive norms are relative. Whatever we can say about reality is only a map, and a map is not the territory. 'The territory', reality, is forever beyond the reach of any map we can draw, is forever beyond the speakable. Dao called Dao is not Dao. No name we can name is an eternal name. 'Name' here stands for all representations, it embraces the whole dimension of our effort to describe reality. Laozi says: names, representations, are all relative, contingent, they have meaning within the context of a certain universe of thought, they are effective in order to reach certain goals, they are goal-dependent.

But on a deeper level these two verses can be taken to refer to the process of experience itself, to the general 'law of knowing' as subjects embedded in the world. As soon as there is experience, subject and object arise. As soon as consciousness draws the distinction between self and not self, I and other, I and world, names are there, i.e. 'things' are born. The universe is a universe of things, of objects, because it is a 'named' universe. Things do not pre-exist consciousness: they emerge in the act of naming. Our modern scientific 'myth of origins' views things as primordial and consciousness as a later, perhaps accidental, addition to the scene. It goes somewhat like this: first there is the big bang, then the evolution of matter, then heavy elements are

formed, then in some special circumstances organic molecules appear, then again in special circumstances life arises, and at some point in the evolution of life, perhaps in connection with a sufficiently developed nervous system, this something we call consciousness wakes up and starts looking around. That is the contemporary standard version of our story. Consciousness is a late guest who accidentally walks into the party. Ancient cultures, on the other hand, saw the whole universe as animated, they found consciousness everywhere. From this other point of view, matter and consciousness are not really two separate substances: they are two sides of the same coin.

**Without name, heaven and earth's beginning, with name, the myriad beings' mother.**

The objective world and consciousness co-emerge in the act of experience, subject and object are two faces of the same coin. Then in the most basic sense 'names' indicate the process through which the inseparable unnameable totality of what is, the unus mundus, unfolds into subject and object, becomes conscious of itself by splitting into mind and matter, consciousness and world. In the Upanishad this process is described as the act by which Brahma, the creator, feeling bored with his/her eternal perfection, unity and solitude, chooses to split into the innumerable beings, to become cow and bull in order to play hide and seek with him/herself - and thus creates the world.

Of course the process of co-emergence of subject and object should not be understood as an act of creation happening at a certain moment in time, so that from then on there actually are two separate things, matter and mind. It should rather be conceived as constant creation, an act that is present in each 'atom of experience'. And in it nothing is ever created as a 'thing in itself'. The two poles, mind and matter, remain inseparable: the world only exists as world experienced by consciousness, and consciousness only exists as consciousness experiencing a world.

Therefore, ultimately, reality does not consist of things, of separately existent singular beings. Nevertheless, we live in a world of things and of individual beings: we live in a 'named' world. It could not be otherwise, because as soon as consciousness is there as subject, a world, an 'other than itself', is given as its object. The 'nameless' is the undifferentiated, the primordial unity, the *unus mundus*, the Dao. 'Naming' is the act by which out of the undifferentiated arise subject and object, consciousness and world - and thence unfold 'the myriad beings'. The act of 'naming' is 'the mother'. In her womb starts our journey of beings that experience themselves as independently existing - and to that womb our journey returns.

This is the meaning of the statement that 'in the beginning there is the Word', and for this reason in African religions the word is conceived as creative power. Beyond the universe of names there is only the nameless Dao, existence 'beyond the power of words to define'.

**Therefore ever without desire we  
contemplate its mystery,  
ever with desire we contemplate its  
boundaries.**

As soon as the myriad beings arise, as soon as we exist as individuals and identify with a body, attraction and repulsion arise. This is so already for an amoeba: it seeks food and moves away from toxic stimuli. We would not be here if a long chain of evolutionary processes had not selected the same attitude in us. Desire (in a positive and negative sense, attraction and repulsion) is the law of individual existence.

The Buddha framed the problem of desire in the most concise and elegant manner. Desire follows the identification with a self like a shadow: we are attracted towards what we perceive as expansion of the self, survival, pleasure, and recoil from what we perceive as contraction of the self, death, pain. But the self is not intrinsically existent: it is an illusion, a mirage, and this illusion is impermanent. Therefore, ultimately, all desire is bound to be

frustrated: we do get old, contract and die.

Desire is the root cause of suffering.

The Buddhist notion of *anatta*, no self, fits very well with the world image of contemporary physics, which describes all matter/energy in terms of infinitely extended fields. Individual particles do not really exist as localized objects; they are simply localized manifestations of the fields. E.g., an electron situated here on earth and another electron located in a far-away galaxy, are not two distinct objects: they are inseparable manifestations of one and the same field embracing the whole universe. In this perspective our own body is also not something possessed of a separate, intrinsic reality: it is rather something like an 'interference pattern', temporarily formed by the superposition of a certain number of fields extending throughout the universe.

A simile here might help us: our body can be compared to a wave arising on the surface of the ocean. A wave does not consist of a travelling separate mass of water. It is simply an emergent pattern in the motion of the ocean water, a pattern that propagates more or less undisturbed for a little while, then dissolves into other emergent patterns. The ultimate reality of the wave, we might say, is only the ocean. Therefore if we imagine the wave as a self-aware being conditioned to seek its own survival as a separate entity, its desire is inevitably doomed. This is our predicament as humans, as self-aware beings: we don't exist, but we are attached to our existence. Death is the ultimate frustration of desire.

The first of Buddha's Four Noble Truths is therefore the simple statement: existence (existing separately, standing outside, being an individual entity separate from the whole) is suffering. That is the starting point of Buddha's path, the path going beyond suffering. Buddha's path is not essentially different from that of Laozi or fundamentally from that indicated by all Eastern spiritual traditions. Realise the illusory nature of the self: 'you' do not exist. Realise you are not the wave, you are the sea. When this realization becomes your living experience, the identification with desire ceases. You are then free: you have gone beyond suffering.

There are therefore two ways of being in the world. Free from desire, unidentified with a self, we contemplate the mystery of this wonderful, vast, incomprehensible existence. Immersed in desire, we live the whole gamut of human passions: love, hatred, joy, sorrow... We go through all the rainbow stages of the journey through form, what Buddhists call samsara, the wheel of conditioned existence.

**These two arise together, but have different names.**

**Together we call them dark, the darkest of the dark, the door of all mysteries.**

Laozi's way, just as the way of Mahayana Buddhism, the 'great vehicle' tradition, is not a way of asceticism and renunciation. The idea is not to leave the world in order to seek a mystical elsewhere (where else could you go?). The mystery and its manifestation, the boundless and the boundaries are two faces of the same reality. Nirvana (liberation, the extinction of the identification with a separate self) and samsara are one. The ocean and the waves are the same water.

Therefore Laozi does not say: give up being identified with the wave and identify yourself with the ocean, which is your true nature. His statement is subtler: he says 'these two arise together, but have different names'. We are asked to keep our awareness in two places at once. There is no self, yet I exist as a self. The wave is just ocean, but it keeps dancing its dance as a wave. Laozi says: live in the world of manifest reality, the world of things, the world of desire, experience not just the mystery of the boundless, but also the infinite charming and terrifying details of the boundaries. Be with form, be with desire, but remain aware of the formless, remain aware of the state that is beyond desire. Be in the world, but not of the world.

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Tarnas, Richard: drawings in this article are based on a lecture delivered by Tarnas at EranoS in 2008



## **First Key - MAGIC DOORS**

SOME ARE EVIDENT AND IMPOSING  
SOME ARE SMALL AND HUMBLE  
SOME ARE HIDDEN  
SOME ARE INVISIBLE  
SOME SEEM ORDINARY

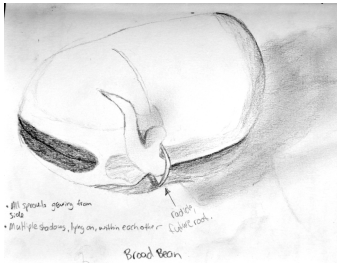
THEY ARE ALL POWERFUL AND  
BEAUTIFUL

WHAT HAPPENS IN YOUR BODY

IN YOUR ATTENTION  
IN YOUR BREATH  
WHEN YOU CROSS A DOOR?

WHAT HAPPENS IN THE UNIVERSE  
WHEN YOU CROSS A DOOR?

THE GAME IS IN THE TENSION  
THE CHOICE IS IN THE FLOW  
FOLLOW THE GOLDEN THREAD



## SEED TO SEED

One of my favourite aspects of Canadian aboriginal storytelling is the non-

chronological order in which they emerge. These narratives evade my spatial and temporal understandings of stories, creating the sense that all myths have their own identity and purpose swirling around, suspended in a liminal reality, freely flowing into and out of one another. My own life is a fluid dance of different stories creating or leading me to particular moments, new beginnings. Yet these new beginning are at the same time the middle or end or any part of another story – a pattern of influential stories that co-evolve together in the micro- and macro-cosmos of life. This has been my journey of the outer and inner seed.

One influential story unfolded several years ago during a summertime in Thunder Bay, Ontario. I was walking out to my garden to pick some beautiful golden peas. The Russian Giant sunflower looked me in the eyes as I approached the back of my garden. I came out to find a handful of pea pods that had been wrinkled, dried out in the sun, no longer fresh enough to eat. One pod was so dry that it crumbled in my hands, leaving me with four peas that looked exactly like the pea seeds my neighbour had given me to plant this pea patch. Then I realized that if I left some of my peas to dry out in the sun, I would have seeds for next year's patch!

It was beautiful to so clearly see and physically experience the flow of nature's rhythm, yet at the same time astonishing to realize that the seed-to-seed cycle was not an integral part of my gardening practice. I realized that I had no understanding of where the seeds of a broccoli or garlic or a radish plant, for example, would

be or what they looked like. Curious, I also left some of these plants to complete their own intrinsic rhythms, allowing me to learn from their wisdom and became a more engaged and receptive participant within the garden. The pea seeds shifted how I interacted with and saw the garden, and I find myself continuing a seed journey, both outward (planting, gardening, and eating seeds) and inward (self-reflecting, abnegating control, and being more in tune with myself). I cannot express enough gratitude for the lessons I received in Goethean science at Schumacher College; they have formed my main support system and pathway of understanding on this journey of coming to know the inner and outer seed.

## GOETHEAN SCIENCE

The key text for this essay has been Nigel Hoffmann's "Goethe's Science of Living Form: The Artistic Stages" in which he describes four main stages of Goethean science: earth cognition; water cognition; air cognition; and fire cognition.

Briefly, Goethean science has become for me a way of creating understanding and meaning in experiences - an ability not readily nurtured in the Western world where our focus on analytical thinking is valued over all other valuable ways of knowing, including sensing, feeling and intuition. Embarking on a Goethean study of seeds led me first into that analytical way of thinking (earth cognition) also referred to as *physical thinking* or *mechanical thinking*, which is concerned with collecting outward, objective facts. This is what Goethe referred to as 'exact sensing fact finding'. Hoffmann associates the next phase of water cognition with Goethe's 'exact sensorial imagination', in which we use our imagination to tell a fluid story with the facts of which we are a part. The next stage, air cognition, involves 'seeing in beholding', and represents the inspiration stage. Fire cognition finds us becoming one with the being, and forms the

intuitive stage from which an action emerges. (Hoffman, 2007; M. Colquhoun, personal communication, September, 2011). The scientific method developed by Goethe was formed in response to the mechanistic methods of science he recognized in his life time, and used in a conscious effort to remarry the arts with the sciences. I see this process as not just a methodology, but as a lifestyle - a lifestyle that, like a pea seed left to move with its own rhythm, enables flow in my life. This way of being prevents me from becoming stagnant in an 'earth' mode of thinking based purely in the intellect, concerned with what is happening in the head rather than the whole self. It is a response to the way in which western science, which has fundamentally shaped the western world, 'cuts people off at the head' (M. Colquhoun, personal communication, September, 2011). In Hoffmann's words, Goethe's work of cycling through all modes of cognition could be regarded as "the movement from the determined to the determining, the constituted to the constituting, from the objectively structured to the creatively free" (Hoffman, 2007, p. 11).

It was only upon writing this essay that I realized how organically I moved through these four stages. Ironically, I felt as though I was constantly getting distracted, but in fact the distractions were my natural rhythm and are, in hind sight, what Ruldolf Steiner has referred to as the "cultivation of an authentic living thinking" (Hoffman, 2007, p. 8). This authentic living, however, is often devalued by western science, based as it is on the belief that:

"We see objects outside ourselves, and do not notice that in order for them to appear as such, we must picture them to ourselves in a particular way. We mostly overlook the fact that the reality of these objects derives from the joining of two experiences which are gained in quite different ways: the percept coming from without, and the concept brought forth from within" (Bockemühl, 1985, p. 1).

I have begun a journey that is attentive not only to the prudence of planting seeds, gardening and food security – 'the percept

coming from without' – but also that which is 'brought forth within' myself from seeds.

## **OUTER SEED**

### **Earth Cognition – Physical Thinking**

Goethe's first step concerns scientific intelligence, cause and effect, and the laws of nature - in other words, conventional science. It is a very mechanical, externally-based process of writing down only that which you observe on the surface of a phenomenon. I worked with broad beans to begin forming a deeper relationship to all seeds, and used the act of drawing them at various stages of their sprouting process as an entry point into this relationship. Some observations from my journal are as follows: "varying shades of light brown/beige to soft pinks; dark brown 'mouth' at one end with a distinct line; kidney shaped; between 1-2 cm long and 1-1.5cm wide; smooth and uneven surface." Then I sprouted them: "all sprouts growing from one side - I expected them to come from the brown line at the one end; peeled off the skin of the previous sprout, leathery texture quite easy to do. The seed was splitting into the cotyledons under the skin. The sprout was growing from [in]side, and I broke it apart. The sprout was growing from both ends, the one end emerging out of the seed already, the other growing through the centre of the seed. Not sure which part is root or leaf" (personal journal, October 30, 2011).

An infinite amount of detail could be collected, forming a rather exhausting process that can easily leave us lost in our heads. If I imagine myself writing down every fact about the seed that I could see, smell, touch, taste or hear, I would lose all interest in the process of forming a relationship with the seed, distracted and consumed by the objectifying stage. As Hoffmann (2007) states:

"In terms of practical science, the inside of things – rocks, plants, animals – must be broken open...in order to be observed and measured; thus what is inside must be penetrated and established as the external. The method of quantitative science is to break

things open – but when we do so we do not see inside at all, but only more surface...” (p. 30).

Here we see the limitations of perpetually maintaining an earth mode of thinking, a stage that exists only on the surface. Yet no meaningful relationship in my life has stayed at a surface level. Creating a deeper exploration requires a move into ‘water’ cognition which “represents a mediating, softening influence; by imaginatively flowing into things, we are, in a way, giving ourselves over to them for the sake of letting them appear just as they themselves are, not according to a wilful desire to conquer through our knowing” (Hoffman, 2007, p.44). Without this deepening, the cyclical rhythms of life are blocked, confined by a “scientific thinking that is mechanical and logical [and thus] perceives only that dimension of nature that is mechanical and logical” (Hoffman, 2007, p 7-8). A seed is not a machine, and a deeper relationship is possible. I facilitated my data collection of the seeds by drawing what I observed. This can also be a mechanical process, but with awareness, by not imposing any expectations and allowing myself to be receptive, I see how I flowed beyond earth thinking into water cognition. Let me share with you what the seeds shared with me.

### **Water Thinking – Imagination**

As I spent time drawing I became fascinated by the shadows that were cast by the seeds. It was only when I included the shadows in my drawings that the drawings came alive on the page. Below is an excerpt from my journal:

I’m noticing as I draw a bean seed how many different shadows it casts, and it’s almost as if the shadows have shadows. When drawing the bean, you really have to draw the shadows in order to bring the seed to life on paper. Without them it’s very one dimensional. The shadows bring the drawing to life (personal journal October 30 & November 8, 2011). What I’ve come to realize about shadow is that it is everywhere all the time, we’re just not able to see it because the light blocks it out or covers it up. I realized this because I was playing with the shadow of my seeds and

noticed that it could be cast anywhere if I just manipulated where the light fell. So then in some aspects that must mean we are always in a state of shadow – of creativity and potential. I have the sense that my broad beans sprouting in my room grew noticeably in the night, so that I often awake to recognizable growth. But this state of eternal shadow is stunted by the light to some extent, and only when pure shadow is present is the creative side, the side of potential, most pure and abundant (personal journal, November 16, 2011).

These journal entries are some examples of how I was using my imagination, the key element of water cognition, to see the shadows as something deeper and more significant than they appear with earth cognition. Seeing the shadow from a different mode of cognition resonated with Hoffman’s observation that “that which began as a clearly recognizable scientific process of observation and measurement has begun to turn into something more like art... Science becomes artistic out of its own requirement to realize itself as a true science of living form” (Hoffman, 2007, p. 43).

My interest in the shadows cast by the light (external) drew me into the seed itself (internal). When I used my rational mind to imagine the inside of the seed I assumed that it was very dark inside. Then, flowing into my imagination, I saw the inside of the seed as an internal shadow. Reflecting on the MSc classes in which we explored the qualities of light and dark, I started seeing the inside of the seed, its internal shadow, as a space of unlimited potential. From the inner shadow a *whole* plant will grow. The essence of life is contained within the small dried seed - within every seed. The secret of all life is contained in these inner shadows. From within the seed comes the root, stem, leaves, flowers, fruits and seeds. This is beautifully expressed by Hoffman’s statement that “freedom and creativity in organic existence means that an organism comes forth ‘out of itself’ and is not merely the products of something else” (2007, p.13).

When I think back to the size of my pea patch growing up the chicken wire fence in Thunder Bay, and all the space they eventually took contained in the tiny seed, the generosity and abundance of nature - of us - overwhelms me. All this from a place of internal darkness. "For Goethe, darkness is not the completely powerless absence of light, it is something active" (Steiner, 1897). This I found clearly evidenced within the seed itself.

As I began seeing the inside of the seed as a place of unlimited potential, I related other active qualities of darkness, such as creativity, uncertainty, holding back, withdrawnness, freedom that at any time can find expression into the light, to the seed qualities. These are all crucial to how a seed gives voice to itself (P. Franes, personal communication, October, 2011), but I knew that something else was involved in the seed finding its voice: what ignited this active darkness into an expression of itself?

It seems obvious that by putting the seed in soil or sprouting it in water, the seed starts to grow. This is very logical, rational, earth thinking. However, if I move beyond this earth thinking I come to the realization that the inner shadow is activated when the whole bean becomes engulfed in shadow, i.e. soil. In a sense the seed surrenders to the darkness. The seed and soil become unified in the darkness. The seed roots itself in darkness and in doing so is able to grow up towards the light. Plants display a balance that embraces the dark and the light, not because they cannot have one without the other, but because the seed goes beyond these descriptions and embraces life in its entirety. There is a striking difference, however, between a seed growing in water. Being engulfed by water, the seed can still grow and exist, but this is what I would call an inauthentic shadow. The seed has surrendered to a quality that will never let it reach its full potential.

## **INNER SEED**

### **Air Cognition – Inspiration**

In a move away from the seed as physical matter to the philosophical realm of

understanding what the seed represents, I moved into air cognition, inspiration. The insights brought forth through the seed were very inspirational when I applied them to myself and how my life is stimulated. I recognized the different layers of darkness that are intricately connected: in the seed, the soil, myself, the world. These layers create a fractal structure of darkness, highlighting how the pattern of the whole is mirrored in the parts. On another level I was very inspired when I came across the book "Secrets of the Soil" by Peter Tompkins and Christopher Bird (1989) and read the section labelled in the Index as 'Seed-formation, spiritual science,' which is shockingly similar to what I had discovered:

"Carbon, hydrogen, and nitrogen, which occur in leaf and flower, calyx and root, are everywhere bound to other substances in one form or another, and can become independent again, says Steiner, only when hydrogen carries them outward into the far spaces of the universe, separates them all, and merges them into a universal chaos. Alternatively, it drives these fundamental substances of protein into the tiny seed formation and there makes them independent, so they become receptive to the in-pouring forces of the cosmos. In the tiny seed-formation there is chaos, and away in the far circumference there is once more chaos. *Chaos in the seed must interact with chaos in the farthest circles of the Universe. Then the new being arises.* (p. 375, emphasis added)."

I could also use chaos as a synonym for 'shadow' or 'darkness.'

Like the seed, I too must surrender to the chaos in the farthest circles of the Universe so that I can rise to my full potential - a metaphor for my life brought forth by the seed. Air cognition "is experienced as the void, the spaciousness or nothingness which...is not merely an absence of matter but an *overcoming* of matter" (Hoffmann, 2007, p. 44). By entering into air cognition, albeit unknowingly, I came to many other realizations about what certain manifestations mean beyond their physical form.

I'm a jumper. I physically or outwardly love to cliff jump, bungee jump, rappel; I 'jump' into

situations and allow the learning or process to come forth from situations, from replacing the plumbing in my upstairs shower and tiling my bathroom without previous plumbing experience to applying to the Holistic Science program without ever having visited England let alone the College. Looking back on these examples, they all share a surrendering into the unknown, allowing myself to become completely engulfed by darkness, where authentic and more meaningful learning or living emerges. Here I have lived with trust, interacting *“with chaos in the farthest circles of the Universe. Then the new being arises”* (Tompkins & Bird, 1989, p. 375).

Metaphors of the dark and how I live my life extend into interesting symbols, including those of my astrological chart which are all contained in the bottom half of the sphere – the underworld, the dark. My identification with the seed is also interesting to mention in light of the Homeric Hymns of Demeter’s daughter, Persephone, who is represented as the seed and queen of the underworld. All of this relates back to Hoffman’s description of the inspiration stage as inner readiness, a receptive space – a place of feeling. For as much as I am a jumper, it has mainly been a physical experience rooted in my external world (i.e. jumping into new situations, or literally cliff jumping). Being at Schumacher College, I have been making the steps towards jumping into the chaos within myself, in other words deepening my connection to my inner seed – discovering my own potential and creativity.

### Fire Cognition – Intuition

During my Goethean study of seeds I decided that I was going to undertake a meditation for my project instead of doing an essay. I felt that

it was a much more accessible way to share what I was learning from the seed, and yet in the end I also wrote the essay. By reflecting back on my study with seeds I have come to see how I progressed smoothly through the stages of earth, water, air and fire, although at the time I thought I was digressing from my study. It is only in looking back that I can align my experience with these titles. The meditation that I created could be described in Hoffman’s words as a gesture, symbolic of the fire cognition: *“Gesture is a manifestation of being; it is still apprehended from without, albeit through inner participation. The creative idea, the being itself, can only be grasped from the inside out”* (Hoffmann, p. 58). Out of the seed has arisen a meditation that I plan on sharing as an invitation for people to connect with their own inner seed, and as a contribution of my stories to the stories of others.

And so like the tales of the Canadian aboriginals there is no ending to this story. It will flow freely into the lives of others, influencing their stories in turn. From the bean seed this story has come full circle, into my inner seed. May the cycles always continue, from seed to seed.

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## SECOND KEY - CREATING A PLACE

What is it to be alive?

I DON'T HAVE A POINT TO MAKE  
 I AM CREATING A PLACE  
 THE GAME IS YOUR TREASURE HUNT

## THE MAP IS THE EXPRESSION OF OUR INSIGHTS

THE TERRITORY IS LIFE  
 HOLD THE TENSION  
 WALK THE FEAR

COME AND PLAY WITH ME...

## BLACKAWTON BEES

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**Background:** ‘Good’ science education rarely involves actual science. And yet science is an amazing yet basic process of playing games and making puzzles in order to extend one’s understanding of nature and human nature. Indeed, I (Beau Lotto) have found that doing ‘real’ science (usually on bumblebees) in *public* spaces stimulates tremendous interest in children and adults in understanding the world and processes by which we make sense of it. Here we report the result of one such study on the vision of bumblebees that was not only performed outside the lab in a Norman church in the Southwest of England, but was itself devised in collaboration with twenty five 8-to-10 year old children in the local primary school. They asked the questions, hypothesised the answers, designed the experiments to test these hypotheses and analysed the data. They also *drew* the figures (in coloured pencil) and wrote the paper (at a local village pub). So what you will find here is a novel study (scientifically and conceptually) in ‘*kids speak*’. What you will not find are references to past literature. While the historical context of any study is important, including references in this case would be disingenuous for two reasons: 1. Given the way scientific data are naturally reported, the relevant information is simply inaccessible to the literate ability of 8-to-10 year olds (without excessive direction which would defeat the project’s underlying aesthetic); 2. The context for the kids in this study is not what scientists had done before, but what their own personal and shared curiosities of nature are (which at a more fundamental level is true for any scientific paper with integrity). This lack of historical context, however, does not diminish the data, scientific method nor merit of their discovery for the scientific and ‘non-scientific’ audience.

**Principal Finding:** “We discovered that bumblebees can use a combination of colour and spatial relationships in deciding which colour of flower to forage from. We also discovered that science is cool and fun because you get to do stuff that no one has ever done before (kids from Blackawton).”

### INTRODUCTION

*Once upon a time...*

People think that humans are the smartest of animals. And so most people don’t think about other animals as being smart, or at least think that they are not as smart as humans. Knowing that others animals are as smart as us means we could appreciate them more, which could also help us to help them.

Scientists do experiment on monkeys, because they are close to man. But bees could actually be close to man too. We see bees in the natural habitat doing what they do. But you don’t really see them doing human things ... like solving human puzzles ... like sudoku. So it makes you wonder if they could solve a human puzzle. If they could solve it, it’d mean that they are really smart, smarter than we thought before. Which would mean that humans might have some link with bees. If bees are like us in some way, then understanding them could help us understand ourselves better.

To get ready to do experiments with bees we first talked about science being about playing games and making puzzles. We then got into groups and made up games for ourselves to play using random pieces of PE equipment. This gave us the experience of thinking of games and puzzles. Then we had to explain our games to other people. After talking about what it’s like to create games and how games

have rules to play, we then talked about seeing the world in different ways by wearing bug eyes, and mirrors and rolled up books. Then we watched the David Letterman videos of ‘Stupid Dog Tricks’, where dogs were trained to do funny things. Then we too had to learn to solve a puzzle that Beau (neuroscientist) and Mr Strudwick (Head Teacher) gave us (which takes an artificial brain 10,000 trials to solve, but us only 4 times). Then we started asking questions about bees, and then more specific questions about seeing colour using the bee arena (See Figure 1).

We came up with lots of questions, but the one we decided upon was whether bees could learn to use the spatial relationships between colours to figure out which flowers had sugar water in them and which had salt water in them. It’s interesting to ask this question because in their habitat there might be flowers that are bad for them, or some flowers that they might have already collected nectar from. Which would mean that it would be important for bees to learn which flowers to go to or to avoid by, which would need them to remember which the flowers were around it, which is like a puzzle.

To find this out we gave the bees a series of challenges to see if they could complete them or not, and then we tested them to see how they solved the puzzle and how they solved it. It was a difficult puzzle because the bees couldn’t just learn to go to the colour of the flower. Instead they had to learn to go to one colour (blue) *if* it was surrounded by the opposite colour (yellow), but to also go to the opposite flower (yellow) *if* it was surrounded by blue. We also wanted to know if they would all solve it in the same way as each other. If they didn’t, it would mean bees have personality (if a bee always goes to go to the blue flower every time, it tells us that that bee really likes blue).

## METHODS

*The bee arena:* The bee arena, which is made out of Plexiglas, has 5 panels. It is 1 metre high, 1 metre wide and 1 metre deep. Two of the side panels have three doors in them. It has a

vertical light-box at the opposite end from the side that the bees enter the arena through a small hole. The light box is made out of aluminium with a Plexiglas screen in front of the six fluorescent lights. There is an aluminium cross in front of the Plexiglas screen. The cross has grooves in the sides of it so that we can slide 4 black aluminium panels into the cross. Each panel has 16 cut out circular holes in 4 rows of 4 circles each. Each circle is 8cm in diameter. The holes are covered up by Plexiglas screen. In the centre of each circle there is a Plexiglas rod with a small hole in the middle in which we put sugar water or salt water or nothing. Behind each hole there are slits so that squares of coloured gel filters can be slotted in, making the light shining through each hole a colour. It’s like putting a piece of coloured see-through paper on a light and the colour of the paper shines through.

*The bees:* The bees have black and yellow stripes with white bums. The type of bee was a *Bombus terrestris*. We got the beehive delivered from Koppert, UK.

*Training phase 1:* To teach the bees to go to the Plexiglas rods as flowers, in every panel all the circles were white and all the rods had sugar water in. Once the labelled foragers learned that the flowers had a reward, which took 4 days, we marked the bees, and then set up the puzzle for them.

*Marking bees:* We let the foragers into the arena and then turned the lights off, which makes the bees stop flying (because they don’t want to run into anything). Then we picked the bees up with bee-tweezers and put them into a pot with a lid. Then we put the tube with the bee in it into the school’s fridge (and made bee pie ☺). The bees fell asleep. Once they fell asleep, we took one bee out at a time and painted little dots on them, like yellow, blue, orange, blue-orange, blue-yellow, etc. We put them into the tube and warmed them up and then let them into the arena. No bees were harmed during this procedure.

*Training phase 2 (‘the puzzle’ ... duh duh duuuuhhh):* We set up a puzzle for the bees.

The puzzle was the following. Imagine having a 16-circle panel with the large square of 12 circles on the outside in yellow with the small square of four circles in the middle blue. This was true for two panels, but the on the other two panels were opposite. So in these other two panels instead of yellow on the outside, larger square and blue on the inside, smaller square, we had blue on the outside and yellow on the inside. The sugar reward (which 1:1 with water) was in the middle 4 flowers in each panel of 16 flowers. Every 10 to 40 minutes we swapped locations of the panels in the different quadrants so that the bees couldn't learn the location of the rewarding flowers. We also cleaned the Plexiglas stems so that the bees couldn't use scent to tell the other bees that that flower had the reward. Instead they had to learn ... if the there was blue on the outside ring of each panel of 16 circles, then go to the inside 4 yellow circles. If, however, there was yellow on the outside ring, then go to the inside 4 blue circles. During the first two days of training, we had sugar water only in the four middle flowers in each panel and nothing in the outside ring – so that they got the hang of it. During the second two days we added saltwater to the flowers in the outside rings. We did this so that they would learn not to go just to the colours, but had to learn the pattern. Otherwise they might fail the test, and it would be a disaster. After training, we tested the bees to see if they solved the puzzle.

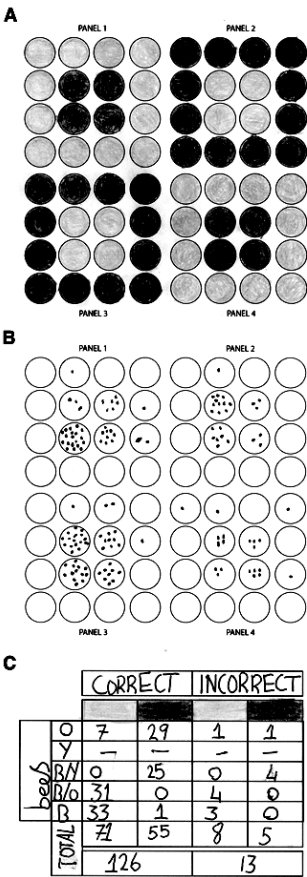
**Testing the bees:** We tested the bees using the same pattern of colours, but without sugar water or salt water to see which flowers they would go to. We also moved the locations of the panels around so it was different from when they were just trained. We let the labelled foragers out into the arena one a time so they wouldn't copy each other (like humans might do). We tracked their flower choices using a sheet of paper with the 64 circles into the 4 quadrants. Whenever the bees landed on a flower and stuck their tongue into the Plexiglas rod, we would mark the same circle on the sheet. We marked each circle with a '1' or a '2' or a '3' etc., so that we could track where they went to see out their behaviour might have change with time. After a while the

bees might have got annoyed because they weren't getting a reward and might start making mistakes or searching randomly. So we let each forager make only around 30 choices before we stopped the test. We gave them 3 tests (see Results).

RESULTS

After training the bees in the arena, we tested them three times to see if they learned anything during training.

Test 1 (The Control)



**Figure 1:** Conditions and responses to 'Test 1' (The Control). (A) The pattern of colours that the bees were trained to and tested on in their first test (see text for explanation). (B) The selections made by all the bees tested (dots show where each bee landed and tried to get sugar water). (C) A table showing the preferences of each bee during testing (see text for explanation).

In the first test the bees had the same pattern that we trained them on. After training, we moved the colours of panels around clockwise

one time so that the colours of the quadrants would be different for the bees. We did this so that the bees could not just go to the same place where they went last time to get a reward. See Figure 1A for a hand drawing of the test. If the bees solved the puzzle, they should land on the flowers in middle of each quadrant and stick their tongue (proboscis) in the flower, since during training this is how they would have got a reward (but during the test, they don't get a reward).

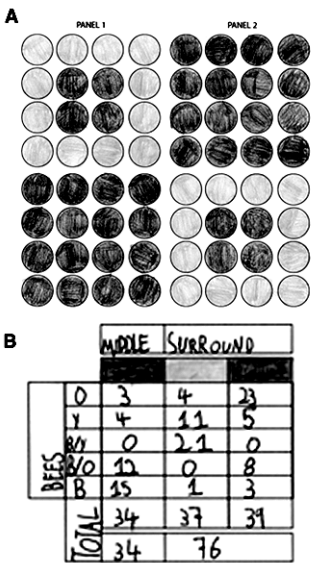
Figure 1B shows where four of the bees went during the test (unfortunately, one of the bees called 'yellow' didn't come out of the hive during this test). Each dot in Figure 1B is an attempted forage. The picture in Figure 1B shows that the bees went to the middle flowers 126 times, and to the outside flowers in each quadrant 13 times (see 'total' in Figure 1C). So out of 139 attempted forages, 90.6% were correct flowers (correct means flowers that would have had sugar water during training).

Figure 1C shows how many times each, individual bee went to correct blue and yellow and incorrect blue and yellow flowers. We did this so that it would be clearer where each bee went during the test. 'Orange' bee selected 7 correct yellows and only 1 incorrect yellow. She also went to 29 correct blue and only 1 incorrect blue. This bee prefers blue in the middle, but also prefers yellow in the middle. This bee did extremely well, because it went to both colours of correct location of flowers. 'Blue/Yellow' bee went to neither outside yellow flowers or middle yellow flowers. Instead it went to 25 correct blue flowers (inside square) and only 4 incorrect blue flowers (outside square). So she preferred blue to yellow. The 'Blue/Orange' bee went to 31 correct yellow flowers and 4 incorrect yellow flowers, and never went to blue flowers. The 'Blue' bee went to 33 correct yellow flowers and only 3 incorrect yellow flowers, but selected the correct blue flowers only once. These numbers are shown in Figure 1C. We conclude that one bee went to a mixture of colours in correct locations, while the rest preferred one colour more than another. But while they preferred only one colour, they only

went to the middle of the panel that had that colour (since this is the flower that would have had the reward). This test shows that together the bees solved the puzzle very well as their choices collectively were divided between all blue and yellow *rewarding* flowers. We then presented the bees with two more tests to see how they solved the puzzle they were trained to.

### Test 2 (The First Experiment)

Test 2 is very similar to the Test 1, except that the middle flowers in each quadrant were green. We did this to see if the bees learned to go to the colours or the location of the rewarding flowers during training. If the bees learned to go to the location of the rewarding flowers, then they should land on the green flowers in Test 2. See Figure 2A for a hand drawing of this test.



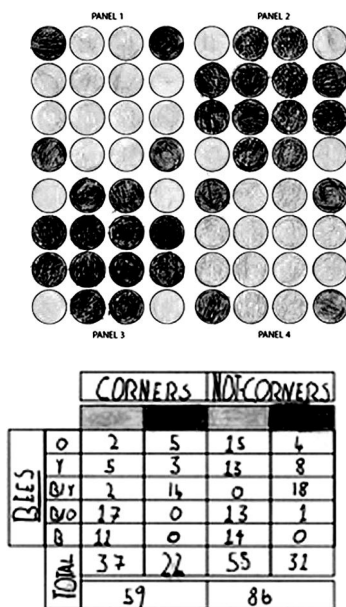
**Figure 2:** Conditions and responses to 'Test 2'. (A) The pattern of colours that the bees were tested to in their second test (see text for explanation). (B) A table showing the preferences of each bee during Test 2 (see text for explanation).

Figure 2B shows a table of the choices where the bees went during this test. In total, the bees went to the green middle flowers only 34 times, but to the outside blue and yellow flowers 76 times (see 'total' in Figure 2B). So out of 110 attempted forages, 30.9% were to the middle flowers. If the bees were guessing, they should have selected the green flowers 25% of the time, which is very close to 30%. So

we conclude that the bees did not solve Test 1 by only going to the middle flowers of each quadrant ('dah dahhh dahhhhhh'). However, two of the bees (labelled 'Blue/Orange' and 'Blue') actually went most often to the green, middle flowers. So they seemed to have learned a different rule to the other three bees.

### Test 3 (The Second Experiment)

In the third test, instead of having large squares of yellow and blue around the outside of each panel, and a smaller square of yellow and blue on the inside of each panel, we took the four inside flowers and put them in the corners of each panel. See Figure 3A for a hand drawing of what this test looked like. We did this because we wanted to see if the bees solved Test 1 because they learned during training to go to the colours of each panel that were the fewest in number. We could also see if they still preferred to go only to the middle flowers. If the bees learned to go to flowers that were fewest in each panel, then should go to the flowers that are in the corners.



**Figure 3:** Conditions and responses to 'Test 3'. (A) The pattern of colours that the bees were tested to in their third test (see text for explanation). (B) A table showing the preferences of each bee during Test 3 (see text for explanation).

The table in Figure 3B shows where all five of the bees went during the test. You can see that the bees as a group went to the corner flowers

59 times, and to the 'not-corners' 86 times (see 'TOTAL' in Figure 3B). So out of 145 attempted forages, 40.1% were to the corners. This is very different from what they did in Test 1. When the same flowers were not in the corners but in the middle in Test 1, they selected them 90.1% of the time, which is 2.2 times more often. We think instead that the bees in Test 3 selected the flowers randomly. We conclude that the bees did not learn to go to the flowers that had the fewest colours in each panel. Also, the 'Blue' and 'Blue / Orange' bees this time did not prefer the middle flowers in each panel. Which means in Test 2 they must have used the larger square of blue and yellow flowers to decided to forage from the *middle* green flowers.

### DISCUSSION

This experiment is important, because no one in history (including adults) has done this experiment before. It tells us that bees can learn to solve puzzles (and if we're lucky we will be able to get them to do Seduko in a couples years time). In this experiment we trained bees to solve a particular puzzle. The puzzle was go to blue if surrounded by yellow, but yellow if surrounded by blue.

Test 1 showed that the bees learned to solve this puzzle. We know this because the test results showed that they mostly went to the flowers that they were suppose to go, because they were the ones that were the ones that had had a sugar reward before. But we also noticed that the bees solved the puzzle in different ways, and some were more clever than others. Two bees preferred yellow and two others preferred the blue flowers. The 'Blue' bee was best at understanding the pattern in the first test, because it had the most correct answers compared to incorrect answers. It also went to both correct yellow and blue flowers, but preferred the blue flowers.

What's important about this puzzle is that there is more than one strategy the bees could use to solve it. One strategy would be do use two rules: (i) go to the middle four flowers in

each panel and (ii) ignore the colour. Another strategy would be to go to yellow if surrounded by blue or blue if surrounded by yellow. They could also learn to *avoid* the surrounding flowers, and as a result only go to the middle flowers. Or they could go to the fewest number of coloured flowers in each panel. Of course they could have also just chosen randomly – and they might get them right or they might get them wrong. Or they could have just gone to a colour, but then they wouldn't solve the whole puzzle, only half of it.

Test 2 tests whether the bees learned to go to the middle of each panel and ignore the colour. If the bees learned to go to the middle and ignore the colour they should go to the green flowers. If they learned to go to the middle blue and yellow flowers then they should go either to the surrounding blue and yellow flowers or no flowers at all. The results tell us that three of the bees preferred to go to the colours that they learned before and avoid the middle green flowers. Two of the bees, however, mainly went to the middle flowers, including the 'Blue' bee that went to both correct yellow and correct blue flowers during the first (control) test. So they learned to solve the puzzle using different rules. Test 3 also showed that one of the rules wasn't just to go to any middle flower, since they rarely went to the middle flowers, or to go to the flowers that had the fewest colours in each panel, since they did not prefer the corner flowers. Instead they seemed to select the flowers at random, but funnily continued to go to their 'favourite' colour.

We conclude that bees can solve puzzles by learning complex rules, but sometimes they make mistakes. But also that they can work together to solve a puzzle. Which means that bees have personality and have their only 'likings'. We also learned that the bees could use the 'shape' of the different patterns of individual flowers to decide which flowers to go to. So they are quite clever, because they can memorize a pattern. This might help them get more pollen from flowers by learning which

flowers might be best for them without wasting energy. In real life this might mean that they collect information and remember that information when going into different fields. So if some plants died out, they could learn to find nectar in another type of flower and so survive during evolution.

Before these experiments we didn't really think a lot about bees and how they are as smart as us. We also didn't think about the fact that without bees we wouldn't survive since bees keep the flowers going. So it's important to understand bees. We discovered how fun it was to train bees. This is also cool because you don't get to train bees everyday. We like bees. Science is cool and fun because you get to do stuff that no one has ever done before. **(Bees think!)**

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**Acknowledgements:** We thank the whole of the Blackawton community, who truly engaged with the science research, including the George Inn – where the manuscript was written – for the free Cokes for the kids (and pints for others). We thank the local parish for the use of the Norman church, where the experiments were run, and the parents for letting their children 'work' outside 'normal' school hours. Of course none of this would have happened without the innovative and enthusiastic support of the teachers of Blackawton. We are also indebted to Larry Maloney and Natalie Hempel de Ibarra for their openness to possibility and time, effort and detail in writing the commentary, as well as Dale Purves, Lars Chittka, Read Montague, Karl Friston and Geoff North (Current Biology) for their sage advice. Finally, we thank Chris Frith and Brian Charlesworth for their open-mindedness. The project was funded privately by Lottolab Studio, since the referees argued that young people can't do real science.

Editor's Note: Dave Strudwick challenges the idea of teaching as a communication of knowledge. In this experiment conceived by students from Blackawton Primary School, the living curiosity about the world is the precursor to a discovery.

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See further:  
<http://www.lottolab.org/articles/blackawtonbees.asp>

## IF YOU GO DOWN TO THE WOODS TODAY...

CHRIS SEELEY

*In their turn, each tribe of exiled bears headed north, toward the colder counties. Hiked up into the hills and peaks, then went to ground. Made their way down, down into the darkness and settled, in England's forgotten caves and caverns. Growing still, until sleep came lapping at their ankles. Then deeper sleep came rolling in.* **Mick Jackson** (2009: 105)

For as long as I remember, I have experienced a sense of archetypal connection with bears. These creatures, long extinct in my home island of Britain, somehow continue to inform and shape our consciousness. I wonder where it comes from, this enduring sense of affiliation with some very different other?

Having (finally) grown out of childhood teddy bears (which is such a widely engaging manifestation of the bear archetype), having read no end of bear-related literature and having failed to see any in the wild on various trips to Canada, I still wanted to get to know these creatures in the same way as I knew my dog. I wanted to experience for myself essential gesture of “bear”. To know them in the sense of acquaintance (*connaître* in French or *kennen* in German) – or *withness* knowing (Shotter, 2005) rather than knowing *about* them (*savoir* in French or *wissen* in German). We have lost this distinction in the English language and maybe partly as a consequence, quality in research tends to be implicitly associated with saviour, wissen and aboutness knowing. Research that is focused on becoming acquainted with a phenomenon (*connaître*, *kennen* or *withness* knowing) is considered by some to be academically second rate. And yet it is this more hidden knowing which enables us to navigate our practical lived relationships with each other and other species. In North America, where bears still live, they are often portrayed as fierce, growling, aggressive and scary. People are taught from an early age to be frightened of bears of all kinds – including the black bear, which apparently evolved more as a prey animal than a predator, meaning that it is inclined to be ready to run away (or up a tree) as a first

defence and very unlikely to respond aggressively through attack.

“Black bears are so timid today partly because they evolved alongside such powerful predators as sabre-toothed cats, American lions, dire wolves and short-faced bears, all of which became extinct only about 12,000 years ago. Black bears were the only one of these that could climb trees, so black bears survived by staying near trees and developing the attitude: run first and ask questions later. The timid ones passed on their genes to create the black bear of today.” (www.bear.org)



When at the end of 2009, I stumbled upon a BBC documentary (BBC) about research - conducted by Dr Lyn Rogers and his assistant Sue Mansfield at the Wildlife Research Centre, Eagle's Nest, Minnesota - that sought to know black bears (in the *withness* sense) and their sometimes fraught relationship with humans. I immediately signed up to go and be part of their research and study programme. Research at the Centre, which is gentle, rigorous and qualitative, tracks the personalities, interactions and patterns of individual wild bears over their lifetime and “focuses on improving coexistence between people and bears in an increasingly urbanized environment” (www.bearstudy.org)

This ethological approach demands that a degree of trust and tolerance is built between researchers and bears. It looks close up at behaviours and relationships but continues to be questioned as unconventional by old paradigm thinking - something also experienced by well-known primatologists Diane Fossey and Jane Goodall.

*"One of the things to emerge from long-term, close-up studies like this... is the difference of individual personalities. That's why we use the word "who" instead of "it" or "that" when talking about individual bears. They have lives. They don't behave mechanically. They show us that the natural world is complicated, wonderful, and endlessly new. That's what has kept us intrigued for so many decades and what continues to show us how little we know about what is going on in their minds and hearts."* (www.bearstudy.org)

In this writing, I am focusing in less on *what* I learned about these creatures and the human politics surrounding the whole situation and more about *how* the context and process I exposed myself to created the conditions for a receptive and holistic mode of knowing. First, the primary encounters with the bears. This was initially informed through lectures and information gained from experience about how to comport oneself in the company of wild black bears. When I (and seven others) arrived at the research station, I listened intently, effectively apprenticing myself to the researchers' long experience of living alongside these animals. It felt viscerally real; already we could hear bears moving around on the wooden veranda surrounding the research station and soon we would be out in the woods with them.

At this stage, I had a sense of archetypal connection to the *idea* of bear, a tiny amount of received knowledge *about* bear-human interaction in this context, the *social conditioning* of bears being portrayed in popular culture as dangerous and fierce, and a handful of memories of seeing *captive* bears in zoo-type situations. In short, I still had no *lived experience* whatsoever of the actual phenomenon of bear-ness, where bear is part of forest and forest part of bear.

Standing, moments later, between a wild mother bear and her cubs, my intellectual *aboutness* knowing ("don't get between a mother and her cubs!") and my rapidly unfolding experiential *withness* knowing ("this is OK, I feel safe as long as I do nothing to lead this bear into feeling unsafe") competed with one another. I needed to trust my own senses and bodily responses rather than what the scaremongering popular imagery would have us believe about how bears are likely to behave. I was here at my own risk, with nothing to protect me from these strong creatures but my own quality of presence and common sense. That the bears should show any trust towards humans, given that most of them will go on to be killed by humans and all will have their habitat taken by human activity, amazed and moved me.

Later, we humans lay round a white pine tree where the same mother slept with her three cubs at the base of its trunk. They were utterly wild (albeit habituated to our presence) yet they chose to trust us.

Overcoming the idea of bear with the actuality of experience demanded that I simultaneously pay attention to the context around me and to the data coming from within me. Like the bears around me, my senses were alert and I was instinctively opening myself to discerning patterns of behaviour and seeking anomalies in those patterns. I paid attention to my own breathing and heart rate. What was the mother bear doing? Did she seem relaxed? Where was her gaze? In response to what sounds did her sensitive ears twitch? When she raised her head to sniff the air, what could this tell me with my much duller sense of smell? It was instantly clear to me that this was not an encounter, with bear as "object" and me as "observer", so much as *placing myself as part of the context of bear/forest*. I held both a



*focused consciousness* on the bear before me and a *diffuse attention* (de Castillejo, 1973) to whole context of trees-forest-cubs-food-other bears-gusts of wind-human presence Like the bears, my presence influenced and shaped the nature of this context. That I was there at all, and how I was present played a part in creating the conditions which in turn affected me-bear-others.

I was surprised at how moved I was each time a bear took form in the dense wood. I understood *respect* at a visceral, not intellectual, level, looking again and again at what the bears were doing, at what they, in turn, were watching, and seeing them with a kind of differential regard – they were in charge here, I was just a passing visitor.

As the field study course continued I asked myself how I might dwell more fully in any given moment. Time neither rushed by nor did it stand still. Rather it seemed to become irrelevant as I gave exquisite attention to the experience itself and to my practice of drawing the bears. The practice of drawing helped me stay with and deepen my aesthetic experience as I became more intimately acquainted with the patterns of movements and interactions of these creatures in their habitat. It supported me in my *seeing* rather than just *looking* (Franck, 1973) through the lens of the camera. I did take photographs as well as make



drawings. These two activities felt very different – photography had an aura of taking,

grabbing, capturing whilst drawing felt like offering, making, responding. With drawing I felt more present, with photography, less so. Compare the quantity of future-oriented quick and seductive photography (in the hope that the next shot will be a good one) with the present, patient quality of careful tracery of a bear's essential shape through eye, hand and pencil.

Artist Leigh Hyams makes a similar point when she says: *"If you genuinely, deeply look at a real flower the reality of it is a non-language reality. It is simply, uniquely what it is, and can't be described in any language. When a botanist tells us the species it belongs to that's not the flower, it's only information. The large flower images in my paintings are not flowers. They are paintings. They exist as works of art but they are also a vehicle that can point beyond art work. It's true that some of the shapes can be named—that's the stem, there's the stamen—but if you are open and keep looking at the images themselves, words stop having any meaning"* (artsreal.com)

I have embodied this experience with the bears differently, more fully, than if I had just read about it, if I had just seen it on film, or if I had just photographed it. I remember the points of drawing particularly clearly. The attention I brought through drawing and through the qualities of my awareness deepened my aesthetic experience. Coming back home, I wanted to continue to dwell in this experience, to be consciously informed by it and, perhaps, take this hidden knowledge and make it visible to others.

The emotional impact of my encounter with the bears raised profound questions: How do these the expanded ways of knowing in the moment, tip into an expanded way of being in the world, beyond the sheer privilege of the encounters themselves? What is my responsibility to others, to the bears and the ecosystem of which they are an emergent part, to myself? Am I willing to reveal and articulate my living subjectivity? How do I keep dwelling in the experience and not skim over it? How do I follow my train of my thought and weave it back in and out of my bodily experience? How do I re-member the bears through my own bodily experience?

I ask myself: Am I willing to be vulnerable enough to apprentice myself to these fuller ways of knowing? Am I willing to immerse myself more fully into the imaginative realm, to “do the work” that takes me beyond thinking about, and into getting to know this aesthetic, patterning mode more deeply? Am I willing to behave in artful ways that “sensuously frame” life (Arteaga, 2011) and are consciously “making special” (Dissanayake, 1988: 126)?

Seven months after my return, I was a little closer to making the experience visible to others. The experience was ripening, and I was starting to respond to my experience. I felt my own resistance to shifting from knowing about, to living a more exposed, vulnerable and revealing life, I committed to a one woman performance which would plait facts, memories and myths in and out of each other. The performance event wove together many different ways of knowing, bringing my experience to an audience of neighbours and friends and doing justice to the bears’ continued existence in North America. I also told a story about how we in the UK obliterated our bear population centuries ago (see Jackson, 2009). Now, another 8 months later, I am working on a painted triptych (and this writing) as further responses.

I haven’t even begun to explore the possibilities of an even more embodied knowing through mime and movement, to “develop a habit of engaging physically with the world, while heightening a sensitivity to the often ineffable way that the world continuously engages with us...” (McNeer, 2010). Bear biologist Dr Lynn Rogers makes a lot of bear-like noises and movements after his 44-year research, empathizing with these other sentient beings in a kind of physical prayer of deep physical engagement and embodiment.

Disciplines, practices and approaches such as Action Inquiry (Reason & Bradbury, 2001) and Goethean Science (Kaplan, 2002) demand of us that we value and develop the many ways we come to know, beyond grazing the intellectual or delving into the abstract. They ask that we extend our epistemology by paying rigorous

aesthetic and embodied attention to the ways we receive and respond to our experience of the world through movement, stories, image making, musicality, practice, play and performance... as well as through our ideas and theories (Heron, 1992). This expansion means developing everyday aesthetic practices for ourselves and others: “aesthetic experience emerges due to a certain mode of activity... in the aesthetic experience, we have conscious access to knowledge through our body as a whole... and the sense of the system of interactions as a whole” (Arteaga, 2011).

Implicitly making the link between cultivating these fuller ways to knowing and creating a more sustainable future, they seek to heal the Cartesian mind/body split through an “epistemotherapy” (Rosen, 1994) and a greater “epistemological equity” (Cole, 2004). Cultivating greater equity between our different ways of knowing requires a systematic awareness of what gets valued. I want to stress that this does not mean devaluing intellectual endeavour, but bringing alongside it the individual and collective practices of paying rigorous attention to the imagination, to intuitive knowing, emotional data, aesthetic and embodied knowing. Commenting on the work of Gregory Bateson, Noel Charlton says:

*“If aesthetic engagement offers us a remedy for our sealed-off, self-seeking purposiveness, it will do so by reconnecting, integrating, enabling wholeness and the recognition of oneness. Further, we must be involved in active process with the art and with the natural beauty...”* (Charlton, 2008:141)

*“Engagement in aesthetic process, as creative artist or ‘appreciator’ of art (and ‘art’ means poetry, music, drama, dance and ‘natural history’ as well as painting and sculpture) enables us to recover our lost sense of unity with the living world, our integration with the rest of life on the planet.”* (Charlton, 2004).

If both we and the other-than-human world are to flourish then we must exercise our responsibility to become more wholly human; not merely acknowledging that we come to

know in diverse ways, but actually to *live* and *be* in ways which invite the artful *and* the intellectual, the embodied *and* the theoretical, the hearty *and* the heady with equal thoroughness and enthusiasm. We need to dissolve the boundaries that split these artificial categories and develop a comprehensivist, transdisciplinary (Nicolescu, 2008) rigour if we are to enhance the qualities of life around and within us and achieve a broader sense of “success”.

Yet, in a world which tends to devalue artful practice as being somehow frivolous whilst simultaneously reifying it through the “Art World” of galleries, concert halls and auctions, it is hard to carve out space for ordinary, everyday knowing through attending to our moving, drawing, stories or poetry – both in our own lives and through the strictures of organisational norms. Somehow we deny ourselves the most delightful and nourishing fruits of the self-reflective and imaginal consciousness which we humans uniquely offer.

Further, how do we make the deeper shift from intellectually recognising broader, more whole ways to know, towards cultivating and living our lives in ways which incorporate our extraordinary birthright and evolutionary gift of receiving and responding to the world art/fully?

Underneath our epistemological impoverishment, I am coming to think that at the deepest level we know all this anyway. We know this in all the ways we have to know. Beneath the chatter and the noise, the statistics and the facts, the messages and the tweets and the updates and the breaking news, the creatures of the information within us and outside of us understand, inform and influence us. Like creatures in a forest, sometimes they can only be glimpsed through the trees or with a sideways glance. Our point of contact with this creaturely knowing comes through an invitation we must freely issue over and over again. Our responsibility is to make space for this embodied, vital conversation and give it our attention in all the ways we can.

*“I know artists whose medium is Life itself, and who express the inexpressible without brush,*

*pencil, chisel or guitar. They neither paint nor dance. Their medium is Being. Whatever their hand touches has increased Life. They SEE and don’t have to draw. They are the artists of being alive.” (Frederick Franck, 1973: 129)*

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## TALKING RIVER: A JOURNEY TOWARDS WELL-BEING

ROLAND PLAYLE

A group of Maori women gather in their ancestral meeting house to begin a participatory process. They gather to gain a better understanding of the relationship between their community and their environment. The women are part of the community health group, Hauiti Haora, based in a predominantly Maori-inhabited township on the remote East Coast of New Zealand. They hope to bring about interventions that can enhance the level of health of the township's inhabitants.

They work late into the night questioning each other, they dialogue and even create drawings around the subject to gain further insight into their community and place. They delve deeply into their knowledge of the township's history, their own experiences growing up in the area and all that they know of their community's current situation. At times emotional, at other times passionate, a great sense of enthusiasm fills the room from their strong intention to address the problems of their locality.

Is there a relationship between the inhabitants of their township having insufficient public access to the river running through their settlement, the township's poorly maintained septic system, and the dumping of waste that goes on covertly around their township? Are any of these problems related and, if so, how might they be? These are some of the questions they begin to address through a 2 day inquiry process.

The story below is a description of events that occurred during the course of the inquiry. The group, already very active in their township, had invited me to facilitate their staff and board members through a participatory inquiry to gain greater clarity around their organisation's purpose and current direction. The question they formulated for their inquiry was, 'What is the relationship between the community's health and their relationship to the environment?'. With this as a point of focus, we embarked on a journey together.

To 'participate' with a phenomenon in this case is to move beyond objective knowledge *about* something and to begin to enter into a 'dialogue-like'

relationship *with* the phenomenon - in this case, the community's relationship to the environment and their health. The participatory inquiry aims to bring together the so-called 'objective' facts about the phenomenon, with the 'subjective' responses evoked in the inquirers, and in the process come to fuse the quantitative and qualitative dimensions of the health group's inquiry question.

Our bodies, as sensing vessels, carry multiple capacities 'to know' beyond the rational thinking mind so heavily developed in western scientific traditions and education. Our senses, our feelings, emotions, intuition and even our capacity to imagine, all have the potential to illuminate our relationship to the world in multiple ways. This article uses the word 'participate' to refer to forms of meaning-making, born from the engagement of our senses and selves, in ways including and other than the rational-logical mind. In this example, we will see how such participation can open up inherent potential extant in our relationship with the natural and social world, precisely by shedding light on the qualitative and quantitative aspects of the social-environmental circumstances of the Maori participants.

The process of the Maori health group, Hauiti Haora, began by building up as rich and detailed a picture of the materially tangible facts underlying their leading question. The inquirers gathered as much 'objective' and empirical information available to them on the relationship between their community's health and the community's engagement with the local environment. A diverse and varied range



of facts were collected, including statistical information gathered by a researcher from Wellington University involved in an environmental regeneration project in the township. The rich and varied information served as empirical grounding on which other 'non-objective' modes of participatory knowing could be engaged in.

Participants were then asked whether they could perceive any patterns or qualities pervading the diverse facts they had gathered. This was achieved by creating space for a facilitated dialogue around specific leading questions, in which each individual was given space to respond freely. With the understanding that there were no 'right' or 'wrong' answers (but merely different perspectives), the participants were supported to see how each individual's responses were related to one another. In this way, the information collected in the first stage of the inquiry by participants were seen in a 'joined up' way. The seemingly disparate pieces of information were now 'seen together' to be creating the conditions and circumstances of the community's health, through their relationship to the environment.

This way of 'seeing' resembles something of the view that Complexity Theory provides, of how the convergence of multiple elements can come to create a single phenomenon that emerges from the very amalgam of those diverse elements. For the Maori participants, this shift in perception to a dynamic and more holistic one, provided a comprehension ('comprehension' being more 'comprehensive' than 'understanding') of their community and environment that shed light on something of its evolving (process) nature, and the complex web of connections that was bringing particular states of health and ill health into being.

This way of seeing brought about an interesting turn of events for the Maori participant's. The more they engaged with this way of 'looking', the more prominent they began to feel the significance of the river that runs through their township. The more they questioned the current state of their community with this way of perceiving, reflecting on the historical trajectories that

brought them to where they were, the more the group's responses became animated in raising concerns about the state of their community's river.

The group spoke of how, historically, their township had emerged and grown from sustenance and trade made possible by the river and how, in their cultural and 'tribal' mythological stories, the river had always played a central role in their sense of place and identity as a tribal group ('iwi' in Maori) and people. Despite this centrality of the river in the township's history and development, the participants narrated stories of how, in the space of 2 to 3 generations, residents had become less concerned with the river and its prominence had gradually faded in the community. The participants talked energetically of how the township's houses had for centuries been built facing the river, but in the last 20 to 30 years were being built to face the roads. Public access to the river had become increasingly lacking, due to the privatisation of much of the riverbank through private land ownership and the more they unravelled the community's deteriorating relationship to the river, the more they came to see how this was reflected in what they felt were the unhealthy lifestyles of the township's residents. The youth of the community, for example, were using the river less for sporting activities and fishing (once the source of the community's livelihoods), and complaints about pollution from upstream logging companies affecting the quality of the river were rife, as well as the lack of mobilisation in the community to act in response to this concern.

The recognition that the river had been neglected and undervalued as a significant part of the community began to provide understanding around the questions raised about the connectivity of issues, at the beginning of this article. The inquirers felt that, as the river carried an increasingly insignificant status, becoming an almost invisible feature in people's daily lives, it became easier for people to pollute it and turn a blind eye to the dumping that had become common around the river and township. *"Perhaps they [who are dumping] don't even know that some of us are*

*concerned about the river?!"* was the cry of one resident. In the same vein, the problems concerning the poorly maintained, ageing septic systems used by the majority of households in the township, and of course the drain-off issues related to this, were also seen through people's lack of relation to and awareness of the river as an eco-system integral to the community's history and current state of well-being.

In the web of connections that was bringing about states of health in their community, the social workers saw that having a meaningful relationship to the township's river was a key piece in the puzzle of enhancing the future of their community. They felt that the sense of belonging, ownership, attention and care for their place had been lost in the recent history of the community and could see the way in which these sensibilities related to the current state of their township and people.

To engage in this dynamic way of perceiving described here requires an imaginative capacity to 'see' the connections that exist between and pervades the diverse facts underpinning their inquiry question. It calls on us to engage and participate in the facts, in a different way to seeing only what is sense-perceptible. The qualities that tie and unite the diverse sense-perceptible facts of a phenomenon are of course not tangible, and can only be 'seen' by engaging an imaginative capacity to 'move through' the empirical information gathered. It offers a different way to know or 'see' something, than our intellectual capacity to reason does.

The insight into the centrality of the river was an unexpected outcome of the inquiry process. It provided a mode of relating that moved away from a causal mode of thinking *about* or having *knowledge about* an 'object' or 'problem', as well as the sort of technological or mechanically-minded 'fixes' that are often presented as answers to complex social problems. Seen dynamically, the circumstances of ill health were perceived in a manner that recognised the emergence of current and future social situations as processes to be engaged and worked *with*, rather than finding

one-off, fixed answers that solved a problem once and for all.

The nature of such an inquiry is like entering into a 'dialogue' with the inquiry question, in that in a conversation, we never know what the other party is going to say or express. In this way, we enter into a process with the 'other' (the inquiry question), giving to and taking from it with a flexibility that is responsive to that 'other'. Just as we can never be fully aware of how we respond or react in a conversation, a genuine inquiry also carries an openness that allows space for it to be 'led' by the process itself. In this instance, the openness of the participants to perceive the facts gathered with fresh and 'new eyes' allowed for the 'conversation' to be led to questions of belonging related to the river. It may not need mentioning of course that even this emergent realisation is a part of the process that will shift and change with time, especially once the community act on this new found clarity.

We continued the inquiry by addressing participant's emotional responses (feelings) to the states of health and ill health of the township and river. The group took time to reflect individually and were asked to distil their feelings into images expressive of their internal responses. Symbols were drawn to reflect these and their drawings again expressed a range of concerns, often rooted in very personal places. These were displayed and presented to one another.

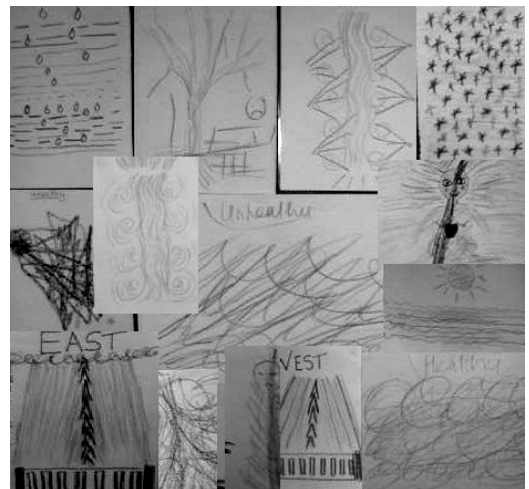


Figure 1: snapshot of drawings by participants during the workshops

I was struck and moved to hear one participant say, *"I've now realised that the river has been talking to us all this time and only now have I listened to it."* I was moved to see that such a strong sense of connection to the river had been established. That in her way of relating to the river she was able to 'listen to it', or 'let it speak to her' rather than approaching the river from a preconceived view. What she said, for me, had broken down something of the separation of the 'subject'-'object' dichotomy. Not that she was 'free' from her subjective responses to the river, but that through them, and becoming more aware of how they related to other participant's, she was able to come to a more sensitive awareness of the river itself. She had moved beyond (without excluding), her objectified knowledge of the river. For her, her awareness seemed to shift from a position based on her own ideas about how the river and community 'should' or 'ought' to be, to a place of awareness and recognition of the river's qualities, as expressed through her knowledge of the social circumstances of the community and her own emotional responses to the river. She had seen how her own experience of the river related to the facts and information gathered, even to the chemical analyses of the Wellington University researcher, and felt she had come to know the river from a more intimate place.

The German romantic poet Goethe, who's scientific work grounds and inspired the facilitated inquiry process described here, talked of a *"delicate empiricism that makes itself utterly identical with the object, thereby becoming true theory. But this enhancement of our mental powers belongs to a highly evolved age."* (Goethe in Miller 1995:307)

The Greek word for theory (*theoria*) carried the meaning 'to behold'. In the process of fusing different capacities of the inquirers to 'see', a *knowing* of the phenomenon can be reached that is much like having an embodied sense of the phenomenon itself. It is a *knowing* similar to the one that comes from having a close familiarity to something, as in the way a sensitive and attentive mother might *know* her child. It is not a relationship that enables the perceiver to predict or foresee aspects of the phenomenon allowing control over the

perceived, but one in which an intimate relationship based on a respect for the respective values of the 'other' can be established. Such a *knowing* offers insight that can unlock something of the potential that exists in the engagement between the observer and observed in a way that can facilitate the enhancement of that relationship. Art practices have the capacity to open and reveal such qualitative elements to us when they are engaged in particular ways. However, as Goethe describes, these sorts of perspectives are an 'enhancement of our mental powers', and ask of us ways of participating that are generally unfamiliar to our habitual ways of living. The example of the inquiry described here required patience and diligence to stick to a process with an open mind, as well as to engage the faculties and capacities of knowing that our bodies offer us the possibility to do. There is also a degree of sincerity and honesty required in the participation, if we are to illicit something novel from the process. Just as the Maori participants opened themselves up to creating and sharing drawings made from individual and personal places, these sorts of participatory inquiries can be seen as acts of reflection, where the phenomenon in question becomes a mirror of the inquirer him/herself. Our multiple capacities to know reflect our very relation to the phenomenon in multiple ways and in this respect, the sincere inquirer is propelled to face his/her own reflections and engage in a transformational process. By allowing the phenomenon to pass through the self and having the opportunity to reflect the views of fellow inquirers to confirm and affirm one's own position, a mutual reciprocity can emerge where we come to know ourselves and the phenomenon from a more insightful and aware place. (Zajonc 1993:203)

To draw this inquiry process to a close, the health group were asked to reflect on the symbolism expressed in their drawings of health and ill health in their community, as a source of inspiration for the practical interventions they wished to bring in their community. They used their images to see how they could transform states of ill health to ones of health, and due mainly to the level of

consensus already reached through the inquiry, decisions around practical solutions were made without much disagreement from the residents. A number of key approaches were put forward as directions for their future work.

The focus of course was the river and its inherent benefit as a source for activities related to community cohesion, environmental awareness and of course health. Strategies were created around reviving and organising community-led activities focussed on the restoration of native flora and wildlife areas along the river, aimed also at addressing the erosion of banks that had become common. They devised steps towards involving the community to create more public spaces along the riverbank for gatherings as well as a longer-term aim to make public walkways along the banks. Several other opportunities were also recognised such as working with the community sports group to encourage more swimming and canoeing for the youth of the township. The process ended with a sense of enthusiasm and excitement with the clarity that participants had gained, as well as of course a renewed sense of belonging to their own home.

Discussions concerning quality of life and 'well-being' common in today's social and political spheres take on a relational dimension when viewed in the context of the participatory approach described here. The sense of good health and well-being in the community in this instance was closely linked to participant's needs for a sense of belonging and in their participation with their own place and environment. The state of the river's good health was also directly related to the community's participation, connection and involvement with it, suggesting that there is an

intrinsic relation between the members of the community finding their own sense of well-being (through meeting their genuine human needs), and the enhancement of the quality and well-being of their own environment. More precisely, it is the community's involvement and participation in their environment that brings about an increase in the well-being of the whole social-ecological web.

The conclusions of this article may seem simple, however it seems that we have a long way to go in terms of the current realities of communities, organisations and even political systems. To collectively inquire, recognise and empathise with one another's genuine needs, seems to call us to engage in different ways to those we have become accustomed to. On the other hand, perhaps we are simply called to face the reflections of our very own selves, openly and sincerely. My own experiences have been that the dynamism of perception emerging from participating with the world around me, breeds a dynamism for life itself. It is invigorating and enlivening and although at times challenging, it is certainly the road I choose to travel. I invite others to join on the way, if only because the process is one of emerging mutual reciprocity and enhancement.

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### THIRD KEY - INTIMACY OF PERCEPTION

THIS PLACE IS A GARDEN  
SLOW DOWN  
OBSERVE

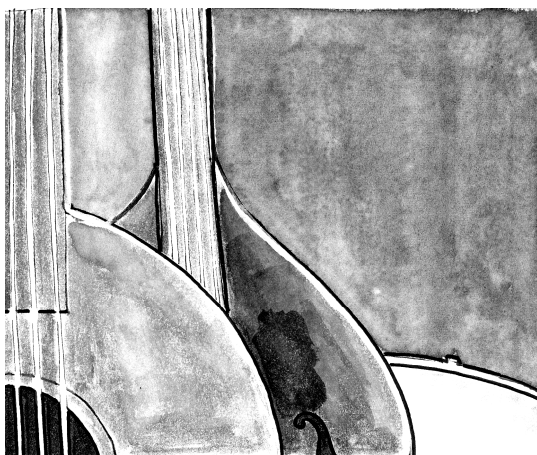
MAGIC IS IN THE AIR  
LISTEN DEEPLY

CAN YOU HEAR MY HEART BEAT?  
LISTEN DEEPLY

GENTLY MEET THE WHOLE - THROUGH  
PERCEPTION YOU WILL DANCE WITH  
THE WORLD

# IMPROVISATION: GETTING FROM ONE NOTE TO THE NEXT

**BERT SCHILPEROORT**



## What is improvisation?

Improvisation is a creative process set within a defined context - a melody, a chord structure, a style of music, an emotion – and is comparable to an artist approaching a blank canvas. Within those constraints the musician has freedom to select from various options moment by moment. It is communication, like speech. When we think of improvisation in music, we automatically think of Jazz. However, improvisation has been a part of other forms of music too. Beethoven and Bach for example were renowned for their improvisational skills. Classical Indian music celebrates improvisation. It is a form of composition in real time without the possibility of erasing anything! Stravinsky used to say *“Toujours avec la gomme”*, meaning that a composition requires careful correction time and time again until it attains timeless perfection. In a Jazz solo that luxury of correction is not available. Perhaps for that reason the potential is there in the moment of creation to generate some of the most powerful and exhilarating feelings of all. Sometimes, even a ‘going wrong’ leads to exciting discoveries. Having created something new and beautiful through improvisation, it

may become the catalyst for subsequent improvisations, or can be captured to provide the foundation of a new composition.

## How do you prepare for improvisation?

When talking about improvisation, Lee Konitz - the famous Jazz alto saxophonist - said it takes considerable preparation to play unprepared. This apparent paradox captures the essence of improvisation. Deciding the content of such preparation is a personal thing: it will differ from player to player. I’m still experimenting with different approaches. Perhaps this will carry on for the rest of my life! When practicing saxophone, I play melodies, scales, and chords. On the drums I have to be more physically prepared, through warming up and practicing a few rudiments and rhythms, and making my own patterns. Most importantly, I listen to a lot of music hopefully with an open mind, allowing myself to be surprised and moved, visiting and revisiting particular players. With this awareness of possibilities in place, I try to listen to the shape, pattern, and form of the piece I am playing and both respond to and drive the music. Some people like to emulate other improvisations they have heard and admired, or have a few prepared phrases with which to begin, but I prefer to enter the improvisation as a blank space and see what happens. With my playing I hope to find an avenue through which all the preparation flows in surprising ways, with new doors opening on each side. To me this is the difference between a ‘show’ solo and real improvisation.

## Does improvisation always work?

It may not always reach the level you had hoped for. When I improvise I hope that there will be moments of magic, feelings of ‘wow!’ that can be shared by everyone. As Ginger Baker puts it – times when “the drums play me”. Then you have created a special

happening, something memorable. But these moments cannot be anticipated or pre-arranged. There are parallels in science and other arts – long periods of effort may be required before the magic can emerge from this prepared ground. When you start to improvise you do not know where the journey will take you. If you did, then the journey would not be worthwhile. The same is true of scientific research. You are venturing into the unknown.

### **Can you teach improvisation?**

Opinions have changed – at first many believed that improvisation could not be taught. You could either do it or you couldn't. Then, after the Second World War the Bebop style of Jazz with its more clearly-defined rules began to be used as a paradigm for the teaching of improvisation. It has characteristic 'licks' - sequences of notes - that can be learnt and built into solos. But I believe improvisation is a very personal thing. When I work with a group of students my first priority is to ensure that everyone is comfortable, not anxious – one already feels so exposed! We select a piece we are going to play and I illustrate some of the musical possibilities. This is more of a technical demonstration, not a living improvisation. Then it is time for each student to find their own way of interpreting the piece to bring it alive. While we play, moments of beauty can emerge. That is what we look for. It is a group experience. It is process of discovery shared by

the students and teacher. It is not predetermined. In a strong sense, Jazz music is speech. Drummer Max Roach and his group once played what was for me a very influential piece entitled "*Nommo*", which he explained was an African word meaning the "power of speech". It was in 7/4 time and had incredible ebbs and flows.

### **What does it feel like when you are improvising?**

If I am playing well, I play with my whole being, there is no separation of mind and body. It all comes from feeling - there is a feeling of complete absorption and relaxation, blended with feelings of surprise and wonder at what is being created. I may be playing a solo, or facilitating other musicians as they improvise, but this is a shared experience - we are together in another space, a space where time is stretched and the feeling is huge. Musicians, instruments, and audience become one living entity and are the source of the music. For me, everything comes out of feel. Then all the other senses emerge from it. I am both reacting to and driving the events, interacting with my environment, not wilfully, but spontaneously while immersed in the music. I am experiencing moments of magic and wholeness. Then we all land again, with a musical high and memories of this shared experience.

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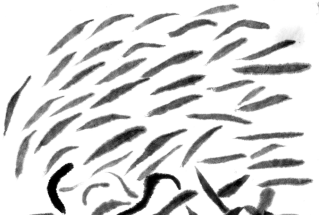
*In conversation with Richard Dryden.*



# Flow

MINNI JAIN

co-authored with Rajendra Singh & Philip Franses



**WHEN THE FLOW OF WATER STOPS, THE FLOW OF LIFE STOPS  
WHEN THE FLOW OF WATER STARTS, THE FLOW OF LIFE STARTS**

Flow is present in all things – animate and inanimate. It is present in all processes. Animate and inanimate. The two interconnected flows that will be explored here are – **individual flow** and **universal flow**.

There is an ongoing, ever present flow which is peculiar to each individual that keeps them moving onward. There is an ongoing, ever present, universal flow that enables all life to always be moving forward. These two flows are interconnected, enabling each other, moving in tandem with the evolutionary cycle. It is when these two flows get entangled and stuck, the harmony in life and its systems starts grinding to a painful crawl. We then begin to see resultant problems as we are witnessing today, in the break -down of social systems coinciding with the moral turpitude of human beings and this feeling of being lost with no inner direction.

When we speak of flow, it feels important to realize that it is not something separate from ordinary experience. There is not some special world of flowing energy into which we withdraw until we are forced to come back out into the clunky and lumpy world of the everyday. Nor is it the same withdrawal into something for a system. Flow is what happens continuously in the background, self regulating and ever vanishing and ever creating. In that sense, it is the same for the individual and for the universal.

## Water

The analogy with water here is very clear. Water was the fluid in which all life began. Water plays the supremely important role of

being present in all life and keeping it alive and pure (individual flow).

And water itself has the ability to remain pure in its constantly moving state, bumping over rocks and outcrops, eddying in pools and moving on again (universal flow). Without this flow of water there would be no life as we know it – just take a look at the planet Mars or indeed any of the other planets on which man is so desperate to find life but till now hasn't succeeded. They have found evidence of frozen water being there a few billion years ago but no liquid there any more. And no form of life there either. Is it a coincidence that the only planet in the universe with life on it ( at least till now), is the only planet that has liquid flowing water in it?

The stethoscope of modern thinking has pronounced many traditional rural cultures and self-sufficient societies as backward, obsolete and incapable of sustaining themselves without comprehending or admitting to the causes of disruption and destabilization of the independent self-sustaining rural societies. Yet, in many parts of the world examples of sustainable management systems can be found in only such rural communities. In India, small water reservoirs in the desert areas were part of a complex inter-linking natural resource management system. It is based on this knowledge of natural resource management that all civil society movements for water harvesting in India are being built up and restoring the flow of balance between man and nature.

This systematic process of conservation, beginning with recharging of groundwater by percolation tanks, protecting the scant

vegetation and allowing it to regenerate shows people's understanding of flow and their very own model of development based on that understanding.

***In these civil water harvesting movements, there is the creation of a deeper understanding and restoration of flow that is required for all life to maintain the balance between man and nature. Without this flow and balance, all life will eventually come to a halt.***

The world economy today is like a river run dry. Pour in money, any amount of it, and it still disappears into the cracks leaving the land ever more parched & dry. Where is the flow that nourishes and gives every creature life? The whole system has started to collapse and – collapse spectacularly! The flow of money from the producers to the consumers and vice versa is drying up, and money has become this dark behemoth going round and around in an ever decreasing small pool which receives no replenishment or movement to keep it fresh and alive...

#### **Restoring Flow**

*The stream has an impressive ability to adapt, to change the configurations, to let power shift, to create new structures. But behind it this adaptability, making it all happen, is the water's need to flow.*

**Margaret Wheatley “Leadership and the New Science”**

**Yet flow can be restored.** With suitable intervention at the right points, any system can regenerate and start flowing again. A case in point is the work of the villages in Alwar, Rajasthan, India that has been instrumental in reviving seven dried up river systems in that area. They have shown focussed action, leading to clear results instead of only talk and fantastic theories about flow.

The individuals of those villages got together and by understanding that collective flow was required, they created a series of interventions which then plugged into the universal flow and allowed man and nature to work together to restore the balance of the area they are living in. These actions were informed from age-old wisdom that was already present in their past

histories and which had been forgotten at the altar of modern development.

Their recent reliance on modern systems which did not follow the principal of flow, led to aridity and desertification and the resultant loss of livelihoods and of life of that area.

When they understood the principle of flow, they were able to tap into the wisdom of the past and work in the present with a vast number of complex systems to restore that flow which gave their lives back to them. Lives that are individually flowing as well as flowing in tandem with the universal flow.

In understanding and working together with flow in the real systems of water in Nature, we can allow that learning to help us re-adjust and make healthy all the various systems of our lives, be they economic, spiritual, environmental, financial or all others. Man-made systems per se, work to man's advantage only when they can use this understanding of the natural principal of flow to re-define the health of their systems. This will help restore some of the urgently needed balance in the world today.

How can we bridge the current contradiction between man-made economy and natural economy? Greed destroys. How can we be rid of greed?

How can we revive the flow between Health, Economy and Nature?

#### **Flow comes with:**

- *Community initiated regeneration*
- *Traditional wisdom informing present day action.*
- *Rejuvenation of the balance between man-made economy and the natural economy*
- *Bridging the wisdom of the East and the West to re-create a global flow*

#### **A story**

On 2nd October 1985 (birth anniversary of Mahatma Gandhi), four youths left Delhi for the villages in arid Rajasthan with a mission to move the people out of their feeling of helplessness in the face of the ravages of nature and an indifferent administration. These four youths included Rajendra Singh. Inspired by the Gandhian model of rural-development they started a school for children

but soon got very depressed seeing no response from the villagers. Three of the others left thinking nothing could be done. However, Rajendra was not willing to give up. Seeing the others leave and Rajendra so despondent, a wise old man of the village consoled him by saying “...you have not understood what is needed here. We want WATER first. You need to build a Johad (traditional rainwater structure) so that the water does not run away but is held back to percolate into the ground...”

***The real problems in the world are all about flow – or the lack of it.***

He started building a Johad (rainwater harvesting traditional structure) single-handedly until other villagers stopped finding him amusing and joined forces with him. Once the first small Johads were ready, the villagers saw water and the ecology below the river change in the very next monsoon. Water gathered in the Johads raised the water table in the entire catchment area of the river. This in turn, enriched the forest in the same area. Forests and scrubs helped to retard the run-offs of monsoon waters. This way, in a decade, the river Arvari came to life from a dried up dead water-course. Today, the river-flow continues the year round.



***(The river 40 years ago & the river today)***



***SEVEN dry rivers in that region were regenerated over the next few years.***

The system is simple - the community contributes their labour; the NGO arranges some funding and provides support to the villagers in studying the topography and soil type, assessing the water needs of the village, preparing a labour-sharing plan based on the benefits accruing to individual households and, finally, helps in the construction and management of the johads.

The way that flow happens is when you allow the freedom of those taking part to find their own way together in coming to a solution. Flow happens when a community is trusted to merge their individual freedoms into a collective response.

In realising this flow of freedom, the following social outcomes are also apparent:

- Expansion or restoration of social and cultural values;
- Finding a balance between human and natural resource development;
- Bringing women forward in the process of decision making;
- Improvement of the level of education in the community;
- Incorporation of better health facilities for the community;
- Energising human power, especially youth power, to harness energy in value-defining rural development and ecological restoration;

The unique part of their modus operandi for development is to make the community self-reliant. This happens when you invite the community to participate at every stage of development-work for them.

### ***Conclusion***

In India, Rajendra Singh revives traditional learnings about flow recalling in communities the ancient wisdom of how the mystery of the source could be channelled through the activities of life. This opening to the understanding of life's relation to the mystery,

allows that our journey too is alive with

from the high terrain of spirituality into the midst of our daily concerns through these ancient ways of honing existence to its dynamic essence.

So the east gives us another perspective on educating from the standpoint of recognising the same flow in ourselves as in all life. With its own law, prosperity, opportunity, meaning can transform our landscape. The flow of ideas returns to the starting point, as the villagers agree that the way to revitalise their community is to hear again the old one talking.

At the centre of all these experience is the coherence of a mode of inquiry that is called the river.

Perhaps now may be a good time to go back to the drawing board to examine and revive the thinking and understanding of flow that is required in all systems for modern living. How can we do that? Perhaps simply by learning from those simple villager folk whose understanding of flow has shown us spectacularly that using age old innate wisdom was the precursor to book knowledge.

Traditional wisdom had that indefinable flow – which held everything together in all its dimensions and allowed life to flourish. Mere book knowledge has only one dimension, and is limited in that it can only teach us of concepts. It cannot teach us the flow between

direction. The flow of understanding is brought nature and humans. That can only be experienced and understood in the real.

*In February, various professionals from across the world are coming together in Rajasthan, India to articulate their understanding of flow alongside the living experience of seeing the rivers that Rajendra has helped regenerate. Discussions and themes for the days will be around freeing the flow in their own professional fields & the communities they live in.*

**See inner back cover for details of this event (Pg 75)**

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#### **FOURTH KEY - BRINGING THE GREAT TO THE SMALL**

MY TRUE NATURE LIES ON THE DARKNESS OF THE SPACE IN BETWEEN

MY TRUE NATURE IS IN THE OPENNESS AND EMPTINESS OF LISTENING

MY TRUE NATURE IS IN THE BREATH

MY TRUE NATURE IS IN THE COMING INTO BEING OF SOUND

MY TRUE NATURE IS IN THE FLOW OF VIBRATION

MY TRUE NATURE IS IN THE COMING INTO BEING OF INSPIRATION

"The most beautiful thing we can experience is the mysterious. It is the source of all true art and science"

**Albert Einstein**



For the Process and Pilgrimage event at the restored monastery of Spineto in Tuscany, **Minni Jain**

produced two simple leaflets as guides – one was called 'the travellers' and the other 'the journey'. The

journey leaflet showed four images: on the front page was a caravanserai moving slowly across a landscape from dark towards lightening skies; at an oasis people gathering in close groups in conversation; on the back page was a group waiting for a small boat to row away across a river and lastly a wagon and riders moving off across the plain.

These images are evocative of our inquiry work at Spineto: – to live into the meaning of the 'journey school' as one expression of the Process and Pilgrimage' exchanges which began some years ago. We gathered from different parts of the globe, arriving and leaving at different moments, being together walking, sitting, cooking, eating, speaking in many different ways in the beautiful settings of the monastery and the powerful land in which it lies, and then all dispersing again. This article weaves together the reflections of some of the voices taking part in this event in one attempt to offer a thoughtful description (certainly not a definition, nor an explanation) of what the journey school is .....one narrative strand woven amongst many possible tapestries of meaning.

The idea of the *Journey School* emerged in 2011 in the stream of activity of *Process and*

*Pilgrimage* which already has a history of many years. This has been exploring the learning that happens in a journey that is simultaneously both inwards and outwards, simultaneously an encounter with others and the world and an encounter with oneself.

**Philip Franses:** "Process and Pilgrimage has been following the vivid glimpse of an alternative way to engage in adult education, redefining the nature and purpose of human knowledge and how it develops amongst us. It's a chance to find our way to an education that is holistic and dialogical in essence, to move in spaces of free inquiry around emerging lines of action, particularly this time in Italy, exploring what the idea of the journey school could contribute to the deep conflicts in Palestine and Israel. The journey school aims to be regenerative rather than only educational."

**Shantena Sabbadini:** "If I understand correctly the idea behind the Journey School, we want to avoid moving at the same level where conflicting narratives confront each other, because there deadlock is inevitable."

**Chen Gratz:** "In the volume of the 'oppressor/oppressed' narrative, all the other narratives that weave the fabric of my life in Israel become invisible, as did I, with my own narrative of what is happening there – a narrative that is filled with sadness, anger, understanding, compassion, fear, fed-upness.."

**Shantena** again: "The philosophy guiding us, I believe, should be that of the relativity of narratives, of the relativity of names. This includes the crucial realization that all narratives, however accurate, are partial. Then the focus shifts to the awareness that we are all rooted in a common soil, in a vast nameless mystery, which is our true nature and identity.

If we can stay with that, if we don't lose track of that, the dialogue and the enquiry have different flavor and depth. If the Journey School manages to do that, it would be tremendously valuable”

*Hannah Arendt*, political philosopher made the passionate plea in her book *The Human Condition* (1958) that the activity that truly humanizes the political realm is that of free-flowing speech amongst equals. She argued that we become fully persons, (we find ourselves) as we take the risk to speak in the hearing of our peers. When politics has come to mean the governing of the few over the many, we have sought increasingly to control or eliminate the unpredictable realm of public speech and action. Something remarkable can happen when we are present with others in an open space of listening and speaking where the topics and order and manner of contributing have not been fully structured in advance. In such a setting each must stay with their own silent presence and find the moment when they are moved to mould their breath to living speech which sounds in their own bodies and resounds evocatively in the hearts and minds and guts of their fellows, bringing each other again and again to the edge of speech, a moment we may take or let pass.

**Jacqueline Mullen:** “A magical alchemy happens when no single group or individual lays claim to having a greater or more valid access to knowing.”

*How then do we come together as peers in the process of generating knowledge between us?*

**Ilan Pappé:** “No teachers, no students, rather conversationalists and conversation. The journey school hosts conversationalists who help to facilitate a conversation and invite others to take part in it.”

An important aspect of the journey school as I understand it is that we do much less offering of platforms to those who have them already and already know what they might say. Indeed we need to catch ourselves in the pattern of handing over too easily to those who have

already earned our respect for their valuable knowledge and surprise ourselves by our own acts of knowledge making from many unexpected realms of experience.

**Ben Hanbury:** “We avoid treating any participant as a celebrity because this creates an ‘I-It’ relationship instead of an ‘I-Thou’ relationship and is part of an old paradigm we are trying to transcend. When we create a safe open space, concepts and presentations that are brought in can be allowed to flower into the fullness of what they are becoming. In fact they did not feel like presentations, they felt more like a sharing from the depths of being which happened to include some Politics, Immunology, Physics...”

How does this happen? During our opening gathering **Jane Whistler** spoke with quiet dignity and honesty about the process of ageing and this deepened the space for all. “It is so good to be acknowledged as having equally valid experience to share even in the absence of conventional qualifications.” In the monastery chapel, **Anne Solgaard**, uncertain of when she had been ‘asked to do it’ took the chance to invite us to experience ourselves through silent movements. And **Robert Woodford** literally took a deep breath and spontaneously arranged the just written reflections from members of the group into plainsong chant that filled the resonant space and gave back our words woven to fresh significance. During a period of confusion about what we were doing, **Kathy Ramsay Carr** described the strong parallel she saw with the journey she undertakes when she starts out on the road to making a painting:

“I described how by drawing on the techniques I have learned over the years, I begin to discipline my mind so that it is fully occupied with the business of mixing paint and medium, and this is like a mantra, soothing, mind absorbing, so that when I put layer after layer on the canvas, there is something that begins to take on a life force, not entirely independent of me, as decisions need to be taken along the way, but if I trust that what emerges works, the painting can develop and make sense.

By working this way, trusting in the creative process that functions like a conduit of energy, problems are easily resolved and an end result achieved often in a surprisingly unexpected way.”

So in this kind of inquiry work we are going even further than working with the relativity of narratives and names. We are paying attention to the way our stories and expressions of identity come into being as we give voice to them, enact them, as though for another first time, in the ‘emergency’ of a live group setting in which people agree to face the openness of the conversation they are participating in and shaping together.

But how do we know what we are agreeing to? Many of us have learned to learn in situations where identified ‘speakers/teachers’ are given pre-assigned opportunities to contribute to announced topics, followed by questions and discussion with the listeners. The Journey School kind of free-flowing conversation or dialogue offers a particular kind of ‘equal opportunity’ but we know that the open space also holds anxieties which may arise for any of us at different moments. **Caroline Harlow** expresses the disorientation that we can feel when our usual expectations are disrupted:

“I learnt that I thrive best within a structured situation from which I can then drop more comfortably into open discussion. I found the group discussions large, ill defined and slightly scary and was not able to contribute. I do appreciate that is very much my problem and not that of others. I also felt the speakers were not given enough time to talk and to develop their ideas. I could have done with hearing a great deal more from Graham and Ian who both had so much to say. People missed discussions as plans changed and the looseness of the programme raised anxiety as one was always wondering what was going on and where and if....

I also had to get used to the fact that my thoughts and perceptions of discussions were different to those of others – and that is a GOOD thing and challenging. I just wish I had

had more confidence and ability to articulate my thinking..... maybe that will come in time!”

In the open space of dialogue we can become aware of our fears and possibly move through them:

**Lubna Masarwa:** “I came to the gathering at a moment when I was lost. But to be lost in Palestine is a critical situation that does not get legitimacy from people around pushing me to organize my life and get back into the frame. For the first time in my life I felt safe with who I am. Fear was a key word in my life. And the meeting made me defeat the fear.... It was interesting to see what happens when the ego of the participants does not exist in the space, how creating knowledge together can move your thoughts from place to place. This movement is not something easy, it’s a real challenge because we are scared to change thoughts in our mind. It requires from us effort and courage to move to new places that we don’t know... I went back to Palestine ready to take important decisions in my life.”

When people come together prepared by their whole lives so far, yet unrehearsed in a specific way to tell this or that, they have the chance to *find themselves* spontaneously recounting experiences and reflections which speak afresh to speaker and listeners alike. We notice details and juxtapositions and associations that may have passed us by previously and which now give a new colour to our accounts. Then the accounts we offer chime and resonate, provoke and move us to fresh insights and different experiences of being ourselves. In this way our narratives of identity unfreeze and are placed in movement by being re-contextualised uniquely in the flow of a dialogue that is finding its own course.

This kind of narrative speech is very different from re-telling anecdotes or presenting well oiled examples or polished case histories such as we may hear in settings geared to more conventional and controlled knowledge exchange. In the latter situations the meaning of the narratives have already been corralled to serve particular points, explanations or

power bases; the 'plot' or storyline is already fixed and narratives are offered as forms of evidence in differing and often opposing arguments. The social scientist *John Shotter*, talks of the enormous difference between the effect of 'words-in-their-speaking' rather than 'words-already-spoken' in the way change happens between us.

The journey school brings together, as Minni says, 'the famous, the infamous and the non-famous' in unique gathering spaces, moving in a landscape where each must listen attentively in order to find themselves speaking spontaneously into the emerging conversation. And in the moment of speech people do

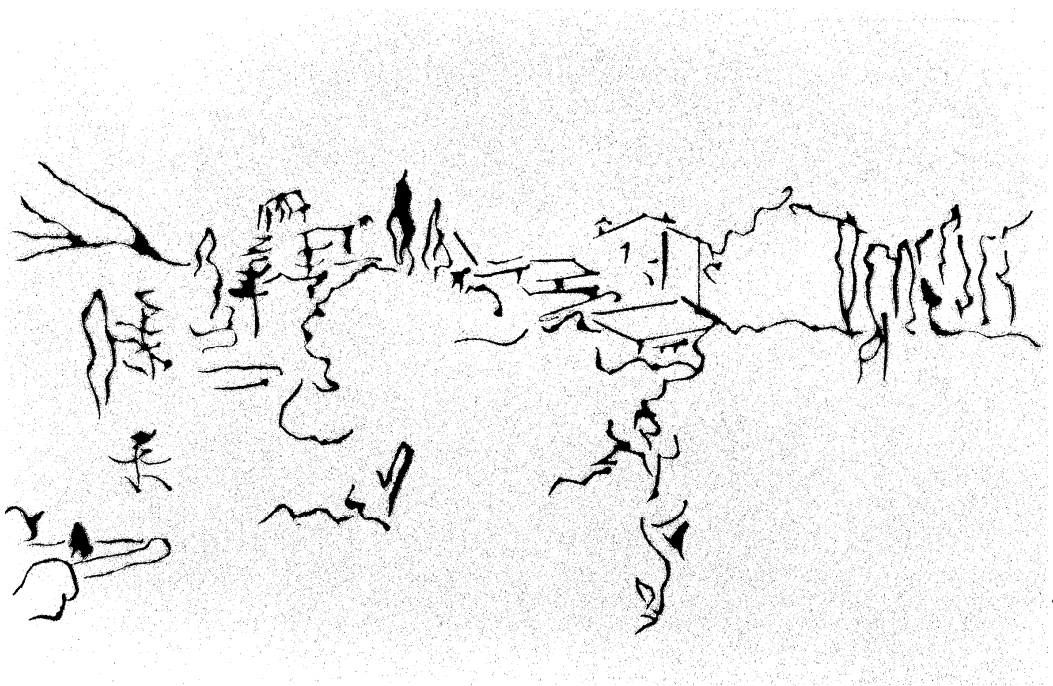
literally 'find themselves' – they may surprise themselves with what they say or how and when they speak or what their contribution comes to mean for themselves or others. Themes, threads of knowledge emerge and transform in the experience of being together. We get lost and find ourselves repeatedly when everything comes together for a unique moment in a unique place. Like Jacob we meet the angel stranger on the road, wrestle with him or her and wake up to find we are wrestling with ourselves. And this movement of selves journeying severally and together opens up new lines of action, energises new ways forward in the world. This is a different kind of education.

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**See Back Cover for details of next event at Spineto in November 2012**

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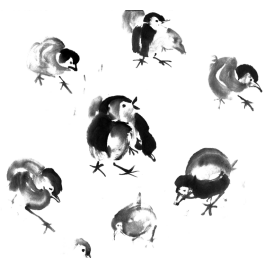
**An artist's impression of the Abbey of Spineto, Tuscany, Italy**



# LEARNING WITH YOUNG PEOPLE FOR AN ECOLOGICAL WORLD VIEW

ISABEL CARLISLE

*'There is science now to construct the story of the journey we have made on this earth, the story that connects us with all beings. There is also great yearning and great need to own that story. The challenge to do that now, and break out of the separate prison cells of our contriving, is perhaps the most wonderful aspect of being alive today.'* (Joanna Macy)



The future that young people and children are currently being educated for in this country is not the future that is approaching.

Two years ago I approached Jane Reed (who was then at the Institute of Education) to join with me in forming a community of practice to address the challenge of how to educate young people in a holistic way for a sustainable future. I could see the opportunity that the ills of the planet and human society presented to open up the whole question of what education is really for. The question with which we invited our fellow practitioners to join us was: "How do we, as educators in the UK, empower young people to know they can make a difference and support the emergence of a new, holistic, approach to teaching sustainability both within and without schools?" The 25 people who gathered for our first weekend meeting at Schumacher College, Devon, UK in September 2010 were head teachers, teachers, teacher educators, academics and advisers, heads of education in sustainability NGOs and charities, working with children and young people on the land, writers, storytellers and activists as well as change agents. We decided to call ourselves *Quince* because we found a quince tree in the forest garden next door.

We shared our practices (including Philosophy for Children, composting and experiencing how it felt to be planted like a tree). We mapped the current education system and looked for allies. We delved into our feelings and pondered what we might do next. We

celebrated being together as a group and said how good it felt not to be lone pioneers any longer. We agreed that we were a community of practitioners for ecological learning and transforming educational practice. We were empowering young people to envision and play a role in their futures; putting pupil leadership and learning first; supporting young people as designers of their future; and sharing a lived enquiry into what it means to be human on this planet now. Sustainability is a very inadequate term for acting as if the planet matters so we clarified that, to us, learning for sustainability means: connecting to place and community, designing new learning processes with and for adults and young people based on ecological thinking and being clear about our values and embodying those values. We felt we were getting a good grip on where holistic education needed to go and by the end of the two days our central question changed into: *'how do we co-enquire, with young people, into what it is to be human on the planet now?'*

Quince became interested in exploring what it is to be human on the planet now in a way that breaks the cycle of this collective wounding. We agree that we cannot explore what it means to be human in ways that are always safe. Enquiry and transformation are a risk. The one-planet pedagogue's role is to manage the risk, help learners to manage and learn from the risk, and thus develop the capacity to be courageous. Failure to enquire, and failure to transform are greater risks. People will change their pedagogy only when they realise this in their own practice.

Another challenge that we named is that the present system has too many teachers and head teachers who play out another collective

wounding, this time about standards. They allow this, too, to unbalance their pedagogy, imposing external measurements on young people's achievements regardless of any ecological principles of connectedness, relevance, reverence or inter-dependence. It is this imposition that can make much schooling fraught, neurotic and quarrelsome.

We wondered how could we explore what it is to be human on the planet without being either sucked into, or marginalised by, the standards obsession? We decided we can and must explore what it is to be human, and still deliver prescribed standards. And in addition, we must summon forth a new standard that leads to appropriate action for sustainability. The one-planet pedagogue's role is to facilitate enquiry toward action. The capacity to act wisely is the standard by which progress in learning needs to be measured. An incapacity, or indisposition, to act wisely is the greatest betrayal of standards.

The upshot of this group thinking was to design young people into a central position in the Quince meet up that took place at Sharpham House, Devon, UK in September 2011. We invited pupils and teachers from Churston Ferrers School in the Torbay area of Devon, and from KEVICC in Totnes in Devon to join us as we put our pedagogical ideas into practice. We decided to create three challenges outdoors on the estate that would be facilitated by adults but led to solution by young people. One was to get our hands into the soil in the vegetable garden and make things out of cob (clay, sand, straw and water). Another was to heat the outdoor swimming pool using black plastic tubing, a car battery and a small pump. The third was to make a den using only natural materials that could be found in the vicinity. The learning for us all was not so much in what we did but the way that we did it with young people stepping forward and adults holding back, in a support role.

We concluded the day with a listening circle in which the seven young people aged 14 to 17 sat in the middle and spoke while the adults sat around the outside and were not permitted

to speak a word, only listen. After a hesitant beginning the young people got into their stride, felt less self-conscious and worked out how to facilitate their dialogue. We posed three questions and this is what we heard:

#### ***What students liked about the afternoon's activities:***

1. We mixed with adults as a team. The adults were learning, too.
2. We had a choice with our activities.
3. What we wanted to do was valued.
4. There was recognition of what we already knew.
5. I learnt loads but didn't feel as if someone was telling me.
6. I liked being practical and doing things with my hands.
7. The adult teacher role was more like a facilitator.
8. Working in smaller groups felt more supportive.
9. Being outside I thought I'd be more distracted but I focused more inside. They talk, we write, outside I felt more alert. Being outside makes you concentrate more, it keeps you alert.
10. I saw the relevance of today and now want to know what next?

#### ***How students compared this practice with school practice:***

- It made me realise education is more about learning than grades.
- Teachers need to get us outside not sitting in classrooms.
- We sit down for 80 minutes and get up and sit down for 80 minutes and get up.
- When every teacher does a Power Point and that's their idea of modern creative approach, I just get a headache.
- School feels like working in a box. Every teacher says "Work hard or you're not going anywhere."
- I've just done my GCSEs and I don't remember anything I learnt.
- We learn better when we experience it.
- I don't question enough nowadays because I'm not asked to.

- When you are motivated you forget you are tired.
- It is rare for us to be able to speak in school and share what we think.
- Feedback on what works or doesn't work is really important.
- Caring is not seen as cool.
- Learning is not seen as cool because we are being told what to do.

***What students think about education for their future:***

1. Education in school is segregating by ability and is based on ability to regurgitate.
2. Education should be about problem solving.
3. Education is about helping someone to understand how to live their life.
4. It's about how to be happy.
5. It's about allowing the truth of someone to come out.
6. Teaching should be about explaining different ways of going about life.
7. Education should show you a pathway.
8. The best thing is for children to want to do something and then being able to do it.
9. We've never been told we could do it another way (about finding a livelihood without worrying about grades).

Based on these findings, Quince has now developed a weekend residential leadership course called New Generation Leaders in Sustainability, for teachers and students enquiring together. Our shared learning continues to evolve, as does our sense of what Quince can do. We now call ourselves radical educators for an ecological world view, though each of us would probably define that world view slightly differently. From my perspective, I have a self that functions within an ecological world view when I see all life as interconnected and take responsibility for my actions in my local ecological and social systems. It's the part of my self that connects with the natural world and allows me to experience an expanded being that is much greater than my small self with its immediate needs. Arne Naess called it the part of us that awakens to and connects with the sacredness of nature. The challenge now is to bring this awareness into mainstream education.

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*With deep thanks for collaboration and shared vision with all Quinces, but in particular thanks go to Mark Chater, Jane Reed and Richard Dunne who were at the core of Quince while all this work took place.*

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## **FIFTH KEY - BUILT UP KNOWLEDGE AND MEMORY**

**CLASSES ARE HARSH  
THEY GIVE US AN ENORMOUS AMOUNT OF INFORMATION JUST ONCE**

**CLASSES ARE UPLIFTING  
THEY LIGHT MANY FIRES IN OUR PASSIONS AND UNDERSTANDINGS**

**CLASSES ARE INTELLECTUAL  
THEY ARE A GAME FOR THE MIND  
BE CAREFUL YOU CAN GET LOST AND IMPRISONED**

**CLASSES ARE MEETING PLACES  
THEY HELP US NAMING AND MAPING OUR INSIGHTS**

**THEY OFFER US A COMMON LANGUAGE OR AT LEAST BUILT-IN MAPS THROUGH  
PEOPLE'S UNDERSTANDINGS**



Holistic science reveals the meaningful wholeness of the living. Aided by hermeneutic

philosophy, holistic scientists practice the coming-into-being of understanding through the mutual co-arising of subject and object in wholeness. Contemporary pedagogical systems generated and sustained by the reductionist science that separates subject and object into time- and space-independent abstractions cannot be expected to foster holistic understandings of the living. We deserve, instead, educational models in dynamic relation with the living world. By recognizing their participation with the subjects they study, holistic scientists stress the modes of thinking necessary for the coming-into-being of understanding. The understandings gained from holistic science spring from and inform the methods of study in reciprocal relation. It is in this reciprocal spirit that I offer for consideration Earthology, a pedagogy born of holistic science and hermeneutic philosophy.

The holistic pedagogy discussed below is meant to inform and complement but not supplant other holistic pedagogies, including those of Steiner (Waldorf, Montessori, Freire (critical pedagogy), Gruenewald (critical pedagogy of place), Orr (ecological literacy), Khan (eco-pedagogy) and Gallegos). Though they differ in technique and emphasis, all holistic pedagogies recognize the need to foster the whole person, usually in healthy relation to the living world, often in recognition of the gross violence and inequity that characterizes mechanistic society and its educational institutions. The holistic pedagogy of Earthology offered here shares these goals but differs in its self-conscious participation

within the understandings and practices of holistic science and hermeneutic philosophy.

### **We learn as participants**

It is perhaps holistic science's key insight that the whole is expressed within each part. Within the living world, each of us participates as places where the wholeness of Gaia and other hermeneutic holons express themselves. This participation must necessarily extend to the process of learning. Hans-Georg Gadamer put it this way: "Someone who understands is always already drawn into an event through which meaning asserts itself." (Gadamer). Henri Bortoft, exploring the way of knowing practiced by Goethe and other holistic thinkers, describes the knower as "not an onlooker but a participant in nature's processes, which now act in consciousness to produce the phenomenon consciously as they act externally to produce it materially." (Bortoft)

Traditional pedagogy tends to promote passivity in students in reflection of the reductionism of the subjects studied. Such pedagogy reflects and perpetuates mechanistic thinking in its separation of teacher and student into an abstract linear relationship wherein the teacher is expected to transfer information and skills to students. This transfer occurs over the gulf separating teacher and student, a separation that reflects the conceived gulf between reductionist scientist and object of study. In both reductionist science and education, this manufactured separation invites the scientist/teacher to reduce objects/students to abstract quantities to be manipulated for desired ends. (Markos) Furthermore, this reductive process scales outward so that scientists and teachers – and Gaia herself – are themselves objectified within mechanistic institutions of study and the market economy.

The holistic pedagogy of Earthology seeks another path. Learning for understanding must come through participation. Active inquiry is already regarded by many educators as centrally important to teaching and learning, but holistic participation goes farther.(Dow) To participate in wholeness is to recognize the meaningful expression of the whole within one's self and one's group. Students and teachers are challenged to understand themselves as participants within the hermeneutic holons of study as active, embodied expressions of that which they study. Students in a course of Earthology would encounter Gaia's meaningful feedback loops of biotic and abiotic systems through recognizing both their own participation within these feedback loops as well as the manifestations of biotic and abiotic feedbacks within their own selves.

Participation within our holistic pedagogy includes the ways we practice learning in the world. Too often in schooling, application is thought to be something that follows learning. Understood as the hermeneutic holon of learning/application, learning can be seen as application, and application as learning; as Gadamer says, "application is neither a subsequent nor merely an occasional part of the phenomenon of understanding, but co-determines it as a whole from the beginning".(Gadamer, p.324)

This proposed participation within teaching and learning cannot be boxed within a classroom. The holographic relation of part and whole that requires participation for understanding infuses all teaching and learning relations, including classroom learning, field learning, curriculum development, school-wide decision-making, family participation, and so on. In this way, holistic pedagogy departs radically from most notions of education in its embrace of holarchical processes of participatory decision-making rather than hierarchical structures of power.

### **We learn in place and time as selves**

Holistic science is grounded in phenomenology, a practice Bortoft defines as "letting things become manifest as they show themselves

without forcing our own categories on them."(Bortoft p.25) As this process takes place as an act of interpretation akin to reading, it is fair to consider holistic science a practice of hermeneutic phenomenology.(Bortoft, p.348) Such a hermeneutic phenomenology requires what Goethe described as a "delicate empiricism", a two-fold attention to the phenomenon and our participatory awareness of the phenomenon.(Holdrege, p.30) Through hermeneutic phenomenology, we move beyond abstraction to encounter the living world in place and time as co-participants in meaning.

The holographic relationship between part and whole reveals our place and time as manifestations of the living, dynamic wholeness of Gaia. Similarly, we can come to understand ourselves as places where the meaning of our communities, our history, and our living Earth find expression. Goethe described this relation as follows: "Man knows himself only to the extent that he knows the world; he becomes aware of himself only within the world, and aware of the world only within himself."(Scharmer) In this way, our Earthology is also self-ology.

Holistic pedagogy facilitates learning through such delicate empiricism of phenomena. The teacher, to paraphrase Bortoft's description of phenomenology, must let students become manifest as they show themselves without forcing the teacher's own categories on them. Similarly, students can learn to read themselves, their communities, texts, and the living Earth through the tools of hermeneutic phenomenology.(Frodeman) In each case, both teachers and students situate themselves in the place and time that they live, understanding themselves as participants in the meaning that is the wholeness of their time and place. Decisions about what is relevant to teach and learn follow from attention to the time and place of teaching and learning. Active exploration of a learning community's time and place, including the people, ecology, and history of this place become vital for holistic education, no matter the course of study. Students and teachers are themselves places of teaching and learning. Holistic pedagogy

invites us to learn from each other and ourselves as places expressing the meaning of our living world. Self and group reflection can facilitate this attention to ourselves and each other as living places, as can Bortoft's "moving upstream into awareness... to the happening of what happens" (Bortoft, 2006), the hermeneutic circle, use of the imagination as an organ of perception, and Goethe's delicate empiricism. In each strategy of holistic pedagogy we shift our attention from the prescribed, universal abstractions of traditional curricula toward learning based upon an awareness of ourselves as active participants in the coming-into-being of the present place and time.

### **We are forever ignorant; we do not know where our learning will take us**

In describing Goethean science, Craig Holdrege asserts that "the phenomena we confront are always richer than the abstractions we use to explain them." (Holdrege, p.29) This richness demands our delicate attention to the phenomena of study, an attention requiring all of our faculties, including our imagination. Similarly, in hermeneutic philosophy, Gadamer emphasizes the "horizon" of understanding, the historically-situated limit of our understanding. (Malpas) Recognizing this persistent distance, Gadamer calls for a "fusion of horizons" in which the interpreter and the interpreted alter each other to bring meaning into understanding. (Gadamer, p205) And yet the gap between knower and known remains; we are forever ignorant.

Recognizing our personal and collective ignorance is vital to our holistic pedagogy. The horizon of understanding situates teaching and learning as a living process of growth wherein both teacher and student continually change in relation to their understanding of themselves, each other, and the living subject. Prescribed curricula can only be skeletal in such a holistic pedagogy. The process of learning within holistic pedagogy becomes a continual opening-up to the living world, an opening made possible by our ever-incomplete understanding.

Accepting the teacher's ignorance is especially important and challenging because of the professional expectation for expertise in the subject of study. Ralph Waldo Emerson once noted that "every teacher acquires a continually increasing stationary force, a cumulative inertia in proportion to the eloquence of his innovating doctrines." (Richardson) A teacher moves beyond the inertia of expertise by way of ignorance, through recognition of the continual movement toward understanding present in the fusion of horizons that teacher, student, and subject together engage. Radical ignorance can foster greater respect for and humility toward the living world. The reductionist program of mastery of the world, a driving force behind contemporary institutional education, is revealed as dangerously blind to its deadening objectification of the Earth. In its place, holistic pedagogical practices attending to the wholeness of phenomena have been demonstrated to foster responsible concern for the living world. This is consistent with what has been long understood about hermeneutic modes of learning, as for example Martin Heidegger's hermeneutics: "The perceiving of what is known is not a process of returning with one's bounty to the cabinet of consciousness.' ... It is, on the contrary, a form of being-with, a concern ... with and inside the world." (Steiner)

### **Teacher and student create one another**

In his discussion of the ways that holistic thinking can dissolve paradox, Bortoft cites Simon Glendinning's hermeneutic method: "...you have to let the text you are reading teach you how to read it." (Bortoft, 2010) Isomorphic to Glendinning's method, we can state that you have to let the students you are teaching teach you how to teach them. Holistic pedagogy must allow for this tightly-coupled co-creative and co-interpretive cycling of teacher and student. From a reductionist, linear perspective, teaching is practiced as a largely uni-directional act toward students. Seen holistically, however, teaching and learning are recognized

as arcs of the same whole: student and teacher can be recognized, holistically, as places where the wholeness of a learning environment is expressed. Glendinning's hermeneutic method allows the teacher to shift from "transmitter of information" to facilitator-participant of the learning whole.

Such a shift grants agency to both teacher and student within the act of learning, recognizing and respecting a group of students' particular knowledge and needs while enlivening the teacher's role in the coming-into-being of learning and understanding. Students and teachers co-create holistic learning environments. Far from Locke's blank slates, students are here understood as active participant-shapers of learning who encounter subjects always already in relation to them. The teacher must study these relations so as to facilitate greater coherence of understanding. The teacher, as described above, encounters this act of learning by participating with the student in the wholeness of the learning environment. Expertise in the particular subject is not enough preparation for such a teacher. Instead, teachers must come to understand the coming-into-being of the learning whole, an understanding again only made possible through participation.

### **Coherence facilitates learning**

The teacher's facilitator-participant responsibility can be understood as tending to the wholeness of the learning space. Holistic science has revealed that wholeness is only possible in a state of coherence. Discussing "organic wholes", physicist Mae Wan Ho describes coherence as a process of "mutual intercommunication" in which "every part of [an organic whole] is as sensitive as it is responsive." (Ho 2007) She calls such organic coherence the "wisdom of the body". (Ho 2007)

Describing Gaia, Anton Markos notes that "the entire global community of organisms can be seen as a coherent, dynamic, highly structured, interconnected network of signalling molecules, genes, and structures." (Markos, 2002) Ho likens such coherence to playing jazz: "Think of a gathering of consummate

musicians playing jazz together ('quantum jazz') where every single player is freely improvising from moment to moment and yet keeping in tune and in rhythm with the spontaneity of the whole. It is a special kind of wholeness that maximizes both local freedom and global cohesion". (Ho, 2004)

Within the holistic pedagogy of Earthology, the teacher can learn to foster similar coherence, and thereby wholeness, by strengthening the interconnections between students and supporting constructive communication among all learners, students and teacher(s) alike.

These interconnections take place in a condition Bortoft calls "receptivity", a "paradoxical state" in which we are simultaneously "'actively passive'" and "'passively active'". (Bortoft, 2010, p.32)

Developing such wisdom within the body of learners is no simple task. True receptivity requires a level of trust and safety often absent from the lives of our students. Ideally, holistic education would take place within a society in which healthful wholeness and coherence were valued as paramount, but we know this is not the case. Instead, the teacher must recognize the challenges our students face and work to make the learning environment as safe and trustworthy as possible.

Additionally, the incoherence of our civilization reminds us that participation in the living world beyond our mechanistic systems remains vital to holistic pedagogy. Learning coherence as a participant invites us to bring our learning into the living world. How better to learn coherence than by experiencing the coherent beauty of a healthy forest, meadow, or marsh? Over time, students can themselves learn how to facilitate coherence. In a highly-developed holistic learning space, we would expect all participants to facilitate wholeness; yet another way that students and teachers create one another. The teacher supports this transition by modelling the facilitator-participant role and also by leaving space for students to take a lead in facilitation.

Following Ho's jazz musician metaphor, it may be useful to think of the teacher stepping away from a conductor role into that of fellow improvisational musician.

## Holistic pedagogy in practice

As an ecology and gender studies teacher in an experimental, publically-funded high school in Seattle, WA, USA, I have had the opportunity to put Earthology into practice. Ever a work in progress, facilitating wholeness remains a wonderful challenge that my students and colleagues and I continue to learn how to enact. The demands of teaching high school students are extraordinary, encompassing everything from basic instruction in writing to counseling students through suicidal ideation to reporting endless streams of data to the State. Somewhere in this mix of responsibilities, I have the great pleasure to work with my students in a holistic approach to understanding ourselves and the dynamic, living world. Whether in courses on Earth science, environmental justice, local history, or gender studies, the deepest and most relevant learning that my students and colleagues and I have engaged in has occurred within the wisdom of wholeness.

But the challenges remain. Wholeness, by definition, cannot be isolated, and yet, too often, our school's holistic education remains a small island within a hostile sea of state-mandated testing, students' previous abuse under mechanistic teaching practices, the contradictions of privilege and oppression, and the dull quantification and incoherence of contemporary society. For Earthology to match the coherent vitality of the living world, it will need to spread from several centers until the practices of holistic thinking and pedagogy become familiar to all learners, students and teachers alike.

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*Birds make great sky-  
circles  
of their freedom.  
How do they learn it?  
They fall, and falling,  
They're given wings.  
(Rumi )*



The goal of Cartesian science is to know everything about all parts of all there is; not to acquire knowledge sufficient for proper understanding. This monolithic objective of complete description, idealized and codified by René Descartes, has spawned a widespread “Cartesian anxiety” (Bernstein, 1983, p. 16ff) – a paralysis of analysis stemming from the belief that we need to engage in an infinite regress of increasingly detailed analysis to establish “perfectly objective scientific certainty”. This belief is at the core of the onto-epistemic reductionism promoted by Descartes and Bacon (Hansson 2012). Instead of nurturing deep emotional connection by the awe-struck reverence that can come from facing the immensity of Nature in all its interrelational majesty, this Cartesian Curse keeps haunting us with a lingering sense of paralyzing uncertainty – just made worse the more we dare to face the world as it is. Under this spell, we feel disempowered to the same extent that we embrace the scope of the whole picture! Therefore, under the weight of the Cartesian Curse, our students are forced to violently reject the world as a unified whole; all to dissect it down in scale and degree of complexity to seemingly manageable portions. For this reason, education true to the Cartesian mind must limit the scope of experience, cut off emotions and intuitive awareness, limit creativity, and reduce problems to bits and pieces removed from their functional context. Instead of being allowed to be awe-struck in front of the wonder of reality, our students are therefore encouraged to seek the false –

indeed, delusional – comforts of Baconian-Cartesian reductionism; all to reduce the discomfort of their cognitive dissonance. Thereby, as I see it, our students are deprived of the opportunity of true, inner transformation – a process that requires a personal experience of meaningful empowerment by interconnection with the subject matter under consideration. Reverence and responsible action are inextricably bonded. If a student is awe-struck by the profoundly enriching experience of perspective-transformative learning, then that life-changing rite of passage can make all the difference in a world so desperately in need of wise stewardship.

The open-ended experience of being awe-struck before the majestic immensity of the world opens the door to a deep re-cognition of the self, “re-positioned” and “re-connected” within the wide-open field of reality, the actual situation that is also the open field of creative possibilities. Indeed, the place where we observe our problems within their actual context; the place where we also have to go to find their solutions!

In my work as an educator in sustainable-systems design and community transformation, I have found that when learners are brought into a state of heightened awareness “in awe of the mystery of life” and of the complexity of the world, then their education becomes transformative in the direction of sustainability.

### **Crisis! Confusion! Where are the rules?**

As many teachers have observed, especially in environmental- and sustainability-related fields, learners in postsecondary education often end up in despair, denial, and self-absorption when exposed to the totally open-ended real-world complexity of socio-ecological problems. These conditioned Cartesian responses to seek shelter from complexity, “messes” (Ackoff 1974) and “wicked problems” (Rittel and Webber 1984)

are of course not sufficient to inspire passionate action. Our students must also be allowed to engage on a personal level and to actively participate in action for change (Kaza). In order for learners to get in contact with their passionate desire to engage with complex problem situations, I have found that they benefit greatly from first being put in a radically “destabilizing” situation where they are totally immersed in the overwhelming immensity of real-world complexity. This destabilization is a facilitated “crisis”; a disorienting dilemma (Mezirow 1995, p. 50) where “the old rules” of Cartesian education don’t apply anymore. In such a “crisis” situation, if well facilitated by the educator, learners get the transformative opportunity to see the world with new eyes.

In my transdisciplinary senior/graduate-level course “Designing Sustainable Systems” at a medium-size university in the U.S. Pacific Northwest, I recently gave my students a first take-home assignment where they were asked to model “the catastrophic system failure” that resulted in the March 2011 Fukushima nuclear disaster in Japan. This proved to be a challenge of quite some magnitude. At this very early stage of the course, the students hadn’t been given any systems-related theory or methodology whatsoever, and they were asked to model the “system” within which the disaster occurred in any way they found appropriate, using symbols, drawings, pictures, and text. I also made sure not to give the students any preconditioning by “giving away” how their efforts would be evaluated. Instead, I made clear that there were NO rules whatsoever.

Understandably, my students’ approach to system definitions, elements, and boundaries varied wildly (some wrote text, others made elaborate drawings, diagrams, paintings, and collages). An obvious common theme was the lacking conceptualization of systemic interconnections and dynamism. Some students also (without success) tried to figure out what their teacher was considering to be the “right” approach.

Another interesting observation I made was that some modeling attempts were radically innovative; approaches that would never have

been tested if the students had been given clues toward a “right” (expected) answer from the onset.

An example of these radically creative approaches was a model of the “system” built like a structure of cells interconnected by semi-permeable membranes and a circulatory system; a physiologically “organismic” approach so very different from any “cybernetic” analogy borrowed from the sterile labs of electrical engineering!

Some students decided that “the system” that had failed was the technology and infrastructure of the Daiichi nuclear plant itself; especially the protective wall that had not been designed to handle the tsunami. Others concluded that it was the “capitalist system” in itself that was to be blamed. A few saw that it was all a matter of choice – and model utility; in other words: a perspective-dependent attempt to structure the functional context of the situation meaningfully in order to understand it. In completing this assignment, a few of the students began discussing the functional “Russian-doll” type arrangement of systems nested within larger systems.

As a consequence of the assignment, several students went into full crisis mode, anxiously inquiring about their “performance”, feeling that they had no capacity to complete this totally paralyzing assignment “correctly” and get a “good grade”. It was a week when I saw many pale faces in the classroom.

### **At play in the open field of reality**

Despite their initial stress of “not knowing the right answer” to satisfy the “requirements”, my students soon realized that many different paths could have been taken in responding to their totally open-ended assignment. A common exclamation was, “this is just like the real world!” To many, this was a surprising and remarkably empowering realization. Thereby, the field of creative possibilities in the course was opened up as the unrestricted scope of the world as it is. And the focus was shifted from “learning” to exploration (which, in turn, tends to make learning irresistible). Here it must also be mentioned that the assignment was graded only for completion and honest effort.

This first assignment started a profound dialogue and inquiry that engaged my students on a highly personal level throughout the rest of the semester and their comprehensive teamwork project designing a strategy for sustainability in a complex setting. Instead of building the course in a traditional, gradual fashion, progressing from teaching increasingly “difficult” concepts to requesting some practical application of these concepts, this course dispensed with this tiptoeing around complexity altogether, taking it for granted as the actual situation, making it the very starting point and the realm of creative opportunity. Uncharted terrain indeed invites exploration! Through this play in the open field of creative possibilities the students became the visionaries, creators and innovators – instead of being the Cartesian “non-experts” that have all reasons to fear engaging with reality as it is; learning from an “expert” who knows! Through the comparison of the students’ various strategies, the course introduced the “soft” (constructivist) systems approach (Checkland 1993) – first expressed in the Western world by Spinoza (Hansson 2012) – through experiential learning before it was being conceptualized in lectures or locked in behind the consciousness-bounding walls of any technical terminology. The final student evaluations of the course clearly showed that this facilitated “crisis” in their education had given rise to a sense of wonderment and gratitude in the vast majority of students in the class; an emotional engagement that had grown throughout the semester into a deeply experienced sense of new empowerment, combined with a strong desire to actually work for constructive change in highly complex problem situations. The initial trembling had given way to fearless fascination beyond the terrors of the Cartesian Curse. Nevertheless, to be effective, the process to inspire confidence following a facilitated crisis also requires consistent, unambiguous validation and support grounded in empathy from the instructor.

Spinoza’s philosophy of systems and wholeness After some necessary “unpacking”, the philosophy of Spinoza – the foremost (but

probably also least understood) critic of Cartesianism – is also highly applicable to systemically integrated sustainability pedagogy (Hansson 2012). Just like Leonardo da Vinci’s non-reductionist science (Capra 2010), Spinoza’s understanding of the seamless unification of Man and Nature holds an untapped potential for truly and profoundly transformative and transdisciplinary pedagogy. After the sudden shock and awe facing a cascading complex-system failure, my students were immediately able to recognize the utility of Spinoza’s explanation of the organization of the world as a nested structure of ‘parts’ and ‘wholes’ on an infinite scale of complex organization contained within the totality of Nature as a whole – the actual situation of the world as it is. A relational universe where correct acts of cognition must follow “the order and connection of things” in order to avoid the “confused and mutilated” knowledge that is derived by reduction (Spinoza 1677, Ethics, Part II, Proposition 7, and Scholium to Proposition 29). Like all organisms, humans are part of this system and not superior to Nature. Instead, according to Spinoza, all organisms are ecologically dependent on their total, functional environment (Spinoza, 1665, Letter 32; Ethics, Part IV, Propositions 2-4). To be able to understand Nature as an integrated system, Spinoza claims that we need a perspective that accounts for our own less-than-perfect ability to comprehend complexity. Our limited cognitive faculties simply make it impossible for us to embrace anything beyond a partial scope of reality in its totality. This recognition is the starting point for Spinoza’s non-reductionist theory of knowledge (Hansson 2012). I have found that it can also be used to help inspire a sense of transformatively re-orienting awe in learners facing the acute need to make sense of their place and role inside this totality. Predating ecology, General Systems Theory, and complexity science by almost three hundred years, Spinoza developed a practically useful non-reductionist philosophy of systems and wholeness that offers a realistic perspective on the functional relation between parts and wholes. As I have discussed elsewhere (Hansson 2012), this is a view that

can function as a powerful conceptual meta-disciplinary language and pedagogic tool applicable to both the descriptive and prescriptive (moral) dimensions of a sound sustainability education.

### Outside the Cartesian nest

In concluding, I return to the poem of Rumi at the beginning of this paper: "How do they learn it? / They fall, and falling, / They're given wings." Our students can unfold their wings as soon as we give them the gentle push they need over the illusory edge of Cartesian security; the fantasy world supported by mainstream academia where order is maintained by reductionistic violence, simplifying real-world problems into well-defined artificial units, together with their equally simplistic and well-defined potential "solutions". Outside this nest, built from conventionally accepted knowledge accumulated for centuries according to the Cartesian rulebook, our students can grow up to become the revolutionaries, inventors, artists and visionaries that the world so desperately needs.

How can wings unfold in the false safety of the old nesting ground? As educators, we deceive our students when we keep telling them they have wings, and then condition them into a life in imprisonment; engendering in them the fears that have kept so many of us paralyzed – willingly or unwillingly subservient to unsustainable systems of rigidity, injustice, ignorance, and oppression.

True and lasting transformation is a state transition; the butterfly emerging from the confines of its former self. Transformation is not growth or accumulation. Often these are necessary conditions, laying the foundation for the leap, but the transformation itself is a radical change of cognition and capacity where a previously innate potential suddenly unfolds. This, as I see it, is at the core of the Socratic vision of education where the teacher self-identifies as midwife (facilitator rather than expert), helping deliver the learner's own potential.

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In my first year at University in the late 60s, I was mildly impressed to notice that my three chosen subjects, Geography , English (Language

and Literature), and History, were all exploring aspects of life in Anglo Saxon England. Geography was focusing on the earliest permanent settlements in Britain and their use of land, the evidence of which is now embedded in our landscape; in English we studied 'Old English' in order to read the literature of Anglo Saxon times; and in History we were looking at these same earliest 'written monuments' for what they revealed about the character and quality of life in those times. I remember wondering in my first exams whether it would be construed as 'cheating' if as part of my answer in a particular area I referred to what I had learned in another subject. (I have forgotten my conclusion.) None of my friends seemed to have the same quandary because, as I recall, none was following my exact course of study. It eventually dawned on me that the alignment of the courses' content was perhaps fortuitous rather than deliberate: and probably no-one apart from me had noticed it!

After finishing University and completing a Teaching course I volunteered to teach in Africa with VSO. In no time at all I realised that the syllabus planned for the students completely failed to engage their interest, so I began a series of 'field studies', taking the students with me to find out about the lives and occupations of local people. I worked on the assumption that whatever interested me about their culture would probably interest them. The students loved it.

On my return to UK, the first school where I taught (Dartington Hall School) had just begun a pioneering and visionary new project linking this private school in South Devon with a state-

funded secondary school in a coal-mining community in Yorkshire. In the headmaster's mind, the emotional, aesthetic, moral and social aspects of a child's development mattered as much as the intellectual and practical ones. It was his plan to develop a scheme which would foster individual and group creative life, enable students to explore the meaning and culture of their own lives, and experience other cultural lives, partly to help students assess their own. He wanted to bring together children from a private school with those from the maintained sector; parents from the privileged professional/ middle classes who often lived abroad with those from a stable, predominantly working class village in Yorkshire; and teachers from a rural independent boarding school with those from an urban secondary modern and a grammar school. It was a multi-dimensional scheme. The objects were to introduce each community to the education, organisation and ethos of the other; to enable people to live and learn together in each others' environment; to initiate conversations and encourage new insights. It was a unique and truly holistic experiment whose boundaries incorporated cultural, social, political and economic dimensions never before explored in this way. Inevitably the scheme touched on (one might say, collided with) the private, personal and psychological, exposing the prejudices and fears of all parties, as well as their curiosity and generosity. I was involved in the project for much of its six year life.

When I took my first job at this innovative and progressive school, as a teacher of both History and Geography, I began to think that a course integrating the two subjects would be an exciting development. A colleague working at the same school shared my interest, so Sociology was added to Geography and History in our Integrated Studies curriculum. The Examination Board which assessed student performance and awarded qualifications, was intrigued by the proposal. After extended

negotiations, together we worked out and agreed both the syllabus and the methods of assessment. The course was heralded with much interest and attracted some adventurous students. It was not different merely because it made connections between disciplines which traditionally were kept separate, but was about new methods of inquiry and new processes of learning. After a number of years I noticed that the grades students achieved were higher than might have been expected. I began to wonder whether this was just the result of the interest focused on them, or of the consciously interconnected programme of study they followed.

As my career progressed my interest in how people learn developed. I realised that the context in which people study affects the success of their learning. Not only does the context need to be respectful and congenial, but its underlying values should not be at odds with the focus of the subject. For example, the effectiveness of a seminar about sustainability is compromised if it's run in a hotel by a motorway which serves instant coffee at break-times and exotic fruits after lunch. In short, students' brains learn from all aspects of their environment, holistically (and subliminally!). I began to experiment with choosing or creating holistic learning environments to promote effective learning. In the 1980s here in Dartington, four or five of us began to plan the creation of a 'Centre for Ecological and Spiritual Studies', a name which was changed to 'Schumacher College' before the programme was launched. My real contribution was my experience of helping people learn. We agreed to offer a wide-reaching course programme of Ecological and Spiritual Studies. Generally speaking, the courses were five weeks long and led by respected pioneering scholars. Our permanent staff included academics from the fields of the Physical Sciences, Ecology, Psychology and the Arts whose role was to probe the roots of the theses underpinning the work of our visiting scholars. Music, art, environmental economics, philosophy, psychology, business, medicine, design, ancient wisdom, green politics, Gaia, building sustainable homes,

relations between the genders... we touched on them all in the first couple of years. The list was the start of a comprehensive (but not complete) exploration of ecological and spiritual studies. It was met with enthusiasm from people all over the world.

Yet after just two years it appeared that the world's supply of students eager to join the College's courses had faltered. Advisors told us that our programme was so eclectic that 'the market' didn't have a clear idea of what we were about. They were unable to place our courses into a traditional discipline, or to see the point of the processes we had adopted to reinforce the learning. (Apparently, in the 90s it was still only a minority that grasped the intention of our programme.) We therefore agreed on the need to present ourselves more clearly and chose to focus on three strands of study. One strand would look at the lessons emerging from the new sciences; another would explore development and new economics, and the third would focus on ecological perspectives on our traditional ways of understanding the world...thus, eco-philosophy, eco-theology, eco-psychology etc. We felt this change narrowed our programme somewhat, but it still allowed us the freedom to offer ecological and spiritual studies and to make webs of connections between many fields of endeavour. For pragmatic reasons, we also decided to reduce the length of the courses to three weeks from five. In some ways this marked the point at which it began to feel to us as if our studies were in danger of becoming less 'holistic' than had been our original intention. We didn't routinely use the word holistic: we spoke in terms of integration, interconnections and of the breadth as well as the depth, of the study.

From the first, Schumacher College's design involved everyone in certain key daily tasks such as food preparation. Part of our holistic vision, this was to create a context in which the implications of our courses could be examined. The conscious choice of an organic and vegetarian diet, both for pragmatic and philosophical reasons; the sourcing of the food and other materials; the living and working in

community, together offered opportunities to explore and elaborate on the academic programme. Some called it a pressure-cooker environment, and within the constraints of the programme we were very successful in providing a holistic education, even if students were only here for a short time. But as our confidence grew, it was clear that we needed courses with extended periods of study so that we could move towards a more holistic programme.

The emergence of the Holistic Science course (so named by a teacher at the University!) at Schumacher College transformed the context in which any student could experience learning there. Now, not only was there a permanent residential group of long-term students, but there was an ongoing corpus of holistic inquiry which informed and enriched everyone's experience, however short their visit. Admittedly, the Holistic Science Course's boundaries were prescribed within the Faculty of Science, in order to satisfy the demands of University accreditation. Nevertheless, in their individual projects some students slipped outside this limitation and chose to put economics, education, community etc. under the spotlight, expanding the boundaries of the course.

When I reflect on the development of my practice, I can consciously go back no further than my time at University. There I was aware of connections between disciplines, but still indoctrinated in the long established academic tradition of the boundaries between them. After University, having decided to study and work in experimental education, I was exposed to and involved in some of the challenges made in the 1970s to conventional practices. There were various radical experiments at that time, though often they sprang from a materialist philosophy. Soon, I developed the confidence in my own field to challenge the status quo. I was fortunate to be in a situation where such challenges were welcomed, and encouraged.

I was a child of my time...most of us are. The zeitgeist of the 1960s and 70s was of adventure, risk-taking and exploration. The expectation was to overturn barriers, to attack the status quo and to achieve inclusivity for the excluded. The work of the last three decades has been to push at doors which had already been edged ajar in the 60s and 70s. But still today, although the language in education has changed, there is still a whiff of iconoclasm about the education at Schumacher College, and about Holistic Science in particular.



## **SIXTH KEY - VERY SLIPPERY**

**BRING YOUR ATTENTION TO YOUR FEET  
SEE WHERE YOU ARE STANDING UP  
EXPLANATIONS  
THOUGHTS  
WORDS  
POINTS**

**... CAN BE VERY SLIPPERY**

## BUDDHIST WAYS OF KNOWING



*'I might not be  
right about that'*

*"A former king of  
the town of  
Savatthi, he*

*related, ordered all his blind subjects to be assembled and divided into groups. Each group was then taken to an elephant and introduced to a different part of the animal—the head, trunk, legs, tail, and so forth. Afterwards, the king asked each group to describe the nature of the beast. Those who had made contact with the head described an elephant as a water-pot; those familiar with the ears likened the animal to a winnowing-basket; those who had touched a leg said an elephant was like a post, and those who had felt a tusk insisted an elephant was shaped like a peg. The groups then fell to arguing amongst themselves each insisting its definition was correct and all the others were wrong." (Keown, p1)*

Buddhism is a religion of faith and reason. The spiritual pillars of Buddhism, the Four Noble Truths, see that suffering is an intrinsic experience of all living beings (the Truth of Suffering), and the very cause of this suffering is ignorance (the Truth of Arising). The Buddha taught extensively that one brings about the cessation of this cycle of suffering (the Truth of Cessation) through pursuing the path of virtue and knowledge (the Truth of the Path). (Keown, p 46-56) Since the key to liberation is the condition of 'awareness', refining the lenses of our perception and treading the path in accordance with our own truth is integral to religious activities.

The story of the blind men and the elephant retold above offers us a helpful image for the theme of Buddhist Debate, a method that ancient Buddhist scholars have established in order to examine 'the elephant' of the nature of reality. This style of dialectic debate is the primal monastic pedagogy engaged in Tibetan

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Buddhism to cultivate the minds of monks and nuns. As we face the challenges of "contemporary socio-ecological conditions of un-sustainability, complexity and uncertainty" (Sterling) while an emergent worldview arises from the new sciences, I've asked what the Gelug-pa tradition of Buddhist Debate can teach us on the path of sustainability and peace.

In the modern academic setting, the main activities of learning are note-taking, reading course materials, essay writing and attending group discussions where space for all voices is often limited. Learners develop their understanding and ways of thinking via the 'written work' of an existing body of knowledge. This is where the Tibetan tradition differs; within Tibetan scholarship there are three "intellectual technologies" (Dreyfus, p.11) that are utilized in the process of learning: memorization, commentary, and dialectical debate. Monks and nuns memorize the root texts that function as the springs of the well of knowledge, and commentaries that form the reservoir of interpretation of the root texts. After their hours of memorizing root texts and some commentaries, the method of Buddhist Debate provides an opportunity for monks and nuns to examine the knowledge through dialogue.

Buddhist Debate, an ancient form of "intellectual gymnastics" (Dreyfus, p.195), is an intrinsic part of the Tibetan learning process and monastic education. The main goals of this style of debate are "to defeat misconceptions, to establish the correct view, and to clear away objections to that view." (Perdue) The pedagogy of debate underscores three aspects of Buddhist practice: to listen to the Buddhist teaching (hearing), to use conceptuality to find its meaning (thinking), and finally to meditate on it (meditation). Among the four lineages of Tibetan Buddhism, the Gelug-pa tradition is well known for the centrality of dialectical

debate within its education process, and particularly in its emphasis on the second aspect of the practices, thinking. This process has been created and practiced with an understanding that the relationship between conceptuality and our direct perception can be reconcilable; therefore, both can serve to fulfil ultimate potential. (Klein)

### Procedure and Rules

Dreyfus used the term “spirited clashes” (Dreyfus, p.195), to describe the vibrant atmosphere of the Buddhist Debate, where striking hand gestures and displays of strong emotion catch the eye of the observer. There are two parties involved in this style of animated conversation: a Challenger who stands and put forth arguments, and a Defender who sits and responds to those arguments. During the debate, it is the responsibility of the Defender to submit and defend the truth that he or she has stated, while the Challenger finds points of contention by logically following the Defender’s statement and challenging the validity of its proposition. There are two ways to do this: through syllogism or through consequences. In a debate, a statement includes three terms: a subject, a predicate to be proven, and a reason (or a sign). When both subject and predicate are combined, it is called thesis. Syllogism is a form of argument, which consists of this thesis and a reason; the thesis is the focus of its examination; and the proof is in the reason. For example:

C: It follows that the subject, the colour of a white religious conch (subject), is red (predicate) because of being a colour (reason). This is the structure in which the debate unfolds through the exchange of questions and answers. The topic is proposed by the Challenger in such a way as to draw out the Defender’s thesis. The Defender has four ways to reply:

- a. I accept
- b. The reason is not established
- c. There is no pervasion [i.e., connection]
- d. Why?

The Defender can accept the posited statement by saying ‘I accept’ (i.e. I accept that the colour of a white religious conch is red,) or ‘The reason is not established’ when the reason is not compatible with the subject (The reason, that the colour of a white religious conch is a colour, is not established). The Defender can say ‘There is no pervasion’ when the reason does not include the predicate, i.e. is not in alignment (Whatever is a colour is not necessarily red.) Sometimes a topic is stated without a reason, leading to the fourth reply, ‘why?’ (Why is the colour of a white religious conch red?). After the Defender has made his or her own stance, the Challenger questions the assertion by using posited logic to draw out its consequence. This is where the Defender can find him or herself in a contradictory, unforeseen, and even absurd stance - here it is as if the Challenger ‘kneads’ the logical mind of the Defender by crafting questions that can reveal the fullness or weakness of his or her proposition. Further refutation continues as the dialectic emerges and the delicate examination develops participants’ understanding.

### Reflections

“One of the beautiful things about debate is that at the very deep level, through the process of debate, it’s going to be able to demonstrate powerfully the limits of language and concepts. That’s where the experience will take off [...] it will take us all the way to the limit of language.” (Jinpa and Perdue)

To understand this process more clearly we note that there are two types of valid cognition in Buddhist epistemology: direct perception and inference: direct perception is the source of our knowledge (which cannot be reduced to perception), and inference is that which has stemmed from it. Inference is the arena in which debate is held and logic is tested, and it is the nature of reasoning that inference is dependent upon. Therefore the responsibility of the debaters is rooted in their ability to listen and differentiate right reasoning from wrong. Dreyfus gives us a clear explanation: “At the heart of this method is the assumption that all pronouncements about the world must rest on the attested forms of knowledge,

perception and inference. A claim can be validated by experience. If it is not, then it must be supported by inference, which must rest on some argument. When Buddhist epistemologists claim that all things are impermanent, they cannot simply invoke the Buddha's religious authority. Since such a claim is not given in experience, it must be supported by reasoning. The discussion then proceeds by assessing the correctness of the argument, following the rules of Indian logic. Such methods put a heavy emphasis on rationality—the assessment of evidence in accordance with the laws of logic.” (Dreyfus, p.237)

Rather than ‘colouring’ the direction of reason, the emphasis here is on reason ‘in support of’ the experience. The method respects the experience and does not seek to make it ‘knowable,’ but rather to use reason as an instrumental tool to guide the observer into the ‘unknowable’. This is where the difference lies between Critical Pedagogy and Buddhist Debate. Whilst the former is based on the assumption that everything can be known (thereby dismissing the unknown) the critical spirit of Buddhist Debate is to guide learners to see the unknown.

## Conclusion

“The true work of the mind is to reconnect us with that which would otherwise be out of reach, to reweave the great community of our lives.” (Palmer) From the history of modern science we have learned that the extreme use of logic and reason can lead us to a place of disconnection, while the trajectory of blind faith has led to separation from ‘the other’ and the obscuration of the interrelatedness of our lives. We see that our need for validation and certainty in the midst of the unknown influences our relationship with reason and faith, and yet knowing cannot be about validating the particular experience of learners. In essence knowing is learning to ‘live through’ life, i.e. to inquire into the place of the unknown. Without recognizing this nature of

knowing, the discourse between reason and faith, science and spirituality, education and spirituality will not take us to a deeper exploration of life. As a living mode of inquiry Buddhist Debate is not designed for internalization but rather as a nurturing tool for our imagination, creativity, critical inquiry, open-mindedness and the development of trust in the process of unfolding.

Every individual has different experiences of being in this world. Wherever we are, we have to live through the best practices and worst influences of industrialization, militarization, colonization, globalization and secularization. Living in the community of truth possesses tremendous challenges, and yet it is this community upon which our lives depend. The ‘beauty and the beast’ of the life of the world gives us strength but also stretches our hearts apart; maintaining the sense of love and compassion for all the lives on this Earth becomes the art of living. We require a pedagogy that celebrates all beings, and the method of Buddhist Debate, which can enable us to cultivate an open-mind with critical thinking, has a tremendous gift to offer in our making of a sustainable and peaceful future.

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“Try not to become a man of success but rather to become a man of value” - **Albert Einstein**

Many people suffer from an acute loss of meaning in their lives (Glas). They cannot see any purpose to their individual human existence, yet they know, without a shadow of doubt, that they do indeed exist, that they are conscious, sentient beings, alive in a tangible physical world. Nevertheless, the question “why?” continues to plague them, either consciously or as an indefinable nagging anxiety which has profound consequences for the way they live. This article explores the issue of meaning in science, philosophy and religion, with particular reference to old age and the challenges, for many people, which this period of life can bring.

### Transitions

Most people will be familiar, with the concept, at least, of the mid-life crisis. Less well-known is the unfolding of human life in seven year periods, marked by transitions at ages 7, 14, 21, 28 etc. After age 63, however, the elder years are marked, not in 7 year periods but by an increasing inner freedom in which the individual gradually retreats from the affairs of the physical world to become more concerned with non-material realities (the spiritual or transcendental), as the next transition at the moment of death, draws nearer (O’Neil). This is a uniquely individual path, which can be spoken about in general terms, but only applies to specific individuals to a greater or lesser extent.

Many people are faced with “retirement” in their sixties which may be a time of existential crisis in their lives. This is particularly acute for those who have identified very strongly with their work so that when this is removed, along with all the motivation, colleagueship and activity, a profound emptiness is felt. The feeling of superannuation and anxiety about the future leads to depression and apathy, and more or less serious mental or physical breakdown is the result. An awareness of physical bodily mortality, with an underlying

fear of death, sets in. The sense of complete and utter loneliness, accompanied by a desperate questioning of the meaning of life sucks what little is left of joy or companionship out of relationships.

Fortunately, an understanding of this transitional period, together with a certain amount of preparation, knowing that it is never too late, can activate the will to meaning and help us to cope with, and even overcome, these life problems. Crisis then metamorphoses into opportunity.



### Will to meaning

Logotherapy, developed by Viktor Frankl is the third Vienna school of psychotherapy after Freud’s “will to pleasure” and Adler’s “will to power”. Its aim is to help people to find meaning in their lives at times of crisis. According to logotherapy, there are three paths to meaning: 1) by finding work or activity with which one can creatively engage, body and soul; 2) by direct experience of goodness, beauty and love in culture, nature or people; 3) through the way in which we experience unavoidable suffering.

Logotherapy asserts that there is an inherent will to meaning. This can certainly be awakened in a therapeutic context, but ultimately individual action is required. Taking responsibility for our own lives is an essential part of the movement towards actualising human potential.

It is axiomatic that finding meaningful work or activity is an essential part of the path to actualising our human potential. As we grow older the danger is that we become fixated on one or other passion so that at the time when physical or mental capacity begins to decline, a deep despair sets in. Life becomes meaningless

as inability to “follow our dream” curtails our options. Our response to changing circumstances, indeed our ability to embrace change becomes the key to further development.

As responsibilities for earning a living, bringing up children and generally “doing” in our complex society begin to fall away, so our relationships also change. Awareness of the essential loneliness of the human condition mentioned earlier becomes more acute and new forms are required. Emerson said that the way to gain friends is to be one, while top of the Dalai lama’s list is kindness. Thus a vast area of human experience, that of human relationships, involves an expanding experience of love to include selfless intention for the good of those around us, and ultimately the whole of humanity. Empathy is the key to this experience - putting oneself in the place of the other person.

As in human relationships, our relationship to the natural order of the world can deepen, too. The notion that we are “nothing but” higher animals seems to be gaining strength as Darwinism pervades the life sciences and the ecology movement. In fact, our direct individual experience of our own consciousness leads inevitably to the conclusion that we are quite different from even our closest “cousins” (Tallis). The grave danger that so reducing our status to that of animals, even very clever ones, will lead to inhuman behaviour is all too apparent. Contemplation of nature, and of ourselves, in all our glory, is an essential part of the way to meaning.

The third issue, which can seem horribly meaningless, is that of suffering (Luke), or more precisely, unavoidable suffering. Simply put, the question becomes one of how one meets the challenge of unavoidable suffering. The ego demands pleasant, happy feelings, including a longing for growth and freedom; if they are not present, neurotic depression may set in as false values come to the fore. To bear suffering bravely, with acceptance in all humility is a deed for the world; somewhere a burden is lightened by our effort. This is unproveable in any logical sense, and it in no

way suggests that suffering is necessary for meaning. Rather it gives us an opportunity to overcome egotistical longing, leading to further spiritual growth.

In logotherapy, as in many other belief systems, the view that the world is an essentially meaningless, random interplay of complex physical forces (nihilism) is not a given truth. Our challenge is to cope with our seeming inability to logically comprehend this meaning, which raises the issue as to what evidence we use on which to base our beliefs.

### **Hard and soft evidence**

Science is concerned with “hard” evidence, and makes progress by testing new theories against objective, measurable, repeatable and universally applicable data. This has been phenomenally successful in recent years at increasing our knowledge of the world and making that knowledge “useful” to us in technological advances undreamed of by people only one or two generations ago. Even “blue skies research” is seen as justified in that one day it may become useful, usually in a material, economic sense. This scientific world view, with its emphasis on rational thinking, comes into conflict with the subjective life of feeling, even to the extent of denying that individual human experience should be admitted at all.

Huge swathes of human experience are denied objective “reality” by this thinking. Indeed, a life including intrinsic value seems impossible without being labelled a crank or misfit, in our western society, at least. Thus it is that the older person becomes increasingly isolated, with physical needs more or less met, but with soul needs largely ignored in conventional “care” situations. A humanitarian impulse alone, without enabling personal growth, is not sufficient. Fear of the future, together with a sense of despair at increasing dependency on others, can lead to unhappiness and depression, and, in extreme cases, premature death.

Fortunately, the conventional scientific paradigm is not universally accepted as the only way to the truth (Hick). Religion (or at least a feeling for the transcendental), art, the

humanities and the subjective inner life of feeling are widely accepted as “real”. The fact that science cannot “prove” that feelings exist (although neuroscience is beginning to make claims that neural activity in the brain can be correlated with specific feelings in an experimental subject) does not detract from the reality, to the individual, of those feelings. Rather than perpetuating a growing schism between science and “non-real” experiential evidence, holistic science practises an inclusive approach which also recognises and embraces a transcendental world view, including that relating to the “hard problem” of describing human consciousness (Chalmers) .

### **The twelve senses**

It is beyond the scope of this article to describe the twelve senses in detail, but since the decline of the senses in later years presents huge challenges it is appropriate to describe briefly some of the less well known ones, and the inner meanings associated with them. Working with an awareness of these meanings can lead to significant changes in behaviour and attitudes in old age. That the nervous system is popularly described in terms of inputs to a computer (the brain) for processing which then provides outputs for sensations or actions is a travesty of the truth. Infinitely more complex and subtle forces (for want of a better word) are at work in all living systems; this especially applies to human beings with their subjective experience of consciousness and free will.

The sense of touch links us to the world, closely and intimately. By touching things an inner experience is created which can enliven the soul with deep respect, even reverence, helping to overcome the disabilities of the body. Older people can cultivate the sense of touch by, for example, playing a musical instrument or by handwork.

The sense of life strongly influences our soul moods. Thus there can be a tendency for older people to be excessively dependent on their state of bodily health; even to lose human contact through minute interest in the course of every illness. Overcoming this requires occupation or concern for other people or the

environment and to gain a degree of equanimity by becoming independent of the messages brought by the sense of life. (How to do this is a major task, but the first step is to recognise how our soul moods are being affected.)

The sense of movement is the kinaesthetic sense. This is closely linked to our ability to stand erect and to attain freedom of movement. As the body ages and hardens, this ability, from the outside, is seen to decline. Learning to look inward to soul-freedom, which cannot be stifled by the body’s lack of mobility, involves joyful acceptance of the course of life and the unwavering pursuit of definite objectives as a sustained effort of will.

The sense of balance gives us equilibrium. It is sobering to reflect that without it we could only crawl. An inner sense of calmness in relation to our surroundings enables us to understand our own being. In literature, where many archetypal journeys can be found, Shakespeare’s King Lear loses his inner peace through his craving for the outer love of his daughters, not having the wisdom to see that this is the tragic result of his excessive egotism. Self-forgetfulness and unselfish love is required as we move through the elder years and “grow old gracefully”. Studying King Lear, The Tempest and Greek literature can bring the old person to recognition of the necessity to keep egotism in check.

The sense of smell relates us to the world through the air we breathe, deeply into our bodies. To cultivate compassion, as the opposite of fear, is the main task in relation to a declining sense of smell. Keeping alive the beneficent forces which we breathe in throughout life in true humility and gratitude helps us to overcome the typical curmudgeon in us – peevish, ill-tempered and shunning all contact with fellow beings.

The sense of taste, by comparison, relates us to the world through the fluid element. Digestion and metabolism takes place in this element. A normal sense of taste knows the needs of the body and can be relied on if uncorrupted. Again, cultivating interest in others and dealing with them with kindness can help to overcome

quarrelsome behaviour related to metabolic dysfunction.

The sense of sight is related to inner balance. Deteriorating eyesight in old age can lead to dissatisfaction with life – counting failures and what remains to be accomplished. Seeking to be truly grateful for our destiny and acknowledging that setbacks may have their origin in long past events restores soul-peace to the individual.

The sense of warmth is essentially the sense of the warmth of the blood, perceived in the heart. The heart is the instrument of the feeling soul, where love, remorse and conscience impinge on the soul life. It is of great importance that older people are kept at a comfortable temperature, in body and soul. Developing the virtue of patience, so that we do not become overheated or cold when things do not go our way, is a great challenge in old age.

Through our sense of hearing we gain a great deal of information about the world, and about people. The soul responds with inner music, which unfortunately can easily be drowned out by external noise and negativity of the will, even to the extent of causing physical damage in certain organs of the body. The supreme task is to give full attention to everything we hear, to listen with understanding and to suppress immediate and loose responses. Listening to live music, and playing a musical instrument, is of great benefit in bringing peace to old people.

The sense of word is related to courage. The fear of death can be alleviated by the cultivation of the power of speech, much neglected in our time. Reading aloud, and every practical use of language can breathe life into the soul to “live victoriously”.

The sense of thought allows us to grasp single thoughts as well as complex series of thoughts as a whole. Small children hardly have it, but around the third year connected short stories can be introduced, allowing the child to learn. In order to keep this faculty into old age, we have to create a space for ideas to penetrate into our inner being. Calm contemplation of the world reveals to us the thoughts that live in it. As we grow older, the desire to assert

ourselves, becoming talkative and opinionated conceals a fear of losing our sense of self. To counter this tendency requires self – discipline, to interest ourselves in new ideas and to keep inner silence.

The sense of the ego of other people is the sense of the “I” of the other person. It permits us to come close to the being of the other person, beyond outer appearances. If undeveloped, this sense makes it difficult for us to recognise the intrinsic worth of people with whom we have direct contact and who may have a decisive influence on our lives. We may indulge in unjust criticism and become a burden in even our closest relationships.

When an elderly woman’s husband died 25 years ago she was unable to replace her dependent relationship with any meaningful activity for herself or other people. Such was her grief, and the sympathy of her friends and family, that she became more and more obsessed with the decline of her physical body and her senses, including eyesight and hearing. The impression she gave was that she had never developed any artistic or spiritual beliefs of her own, living vicariously on her husband’s many interests. Now 100 years old, she is terrified of dying and projects a tragic and belligerent spectacle to all who visit her. Real suffering may result from neglect of the needs of the soul, even if the body is well cared for. It should be emphasised again that the individual has to take responsibility for their own life, and, with the help of others, face all challenges as they arise.

A word about dementia is relevant in a discussion of the senses. Three quarters of a million people, rising to one million in ten years’ time, have dementia in this country alone (The Alheimers Society) It is a progressive dying of brain cells leading to a loss of brain function; usually memory loss is the first noticeable symptom. As yet, there is no cure and it is a distressing and much feared disease, often involving severe personality change.

Losing our memory and the power of thinking is tantamount to losing our identity. Yet it is just this sense of egotistical “me” which is at the heart of so much human suffering (Tolle).

The “cause” of dementia (and perhaps many other diseases of our time) may well lie outside the purely medical-scientific realm, and we should rather seek to understand the condition in terms of individual destiny and the social, environmental and philosophical time in which we live. What we “need” as human beings alive today is a deep respect for ourselves and nature, including the transcendental nature of reality.

It will be seen that many of the senses are alive even in people with advanced dementia, and soul-care is just as relevant as for people with physical disability. Enlightened soul-care as well as physical and social care should be available to all people suffering from dementia.

The message that this look at the senses brings is one of optimism. The radiation of a warm heart by the person who can forget himself will spread like a blessing and he will never suffer from loneliness. The task of the older person becomes clear – to train their senses so that what they bring may be developed in the soul to keep the spirit alive even though it is housed in a frail and worn-out body.

**Conclusion**

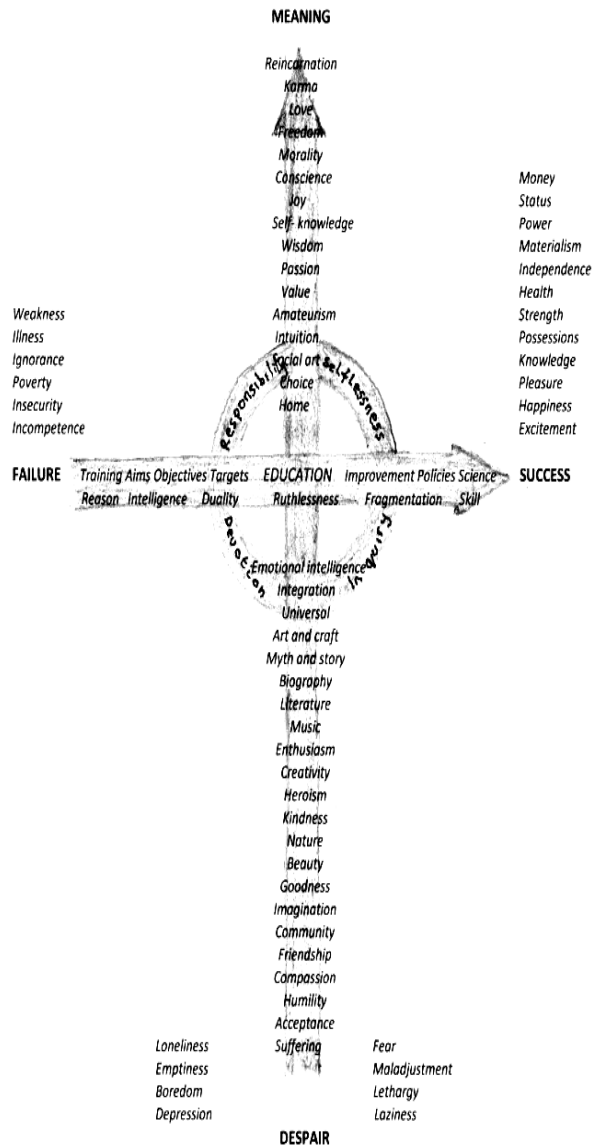
Although we would like the comfort and security which a sound-bite answer to the question “what is the meaning of life?” provides, it may be more relevant to restate the question in a more accessible form as “how can I live a meaningful life?”

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*The Meaning Cross*



My current favourite definition of education is: engaging with everything living and

non-living. It is possible that in India our curriculum makers would, hearing this, jump to list everything living and non-living and then only consider our education complete once a student has engaged with everything. Finding this impossible, we could subscribe to the Indian concept of Karma and attempt this task of 'engaging with everything' over several life times! Before you dismiss all this as frivolous, please just for a moment consider this rather impossible view of education, for among other things, it does bring us in awe before the infinite possibilities of learning.

My limiting education requires me to put down thoughts in linear fashion. Left to right, top to bottom, up again, left to right, down to the bottom and so on. This makes me wonder how damaging this pattern has been for the evolution of the brain. The more highly educated one is, the more one has forced one's brain to read and then write thoughts arranged in this repeated pattern. We know through many sources that learning happens non-linearly; that we should further develop the ability to perceive things holographically. The following are the headings that pop in to my school-trained brain, though I do so wish I could think and write in different patterns, colours and textures:

Collaborating with the universe.  
Collaborating with the self.  
Collaborating with spouse and children.  
Collaborating with loved ones.  
Taking it beyond immediate circles.

Research is usually looked upon as separating phenomena from its natural realm to study in isolation. It is surprising that this view of research is still so highly upheld in spheres where it doesn't really apply, after we know that even the introduction of an observer tends to influence the observed. I am not this kind of researcher. I am a mother who lives in urban India and among many other things, never sent her children to school. All that I write is subjective, and in a sense, and at least in my world, I wonder how anything can be considered objective at all!

In September 1992 when my first baby, a daughter, was born we had no books in the few English book stores on education. We still don't. If you ask for the section on education, you will find a mountain of books on management, on how to crack examinations and all manner of books connected to school and college curricula. It so happened that a friend of mine in the '80s had a collection of books by John Holt, Ivan Illich, Paolo Freire et al that had had a strong influence on my mind. I began to feel that the worst place for children to grow and learn would be school. This was further confirmed by my experiences teaching in seven schools over ten years before my first child was born. Apart from there being only a few books, there were no PCs or internet (or even cell phones) until after my third child was born. So I had no idea that there was anyone else in the world who had chosen not to send their children to school.

Of course we live in India, where many children do not go to school. And let us remember that before the advent of schools, everyone learned and grew without schools! This is an important point to note, and I hope we are fast approaching a world where children will not be required to go to school, but will have school as an option, with various kinds of schools and non-school places to work-play-learn in and more importantly, out.

How did these few books and stray influences reach me, a not very highly educated mother-

to-be? This and countless examples in my own, my husband's, my children's and others' lives inevitably leads me to believe that the universe is collaborating with, working through, and in fact is us. But because of this illusory 'separate sense', our starting point would be to 'collaborate with'. This possibility of collaboration with the universe is not only possible, but actually happening in everyone's lives. It's just that we do not see it until we begin collaborating with our deeper, inner selves. Learn the Self, so to speak. The 'how' of this important starting point of education follows.

Each person seems to have an inbuilt curriculum, a group of interests, talents, capabilities unique to that person alone. Our unschooling experiences have led me to believe that if children are allowed to grow in freedom (well relative freedom, because that's all we, as a society seem ever able to manage) then they will collaborate with the Self, the Other and the Universe, naturally; remain in alignment with their inner curriculum, the community and the universe. The moment we convince them that something else is more important to learn or do than what they are naturally drawn to, or rather, when we take them away from the moment, the fragmentation begins. When we teach them behavior they must adopt to integrate in to society, the disintegration of their natural alignment begins. Rural or perhaps tribal indigenous children do not go through this artificial separation. The beauty and great significance of remaining in alignment is that there is a natural deepening of understanding of one's gifts. Each child/student/person naturally spends time honing skills and talents, following interests and strengthening what one already is. Understanding of interdependency follows naturally, as each is strong in one or more fields and understands that through the sharing of our gifts can we not only survive but thrive. On the other hand the danger of fragmentation of the being, the self, as we see around us today is the ever deepening fear and insecurity that comes from a weakening of the self due to early separation from self and the moment, in which, and with which, the self is

engaged. This leads to irrational tendencies towards self protection. This attempt to protect the self has far reaching negative consequences, right from the need to acquire more money, property and possessions, to trying to feel more and more powerful than everyone else, the need to compete rather than collaborate, the need to bully each other at personal, national and international levels, and sadly the inability to be sensitive to others' needs, others' pain. Worst of all, to be disconnected from the understanding of our interconnectedness with everything living and non-living; the very basis of learning, which I see as fundamental to the quality of evolution and progress.

The negative connotation of power I just mentioned is diametrically opposite to the power that comes from human potential being unleashed both individually and collectively. Something that has become imperative at this point in our evolution.

The smallest unit and probably the most powerfully influential learning comes from our personal interactions, and the ones we interact most with are with those closest to us: the family. In tribal and other small communities, the whole village or community raises the child. On the other hand, urban nuclear families can either be a disaster for raising children, or a haven within which a child may safely experiment and explore, and from which a child can gradually increase forays into the world. Not all children have families, though; all families do not provide safe havens. But one thing is sure, and that is that the world of people that immediately surrounds a child is the most powerful in its holistic influence over a child's whole being. Friends who understand the deep importance of traditional knowledge systems and wisdom, who are trying to safeguard it from the grave danger of it being lost within a generation, say that an important way to preserve biodiversity is to preserve the transmission of traditional knowledge through home education (or life-learning as it is sometimes called) in remote areas where modern education has thankfully not yet reached. In our rush to educate everyone, we are misunderstanding the whole concept of

learning and confining it to the uni dimensional market-driven concept that may soon have the whole world eating the same food, speaking the same language, wearing the same clothes, vying for the same resources to deplete with no hope of renewal. Furthermore we are being separated from many other ways of being that do not fit in with the dominant culture. Ways of being that are gentle and wise, integrated and deeply meaningful.

I am not the sort of person who would keep people from 'modernization' or would keep people from 'advancing'. I imagine that if children, rural, urban and tribal, are allowed to grow in freedom, there are internal forces, the evolutionary impulse, that will steer them towards sustainable life styles - thirsting for traditional knowledge, lowered material needs, building of interdependent community, inner and outer searching for truth and meaning...I say 'imagine', because there are fewer and fewer adults who understand how to 'allow children to grow in freedom'. It is a tricky business. Many will think I mean laissez-faire, do whatever they wish, but that may lead to something frightening akin to The Lord of the Flies, perhaps! Whereas I like to imagine children being surrounded by adults with a higher consciousness, or heightened awareness. We are getting into even trickier territory here! Parents, (teachers), care givers who Know how to Be with children and Know how to let children Be. At least for the early years until children, at any age, begin to feel the need to learn more specific things, which is when all kinds of teachers can be useful. Is there something other than a teacher's degree that we can think of to qualify people to be around children? Some new criteria not based on studying in an institution, that qualifies people who are allowed to Be with and around children. On the other hand, all through life, all kinds of people, situations and things are teachers. Mistakes are very good teachers! Learning never ends. An individual should be able to separate certain kinds of learning for certain practical purposes, for a specific time period, short or long, according to the need of the student, or rather, the call from within the self. The dominant view of education now

revolves around curricula prescribed by 'the other', who know nothing of the individual, 'the self', and which is mostly aimed at preparing students to run the existing dominant (and increasingly dominating) system. I believe that children growing up in alignment and without being repeatedly torn from the moment, would grow up asking for a very different education of which an integrated future of Gaia would be a natural consequence.

There is the learning that can happen purely through engagement; learning that happens through approaching a person who is good at something; learning through trying all sorts of combinations of things; learning that happens through every pore of the physical, mental, etheric and other bodies every waking and sleeping moment. There are teachers who don't realize they are teaching; teachers who draw things out from a student. Teachers who are gifted at teaching the most complex things to the most tardy student by making it somehow broken down or just plain fascinating. Eccentric teachers with whom the student has to go through hell and back to learn what it is the teacher has to teach. There are teachers who learn from the student how they would like to be taught, and teachers who teach through learning themselves. There are spiritual teachers who teach through parables, exercises, puzzles or lengthy discourses. And those who say that nothing can be taught. In 2004, after over a decade of being lost in family, motherhood and the confusions of doing something completely against the tide, I was invited to share my experiences at a conference on Indian Psychology at the Sri Aurobindo Ashram, Pudducherry, (then Pondicherry). Presenters were mostly PhD degree holders or PhD students. Having no formal higher education myself, I had never written a paper before or even made a presentation. My friend who had invited me helped me through the process once I got a whole lot of thoughts down. This process was an invaluable learning experience for me on many levels, forcing me to delve into the past decade of experiences, not only at the superficial level of what happened at home,

but the multi layered experience of what happens when children do not go to school; all the intricate layers of thought, emotion, questions about relevance, learning and Being in the world. By the time I arrived at the Samadhi of Sri Aurobindo and the Mother I felt, where I sat down in silent meditation, turned inside out, transformed.

At the moment I am learning a lot through engaging with various communities. The unschooling community worldwide, the home education community in India, and a very special community called Learning Societies. Through sharing personal stories related to home education with young families who are starting off on this rather uncharted route, it is almost therapeutic for me to re-live, recall, and recount our family experiences. This sharing is a whole different level of learning altogether. The meeting of hearts when there is a shared experience or sudden insight, the touching of minds, the direct and seamless acceptance in to the intimate circle of another family, the smiles of children who know that we care so much about their well being...We are together learning about love, in love.

Almost twenty years ago, in India, there were no other families home educating by choice like us. Over the years we came across a few families, although so scattered, that we have barely been in touch. Over the internet after almost a decade into unschooling, I discovered that there are thousands of families in the US and Australia who had chosen this path, and also that what we were doing is called 'unschooling'. How I tumbled into unschooling I am not really sure. I am aware that there

were constant cycles of gut wrenching experiences, inner work, discussions and arguments with any and everyone and most profound and multi layered learning through the close relationship shared with my husband and children. The most difficult, deep learning that caused me to keep questioning and re thinking everything was my engagement with my children. I could not call anything a fact or a truth and hold on to it for safety anymore, because each secure belief when held up to the light of stark honesty that only children possess, it would crumble. There came a time when I was throwing out so much that I was terrified that the baby would go out with the bathwater. Though that never happened, I often felt on the brink, as if I too were drowning! The babies, however, grew and thrived, and so did I. Only it was an ever shifting 'I' that no longer knew what was 'up' or 'down', 'left' or 'right', or even 'wrong' and 'right', and where was this 'I' in relation to it all...The 'I' began to lose the 'who' that it needed to survive. This is when I started talking about the difference between the 'rishi' let go and the 'hippie' let go. I have nothing against hippies, and in some ways consider myself part rishi, part hippie! But just for the sake of explanation, I would say that people are afraid to 'let go' in case it leads to deterioration. That would be a kind of passive 'hippie' let go. Whereas the 'rishi' let go is an alert form of letting go with full active awareness. It is a stripping away of everything irrelevant, and when this learning process starts, there is no knowing what will be left.



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#### **SEVENTH KEY - COURAGE AND FREEDOM**

WHEN IT COLLAPSES IT HAS A FORM IT BECOMES MATTER

WHEN IT COLLAPSES IT LOSES ITS POTENTIAL

WHEN IT COLLAPSES IT IS EXPRESSED

WHEN IT COLLAPSES IT IS NAMED

WHEN IT COLLAPSES WE LET-GO

AS LIVING BEENS NOT EVERYTHING IS WAVE NOT EVERYTHING IS MATTER  
THERE IS POTENTIAL YET TO BE EXPRESSED

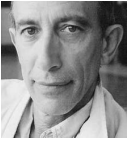
THE TENSION IS IN THE LONGING OF A CREATION  
WHERE THE EXPRESSION MEETS THE POTENTIAL

FREEDOM LAY IN OUR HEARTS AND COURAGE TO  
KEEP THE TENSION UNTIL THEY MEET

CREATIVITY IS THE KEY TO BREAK THE HABITS

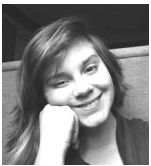
REST AND SATISFACTION LAY IN THE LETTING-GO  
OF IT

## AUTHORS BIOGRAPHIES



**Shantena Sabbadini** worked as a theoretical physicist at the University of Milan, Italy, and at the University of California, Santa Barbara. In Milan he helped lay the foundations for what is now called the “decoherence approach” to describing quantum observations, presently the most widely accepted understanding of this controversial subject. [info@shantena.com](mailto:info@shantena.com)

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**Rajendra Singh** is a well known water conservationist from Alwar district, Rajasthan in India. Also known as the “**Waterman of India**”, he won the Ramon Magsaysay Award for community leadership in 2001 for his pioneering work in community-based efforts in water harvesting and water management. Using traditional wisdom, he has helped revive 7 extinct rivers in desert Rajasthan. In 2008, *The Guardian* named him amongst its list of “50 people who could save the planet”. [tarunbharatsangh.org](http://tarunbharatsangh.org)



**Philip Franses** is the originator of the **Process and Pilgrimage** inquiry forum which he began in 2009. He teaches Complexity Theory and Goethean science at Schumacher College. He is also the Chief Editor of the Holistic Science Journal. Academia's dull explanation of the world inspired Philip on a counter-journey into the depths of experience, travelling and a re-sensitisation to quality. [philip@schumachercollege.org](mailto:philip@schumachercollege.org)

**Patricia Shaw** has developed approaches to organisational leadership, learning and change based on insights emerging from what are now known as the Complexity Sciences. In particular, her approach pays attention to the conversational life that emerges in everyday organisational relating and how we all participate in sustaining and potentially transforming the kind of possibilities the future may hold. [psahw@firenet.net](mailto:psahw@firenet.net)



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**Anne Phillips** was one of a team of four who designed Schumacher College, becoming its Director in 1993 for the next 13 years. Early on her work evolved from traditional teaching into helping people learn most effectively in a range of contexts. She also spent a year in East Africa doing Voluntary Service Overseas.

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**Kyoko Tadaoka** wrote this paper based on her dissertation, "Buddhist Ways of Knowing: Learning from the Gelugpas: The opportunities and challenges of critical debate in sustainability pedagogy". She is currently exploring how this method can be integrated into modern education, and most importantly, to herself. She loves the ocean and also plays an Okinawan traditional instrument called sanshin. [kyocoeur28@gmail.com](mailto:kyocoeur28@gmail.com)



**Stephen Hall** worked in industry for a few years before joining the Camphill movement to live and work in village communities with adults with learning difficulties. Since retiring recently from teaching woodwork craft skills to young people with special needs he has been helping to set up an eldercare community based on Camphill community principles. [hall14345@hotmail.com](mailto:hall14345@hotmail.com)

**Urmila Samson** is a whole being learner and mother in an unschooling family. Her main work right now is changing the current dominant perception of education and learning, through conversations, relationships, self search and healing. She has unschooled her 3 children Sahya g 19, Rayn b15 and Niom b11, together with her husband, extended family and community in Pune, India, where she lives. [urmilasamson@gmail.com](mailto:urmilasamson@gmail.com)



**Satish Kumar** renounced the world at 9 and joined a wandering brotherhood of Jain monks. At 18, he left the monastic order and became a campaigner, working to turn Gandhi's vision of renewed India and a peaceful world into reality. He undertook an 8,000 mile peace pilgrimage, walking from India to America without any money. Since 1973, he has been the Editor of Resurgence magazine. [satish@resurgence.org](mailto:satish@resurgence.org)



## **From the Artist who gave us the Cover & Art in this issue**

About three years ago I saw a notice in the newsagent's window for a Chinese painting

class stating "Beginners Welcome" and so joined about 7 other ladies in a small bright kitchen annex in a Norfolk village.

The teacher, **Kit Nicol**, struck me as a quiet, neat lady in her 80s. With little preamble, she showed me how to hold the brush using different fingers and in a more upright manner than is usual in watercolour painting. Then she set me to work painting bamboo leaves with black ink ground on a slate bed from a solid stick. The rice paper we used was quite absorbent, so it took several weeks to gauge the amount of paint, water and pressure changes to produce a bold, but delicate tapering form. She gave me a few pages she had prepared on the tools and philosophy of the art and that opened the door to the wider history. It appealed to me that the tools: ink sticks, grinding stone, brushes and paper were called "The Four Treasures", and that the skills were first acquired by practising the basic forms of bamboo, rose, chrysanthemum, orchid and wisteria. The traditional intrinsic value of the plant and the outer expression ideally should manifest in its image, for example, the evergreen bamboo represents strength, energy and vitality, but also modesty, nobility and gentleness.

Then I was encouraged to copy simple designs, often of animals and nature from the portfolio of past teaching works and from Kit's accumulated library. During the following months I was shown how to paste and mount the paper on card for durability, and had explained the role of the chop as a final seal to an at least satisfactory piece. Chinese chops are stamps carved originally from stone (now often rubber) to finish and balance an image with a cinnabar mark, which may signify the artist or another expression such as "still learning", "good

luck" or "painting brings peace". Many traditional works also have calligraphy as comment and balance to complete the image.

When I was comfortable with black and water, from which many shades of grey can be produced, a style called Sumi-e, I was allowed to work with colour but only the three primary ones, from which a whole spectrum could be generated by mixing and blending. Chinese painting may place several colours on the brush and water to produce delicate or sumptuous colour blends in one brush stroke.

Naturally the gap between aspiration and achievement often left a sense of frustration; but there was always the possibility of a new start. A happy accidental mark could bring a touch of spontaneity to a piece as often as a mistaken stroke could ruin an otherwise reasonable image. The aim of Chinese painting is to express the essence of an image rather than an exact replication which can look hard and un-alive. Very occasionally Kit would repaint a line over someone's piece of work, usually to emphasis an aesthetic dimension; the value of asymmetry and space seems greater than in western art, which tends to prefer symmetry and to fill in space.

From the start we were encouraged to produce pieces to celebrate special occasions, so we all made Christmas cards, Easter cards, birthday cards for family and enjoyed seeing and receiving each others gifts. The atmosphere in the group was collaborative and encouraging and although not everyone came every week, a sense of endeavour and cohesion soon developed. Gradually I noticed each person seemed to have their own 'style', pace of working, preference for the type of image they were attracted to, and this evolved according to some inner inclination or outer target. I have found the process very organic and fascinating to be involved with; the more I learn the more the subject opens, there is never a lack of small challenges.

**JACKI BORTOFT**



**FINAL KEY - THE GAME NEVER ENDS**

**IF YOU KEEP FOLLOWING THE GOLDEN THREAD**

**THERE IS A PLACE WHERE HEAVEN AND EARTH MEET**

**IT IS A PLACE OF LOVE WE CALL IT PARADISE.**

## LEARNING IS A LIFELONG PROCESS

**SATISH KUMAR**

My first and foremost teacher was my mother, even though she never considered herself to be my teacher, in fact she was not even literate; she could neither read or write and yet I consider her to be my best teacher. Her teaching was as much by example as with words. She loved cooking, she valued gardening, she took care of animals, she enjoyed singing, she was a great story teller, she regularly meditated and she took great pleasure in walking in nature. All those activities have left a deep impression on my soul as well as on my mind.



What I learned from my mother is that knowledge is not a fixed commodity, knowledge is a lived experience. When we become rigid, fixed and dogmatic we stop learning. The life unfolds, ideas evolve, information flows, art and imagination emerge, doors of perception open, concepts move and, in each and every moment of our lives, we discover or encounter fresh insights which can never be pre-planned or predetermined. The nature of knowledge is dynamic, learning is an adventure into the unknown. Learning is a process, a pilgrimage, a journey, a continuous quest. Learning is to live with ambiguity, with uncertainty. Learning is not about exam results, or achieving a degree, or finding a job. Learning to live and to be has its own intrinsic value. True learning is not about an outcome, or a goal or a destination. Learning is in the every moment, in the here and now.

Through participation in the process of the universe we learn that each one of us is a microcosm of the macrocosm. Everything, including ourselves, is made up of the same elements; I am made of the earth, air, fire and water. So is everything else. I am an embodiment of imagination, intelligence, creativity and consciousness. So is everything else. Everything is interconnected; we are all related.

Learning is about expanding our consciousness and coming out of isolation, separation, out of narrow identity and petty ego. We need to learn to participate in the miracle of life and in the mystery of ever changing and ever emerging reality, we need to learn to participate in the collective dance of Shiva. Learning is about opening our eyes, the eye of the mind and loving the world with our big generous hearts then we will know the mind of god. When we observe the cosmos thus, we become the cosmos. Learning is not a lonely journey, not a self-centred pursuit of knowledge. It is a shared pilgrimage which leads to self knowledge and self realisation. Paradoxically from self realisation we learn that the 'self' is an integral part of the 'other'. There is no self without the other and there is no other without the self. The intimate self and the ultimate cosmos are an integral part of each other; the total reality is one. There is no fragmentation, no separation, no dualism. This eternal and infinite reality manifests in millions and trillions of forms, in different colours, different smells different tastes. This existential unity is in the ever dynamic dance of diversity.

There is no contradiction between the inner unity and outer diversity; unity and diversity complement each other. Out of unity emerges diversity so that we can participate and sing together the song of the universe; one verse, one poem, the greatest epic of ever unfolding mystery. We learn to celebrate this complex yet most simple, most wonderful and most beautiful life.

We learn from our teachers and from books but we also learn from nature. Nature is the greatest teacher. The Indian poet, Rabindranath Tagore started a school and held his classes under the trees. He used to say to his pupils, "You have two teachers, myself as your human teacher and these trees as your nature teacher." My mother used to say, "The Buddha was enlightened while sitting under a tree. The forest with their rivers, hills and animals are the greatest libraries in the world!"

As we learn from nature and from a teacher we also learn from our own experience and practice. "Learning by doing and making is the best way of learning", said Mahatma Gandhi, "an ounce of practice is more valuable than a ton of theory"; while making we participate in the process of life. Learning together, in a group and embarking on a journey of collective exploration is the most effective way of discovering the truth comprehensively. A group of eight people together can see, explain and describe the reality from eight different points of view. There are many ways of knowing. Therefore many people together participating and sharing their information and insights makes the learning a rich and enjoyable experience.



# *Flow Family 1<sup>st</sup> gathering*

**15<sup>th</sup> – 22<sup>nd</sup> feb 2013**

**At Alwar, Rajasthan, India**

***You are invited to join the first round of creation, exploration, and deep discussion of the Flow Research Institute & Network***

At the heart of every human being is a desire to live in harmony with their surroundings and their communities. They want a life of peace and prosperity, with challenges coming not from the harshness of the land around them but from the internal struggles towards spiritual realisation.

In Alwar, India, with the work of the Tarun Bharat Sangh in reviving the flow of their extinct rivers, **these villagers have understood something crucial about the revival and meaning of flow in life. A meaning that transcends boundaries, cultures, nations, lands and which we all need to understand and revive in our own lives today.**



Come and be a part of this quiet revolution taking place in the villages of arid Rajasthan, and go back with ideas and

learnings that can make the difference between lushness and aridity in your own lives.

This first gathering is being held at the ashram of Tarun Bharat Sangh in Alwar, Rajasthan, along the banks of one of the seven rivers that have been revived.

**The Flow Research Institute & Network** is being started with the main objective of reviving the flow between Health, Economy and Nature. How can we bridge the current contradiction between man-made economy and natural economy?

Greed destroys. How can we be rid of greed?

## **What will this give you?**

***Just like with water, by making suitable interventions at the right points, any system can un-stick, regenerate and start flowing again.***

This program will give you first hand experiential learning of flow with village communities in programs LED by them.

It is a unique opportunity to share, learn and gain new insights of flow from these villages and their regenerated rivers.



**Cost for the week (incl. all accommodation, meals & internal transport for 7 nights and 7 days) £450**

***Bursaries:*** We are able to offer this program on a sliding scale fee, dependent on what you can afford. How much are you able to contribute towards the program fee? For those on higher incomes or with available financial resources, paying more if you can, enables others to attend who could not usually afford to come. **When contacting us please indicate how much you would like to pay.**

*To book or enquire please email:*

**minni@earthlinksall.com**

**journeyschool.org**

***Only 40 spaces! Book now to secure your place!***



# Process and Pilgrimage 2012



**Abbazia di Spineto, Italy, November 19th -25th 2012**

***In the central Piazza of Sarteano***, the question facing the citizens is whether to keep the Memorial to those who died in the wars or, by removing it, allow the fountain below to flow again. Once memory and hope are no longer generalised and universalised, the spontaneity of each particular present arising in the flow of life can be rediscovered as orientation for the world we create. Once past and future are no longer fixed, particular actions find their collective meaning in the unknown. Does this hold true at all levels of life, from the scientific, to the social to the organisational?

## **Forthcoming Programs**



***November 19th to 22<sup>nd</sup>***

**Cost: £475**

**Journey School: Memory & Hope**

**(the Olive as a bridge between Cultures)**

We are at the crossroads whether to stay with the hurt of past wrongs or have the faith to establish a future of equal intensity in love. In the light of accepting these poles of possibility within us and within our science, a space opens up for movements that allow resolutions to enter into situations of conflict.



***November 23<sup>rd</sup>***

**Cost: £145**

**Pilgrimage: to the Abbey of St Antimo**

Pilgrimage to St Antimo and dialogue. A communication of insights with St Antimo monks.



***November 24<sup>th</sup> & 25<sup>th</sup>***

**Cost £495**

**Seminar: Complexity, Emergence & Organisation**

Bill Critchley, Patricia Shaw, Philip Franses, Gianlauro Casoli introduce the provocations and pointers that the sciences of complexity offer for organisational life.

***Combined cost for all 7 days: £845 or other combinations***

*(All program costs include accommodation, visits, fee, olives, wine and food. **Bursaries/ sliding scale fee available**)*

*For all enquiries and details of these events, please write to:*

**[minni@earthlinksall.com](mailto:minni@earthlinksall.com)**

**[journeyschool.org](http://journeyschool.org)**

***The Journey School*** is a form of open inquiry inviting the “wholeness” of what matters to manifest in the engagement with a living question.