Holistic Science Journal

the quest for perception in lived experience

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Pedagogy

李 ***Li Bai*** *(701 – 762), also known as* ***Li Po****, was a Chinese poet acclaimed from his own day to the present, as a genius and a romantic figure who took traditional poetic forms to new heights. He and his friend Du Fu (712–770) were the two most prominent figures in the flourishing of Chinese poetry in the Tang Dynasty that is often called the "Golden Age of China".*

You ask why I make my home in the mountain forest,
and I smile, and am silent,
and even my soul remains quiet:
it lives in the other world which no one owns.
The peach trees blossom,
The water flows.

"The birds have vanished down the sky.
Now the last cloud drains away.

We sit together, the mountain and me,
until only the mountain remains."
— ***Li Bai***

"He who neglects to drink of the spring of experience is likely to die of thirst in the desert of ignorance." ***Li Bai***

ARIADNE'S THREAD

Our time reflects the need for a new kind of science and education. While we try to find the pattern of fragmentation at the Large Hadron Collider, we have forgotten about the signature of creation that is all around us. There is a misnomer that we know what nature is and can control it. The illusion that we control nature is blinding us to the role nature plays in sustaining us! There is a fundamental confusion that puts our intellect as the power that orders the world, and nature as a resource which we can plunder.

The illusion that we rule the technological world in the name of science (God having long been written out of the picture) is no longer tenable. The idea that nature is controlled through an academic expertise, translated into government policy that gives us a certain understanding, is blatantly contradicted by climate change events, such as floods and severe droughts. Our knowledge is not in control, and nature is not something we have understood and thus can order to our own whim. Our understanding has to accept a more subtle reality than a science that claims unchallenged authority.

We are facing a situation of fragmentation into ever more false promises, dividing into ever more incomprehensible jargon, splitting into ever more divisive factions. Yet hidden in these fractious times, is the question of what is the wholeness from which all these parts have come? Can we by being open to wholeness in ourselves balance this partial understanding with a renewed unity of collective direction?

Holistic pedagogy facilitates a different kind of movement, where the externality of facts is surprised with an interiority of meaning. At each moment, we are offered a different turn into a living future vision. Like Ariadne's Thread in the Greek myth, we weave together these accounts, until we find the way out of the maze of knowledge, deposing the spectre of rationality that rules over us at its centre.

All articles in this issue are a step into this whole meaning. Authors make the steps with nature, with the elephant, with ancient wisdom, with scientific discovery, with classroom dialogue, with sacred symbols. The steps of each author follow out of the shadow of external facts into an inner knowing of an everyday meaning. These steps are not to add new links to the chain of confusion, but to lay the thread , that leads the way out of the maze of illusion that knowledge has caught us in. From the intellectual closure that separates us in partial ideas that never satisfy, we escape into a unity of meaning at a new level of engagement with the world.

The way we put together the journal reflects this process we are describing. Over the month, articles come in, student essays are set aside and significant lectures are recalled and written out. What do they all have in common? Gradually we identify the theme across the articles: Pedagogy. Now the title has revealed itself, like young chicks in a nest, the articles are thirsty for our attention. The critical point comes when the articles suggest themselves in a sequence and the theme of Pedagogy *lives* as a whole spoken through its parts.

Philip Franses

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***Cover*:** Li Bai in Stroll (李白行吟图) by Liang Kai (梁楷, c.1140-1210), Song Dynasty (960-1279) using simple strokes of ink. This painting shows the poet Li Bai (李白, 701-762) (*also called Li Po*) Chanting a Poem. Tokyo National Museum. From a copy owned by the Kanô clan, it is known to have formed a pair with a picture by Dongfang Shuo (東方朔, ca.161-93 BC) in the Edo period (1603-1868). *http://www.chinaonlinemuseum.com/*
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PEDAGOGY

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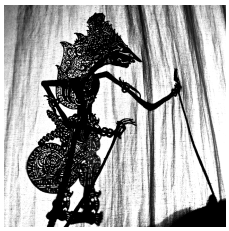

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THE PROMETHEAN FIRE

An education in the art and science of responsibility ***ALEX BLANES***

'Not I, not I, but the wind that blows through me!
A fine wind is blowing the new direction of Time.
If only I let it bear me, carry me, if only it carry me!
If only I am sensitive, subtle, oh, delicate, a winged gift!
If only, most lovely of all, I yield myself and am borrowed
By the fine, fine, wind that takes its course through the chaos of the world…' *D.H. Lawrence*
from 'Song of a Man Who Has Come Through'

On a cold grey Sunday in the early spring of 2010, a 21-year old student was reading Martin Heidegger's Question Concerning Technology, spellbound. If you watched him for a time, you would notice his eyes groaning at the tortuous speed at which he was aiming them; you might see he was holding his breath until eventually, his maternal lungs pounded on the door of that tabernacle, fearful of the mysterious strangers entertained therein. Exhaling at last, he staggers with the gravity of that release — relinquishing super essential darkness and his role as its host, eyes alight with a Promethean fire.

That was my first experience with phenomenology, although I didn't know to call it that at the time. I could only recognise its inner movement as the same basic gesture of an internal conversation which I had written down several years earlier *(Blanes 2008)*:

'What gives something power?'
'Well… I guess whatever gives it definition, however it is transcribed from potentiality to physicality.'
'Makes sense. Define definition.'
'The limits that give an object its properties.'
'Okay. What about people?'
'That's a bit harder. We are alike to objects in most ways excepting that we are able to consciously shift our current definition of anything in our field of awareness; ourselves, others, objects, and so forth. In this way, reality is very much subjective.'
'Agreed. In fact, what room is there for objectivity in such a subjective universe?'
'It is from the physically specific, limited by the rules established by reality, that we may derive personal interpretation. An object becomes meaningful from what we make of it, however, so it all links back to subjective awareness and experience.'
'So objectivity allows for variety in experience between sets of awarenesses?'
'Yes, exactly.'

I now see this conversation, written by a curious 18-year old, as an inchoate archetype — in the same careful definition suffered by Bortoft *(2012: 83)* — for the orientation in thinking I would later come to develop through apprenticeships under David Abrams, Martin Heidegger, Martin Buber, and now, Henri Bortoft, Goethe, Owen Barfield, and further yet to come.

It must be conveyed that these apprenticeships were the product of no idle curiosity, but borne of a primal Question of my soul, an attentiveness which has accompanied the more meaningful events of my admittedly young life. It is that Question which perpetually moves the vector of this listening; it hints at the silhouette of self-actualisation, of that magnetism of a lush truth, of participation in the cocoon of our zeitgeist.

This is the spirit, the context ('with-weaving') by which I arrive at phenomenology, as expressed within holistic science — recited for the same reason context is important to the scientist: in order to re-present, one must become again; or more appropriately, one must become One again. Just as the poet must become her poem in order for its meaning to become resonant and mobile, so must the scientist be changed by the science in order for truth to live 'livingly' in the world of things.

To my understanding, this is the basic premise of 'a science with qualities'; *'… which makes itself utterly identical with the object, thereby becoming true theory*' *(Goethe, 1829, cited in Holdrege, 2005, p. 51)*. It is peace in the positive

sense—as opposed to the absence of conflict—expressed through the basic gesture of science.

It is life in service to truth.
As Philip Franses communicated during the first week on phenomenology:

'*When we meet wholeness, it's always in a kind of elusive way, hinting at a path that leads through that moment to other moments; it's not something finished. It appears to us in particular ways at a particular moment, but that particular moment doesn't exhaust what wholeness is…*' *(Franses 2015: 10m11s).*

It is this subtlety of encounter demanded of the holistic scientist which distinguishes her work from the hegemony of 'finished' knowledge *(Bortoft 2012: 84–85)* which today presents itself as 'science'. This subtlety is what appears as the 'active absence' evoked by Bortoft *(1985: 289–291):* a way of orienting our attention 'which makes us available to meaning' *(ibid: 288).* By cultivating 'active absence', we create the conditions for a substrate to emerge between our attention and the object or concept under attention, and it is only upon this substrate that meaning, 'the fertile idea' *(Goethe, 1831, cited in Holdrege, 2005, p. 51)* may grow. It is the beholding of this 'fertile idea' which possesses us — our instinctual enthusiasm in response is fuel for the extension of our sight along those invisible lines of history and relationship which work to inform the idea.
In this moment, our way of knowing changes. A useful template for understanding this change can be found in the two French verbs for knowing, *savoir* and *connaître*. Whereas savoir refers to a knowing that is a discerning (arising from the same root as sapiēns)—a knowing about, or a knowledge of how to do something—*connaître* refers to the quality of knowing which emerges from relationship; '*Je sais que*', I know that, is hardly the same as '*Je connais cet endroit*'; I know this place.
Here, it is crucial to pay attention to the act of distinction *(Bortoft 2012: 21).* The essential difference between *savoir* and *connaître* is created at a bifurcation or choice point, at which the agent of knowing must participate—or else relinquish participation—in the phenomena of knowing. The result of this choice effectively creates an ontological cascade, appearing eventually as the ostensibly separate epistemologies of *savoir* and *connaître*. However, as Bortoft relates, these are 'downstream' concepts from the phenomena of knowing—'*the appearing of what appears*' *(ibid, 24; own emphasis)*—which is dependant on participation of the knower in order for the known to become itself; to become known as what is known. Bortoft relates this to the unitary event *(2012: 94)* of hermeneutics in Aristotelian philosophy:
'*In Aristotle's language, a text has the potential to mean and a reader has a potential to understand. There is a single actualisation of both… if we participate the meaning, it is because primarily the meaning participates us—and this is understanding' (ibid: 104–105)*

Having travelled upstream in this way, it becomes clear that *savoir* represents not a choice to relinquish—for this would mean psychosis or suicide—but to sublimate participation. In the sense of morphology, sublimate invokes sub-, 'up to'; limen, '[the] threshold', and -ate; an inflectional suffix from Latin, used in the forming of participial (i.e. verb-like) adjectives or nouns *(OED Online).* In the modern sense of psychology, to sublimate means:
'*To divert the expression of (an instinctual desire or impulse) from its unacceptable form to one that is considered more socially or culturally acceptable' (Anon, Merriam-Webster).*

Seemingly innocuous, the implications of this defining circumstance burden the human mind with the explicate order they have unleashed upon the world. With the aid of its morphology and contemporary usage in psychology, sublimation—at its most neutral—reveals itself as the epistemological twin of technological manipulation; the episteme of *techne*, the fundamental means by which science, technology, and civilised culture are made possible, the '*action mode of organisation' (Bortoft 1985: 291)* which results in '*an analytical mode of consciousness attuned to our experience with solid bodies' (ibid).*At its most

zealous, however, sublimation may reveal itself—crucially, not through nature's, but through its own self-referential lens—as an irresponsive autism which demands to set the conditions of appearance. In the language of Heidegger, it becomes Ge-stell: the unseen essence behind modern technology, which challenges nature to reveal itself in a ordered and regular way *(Heidegger 1977: 16):*

'*Man's ordering attitude and behaviour display themselves first in the rise of modern physics as an exact science. Modern science's way of representing pursues and entraps nature as a calculable coherence of forces. Modern physics is not experimental physics because it applies apparatus to the questioning of nature. Rather the reverse is true. Because physics, indeed already as pure theory, sets nature up to exhibit itself as a coherence of forces calculable in advance, it therefore orders its experiments precisely for the purpose of asking whether and how nature reports itself when set up in this way' (ibid: 21).*

Bortoft further contextualises this in his discussion of how the modern scientific method must proceed by virtue of its faulty premise:

'Science believes itself to be objective, but is in essence subjective because the witness is compelled to answer questions which the scientist himself has formulated. He never notices the circularity in this because he believes the voice of 'nature' speaking, not realising that it is the transposed echo of his own voice' (Bortoft 1985: 292).

As this study easily overreaches the bounds of our current topic, I will leave the topic of sublimation—and the contextual implications of its ontological cascade—for the reader's further consideration. The question remains, however, of an alternative, for which we must return to the phenomena of knowing and thereby, the original distinction between *savoir* and *connaître*.

Following his description of the unitary event in Aristotle's thought, Bortoft cites Richard Palmer's morphological definition of phenomenology as a manner of contemplating what he describes as 'the hermeneutic reversal':

'The combination of phainesthai and logos, then, as phenomenology means letting things become manifest as what they are, without forcing our own categories on them. It means a reversal of direction from that one is accustomed to: it is not we who point to things; rather, things show themselves to us. This is not to suggest some primitive animism but the recognition that the very essence of true understanding is that of being led by the power of the thing to manifest itself' (Palmer, 1969, in Bortoft 2012: 105).

Goethe introduces this essence as Anschauung, '*a living perception of nature' (Goethe, 1807, in Holdrege 2005: 36),* the phenomenological encounter of which Holdrege describes as 'a glimpse of another being' *(ibid).*

It is here that *connaître* retains its currency as a way of knowing capable of realising the entangled participation of Nature and perceiver, for the very act of Saying 'another being' implies both difference and relation *(Bortoft 2012: 22–23).* Just as the act of Seeing another being is an act of participation in both Being and selfhood simultaneously, the Seeing and Saying of another being—impression/expression—reveals itself as 'authentic wholeness' *(Bortoft 1985: 285–286),* the phenomena of Being itself.

An important step in developing this way of knowing is '*the recognition of the other as something in its own right' (Holdrege 2005: 31);* in Doing Goethean Science, Craig's extensive observations of skunk cabbage—as well as his intensive observations of his experience of skunk cabbage—provided an entry point for my own understanding. Here, a short anecdote is helpful.

My topic of study in this exercise was *Rubus fruticosus*, the common bramble. After spending the majority of two afternoons with the bramble, not being caught by anything in particular (save its thorns), I realised I was stumped by something: the number of leaves per stem was either three or five, no more and no less. Upon musing on this riddle for the remainder of the afternoon, I returned to the

bramble on the third day and, nearly immediately, 'caught' the bramble in an act of transformation: Suddenly, in this moment of liminality, I glimpsed the productive no-thing behind the material surface of the bramble. It shone inside my imagination as a lusty gesture in time, a leafy-spiky-hiding-growing out of and against surrounding darkness, just behind my eyes and yet, just in front of them, too. I could see the emergence of a strengthening of central veins across the lower leaves, and recognised the myriad possibilities acting behind and through that act of strengthening. In the words of Craig Holdrege, 'where before I seemingly had solid objects…. now I'm dealing with the qualities which are expressed through these parts' *(2005: 44).* As my attention shifted inexorably back to the parts of the bramble, I realised I was looking at a) something inherently unfinished, and b) something utterly absorbed in conversation with the life around it.

As I would later come to write:

'I feel a simple, but nonetheless profound, sense of wonder in this discovery. Truly, it is by being deliberate in our approach, by tolerating uncertainty for extensive lengths of time, that our reward for perceiving the actual life of another Being is so great.' (Blanes 2015)

Literally translated, *connaître* means 'born together'. In that moment when we glimpse the life of another being, Life sees itself through us—"*when it occurs, it fills you with the greatest joy and you realise: 'now I am knowing*.'" *(Holdrege 2005: 50).* Now I join life.

The promise of this—of what is fairly referred to as the essence of a holistic science—is the premise of a new science entirely. It is a way of knowing which realises itself as participating within a single actualisation of Being becoming itself differently. It is a knowing which not only tolerates, but attends to that which is inherently unfinished, in the mode of conversation. As Craig Holdrege muses, *"its practice belongs to a 'highly evolved age,' since it is dependent on transformation within the human being" (2005: 33).*

Collectively, we have only just begun the process of unlearning—of realising the damage we can cause through a sublimation of our participation in the world, and of building the way to a new form of participation that attends to the coming into being of all Beings.

We must suffer an education in the art and science of responsibility — the ability to respond, tolerate, and attend to unfinished meaning. The capacity to be truly led, and thus to be changed, by appearances. If we cannot achieve this, the work loses its possibility as possibility, and thereby, becomes meaningless. This becomes the groundwork of a holistic science: to assume responsibility—not culpability or obligation, which denies the freedom inherent in responsibility — for the meeting and ushering in of wholeness, via the tools previously used for fragmentation, as well as the newly-seen gifts of attention, conversation, and authentic enthusiasm.

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Alex Blanes, a poet, educator and digital polymath is currently studying on the MSc in Holistic Science at Schumacher College, UK. His goal is to develop a high standard of mastery and maturity in invoking a profound ability to respond to the greatest issues of our time.

'TEACHING' PHENOMENOLOGY- THE HAPPENING OF UNDERSTANDING

PATRICIA SHAW

I remember as an undergraduate of Physics at Imperial College, that one of our lecturers in quantum theory said – "If you think you had no trouble understanding what I have just said, probably you have not understood it at all." The same conundrum faces anyone hoping to arouse appreciation amongst students of all that is revolutionary about phenomenology as a way of seeing, a way of experiencing and exploring the life-world.

During the session I will describe we wanted to explore the phenomenon of meaning, the acts of saying, writing, reading and the event of understanding. A satisfying, successful session here means that 'something' must happen, and happen again, during the session, experienced in the same but differing ways, maybe at different moments, for all participating. Not only must this happen, but the fleeting happening must be noticed by us, so that the knowledge of that noticing remains as a vivid reminder even when the moment of experience has passed. What kind of 'something' is this? And how do we notice 'it'? What happens when we do? I hope this account reveals the kind of exciting joint adventure that is this tantalisingly elusive educational activity; the kind of care and attention such ensemble work amongst teachers/learners demands.

First practice: thinking aloud together - articulating our understanding

It's Monday morning. A weekend of diverse activities has transpired between the sessions of the first week and our continuing today. So there is something obvious we can do – recap what we have learned so far. Ordinary though this may sound it offers an opportunity for significant practice – that of saying aloud what we sense we have begun to understand, of giving shape in spoken words to what may be only vague glimpses.
To heighten this as a practice, to cultivate and hone faculties and sensibilities we will need to develop throughout the year and beyond, we work with two constraints: 1) we close our eyes and 2) people offer short contributions in no pre-assigned order, as they feel so inclined.

These constraints disturb the habitual reliance on visual cues and heighten awareness of the acts of speaking/listening as the soundings and reverberations of voices in bodies. We may thus become more sensitive to shifts of tone, to pauses in which speaking lies fallow but experience continues, to resonances stirring in us, sometimes urging us to speak out, an urge which we may allow or contain. Thus a very ordinary activity, that of reviewing before continuing, becomes one in which we face together a darkened openness, a fertile void in which forming happens, as contributions begin to weave a rich tapestry of related 'sayings'. The possibility of finding ourselves speaking may occur at any moment and what we find ourselves saying may be more or less surprising to us.
In making this invitation it is necessary to listen to the shifting qualities of response in the room, and to say no more once there is the sense of the space of uncertainty and anticipation indeed opening, palpably appearing between us. Then we wait for the first act of speaking to arise, to break the silence.

When they come the first voices are low, hesitant, there are long pauses but slowly contributions gather confidence and spontaneity as people become easier with listening to each other and themselves, become more able to take up the freedom of venturing forth in unrehearsed speech. Certain motifs return, like nodes from which strands of

thought branch out again. What is said later resonates with what is said earlier so that both are coloured by each other. There is nothing linear about the unfurling conversation; we can recognise many experiences of the last week coming into relation - talks in the classroom, experiences by and in the river, Goethean studies with a tree, something read, or remembered or seen. People find that this interweaving creates a context which relieves them of the need for long preambles to their own contribution. Each person's saying arrives amid a lingering, ever more complex background which provides undertones, contrasts and fresh associations.

I will not reproduce the content of what was said in those 40 minutes as the sense and value of this can only be fully appreciated from within the experience of developing it together. Take this exchange, for example which brought the practice to an end:

* *Every time we pop our heads above the river the current stops.*
* *Does it?*
Gurgles of satisfied amusement roll around the room.
Like an in-joke it tickles only those who have participated.
The phenomenon of unfinished meaning.

Having experienced this practice together we could reflect upon it and begin to unpick the way we conventionally explain what goes on between speakers and listeners, writers and readers and see how careless this explanation is – how far it is from our actual experience.

We say that speakers or writers have a thought in mind, have something they wish to say or write, which they then put into words. This assumes that this thought must have an existence independently of anyone wanting to listen or read or understand. The second assumption we make is that the meaning of this thought must be stable and unchanging. The thought exists before a person expresses it, well or not so well. Then someone else receives the words and decodes it in their minds to reproduce the thought the speaker or author intended. These presuppositions, so prevalent in our culture, lend themselves to many technical metaphors - senders transmitting messages, 'noisiness' in the transmission, 'filters' in the minds of receivers. We have industries of message crafting, corporate communication and training in presentation skills – how to get your message across. And we begin to worry over the possibility that no-one could ever be sure to understand what is 'inside' the head of another, and that there is no way of judging which of many received interpretations is correct– the kind of philosophical despair of being enclosed in subjective worlds of experience isolated from one another.

And yet if we stop to ask ourselves, we know that we have profound experiences of being or not being understood, of understanding others, of shared understanding. The phenomenon of shared meaningfulness is a very important experience, it nourishes us, is food for us humans, without which we shrivel.

And now we realise that meaning is not just a 'what'. The moment of meaning is understanding happening.

An instance: We are talking together, struggling to 'get' something. Suddenly someone speaks and people respond – YES, that's it. Say it again. To everyone's chagrin, the speaker is unable to do this apparently simple task. No-one quite has it anymore. We've lost it again. Meaning happened in the saying itself at that moment in those circumstances. It does not reside in the words spoken after the fact. We can try and go back and capture the form the event had. But even if we could and we listened again, already new or further meaning reveals itself. Henri Bortoft calls this - catching saying in the act. The act of what? Of meaning appearing in the living moment of understanding. Always unfinished. Always potentially more. Always for another first time.

And then we realise that our human world is littered with all those finished, after the fact 'whats' of saying, separated from their appearing, like literal litter proliferating on our planet, dead until picked up and re-entering the living moment. And immediately we recognise what makes poetry so special–honed kind of sayings that are like buried seeds which sprout meaningfully each time they are watered by an attentive listener/reader.

And someone says: "*So that's why Wittengenstein said that all philosophy should be written poetically.*"

And another: " *and who said: the merely correct is not yet the true?"*

"*Heidegger*."

"*And isn't that where we get prescencing, the living phenomenon in its appearing?"*

"*Yes, we know when something rings true*."

"*So we are moving here from the conventional academic notion of validity in reproducibility to a consensual experience of ringing true. We are embodying a different notion of method and of ethical inquiry*."

A voice tense with excitement: "*I have just written: The moment of meaning happening is a becoming for the one who understands. It's like extreme listening – YOU, the listener, are listened to in that moment!*"

"*Like being with a plant – it coins its meaning into us and each of us picks up a different aspect of the plant. When that happens the text or the plant means into you. Not the authors intention – but the meaning of the work (the text, the plant)*"

"*My work is in forecasting trends. I like to write by hand and later I see a deeper meaning in the text – it reveals itself later*."

"*And I'm thinking how in my organisation we were always trying to create knowledge bases – as though we could bank understanding and give people the access codes*."

Second practice: reading aloud together – experiencing the event of understanding
So now we are ready for a further practice, another very simple activity of reading an article aloud together. There are layers, though, in this apparent simplicity. Firstly, the article is attempting to describe what is happening in the very activity we are engaged in – attending to the appearance of meaning. Secondly it is an edited transcript of Henri Bortoft *(Holistic Science Journal Vol2 Issue 2, pg 31-34)* speaking about his last book which he muses on how he has come to express and communicate an understanding of phenomenology. Thirdly, embedded in the text are various other authorial voices – Oliver Sacks, Edmund Husserl, Martin Heidegger, Iain McGilchrist – who express the same understanding differently. And lastly in reading aloud by passing a single copy of the article around, each person reading a paragraph, we have the chance to notice whether or not understanding is happening as different voices bring the text to life, or are unable to.

The practice constraints are these: if meaning does not stir in you as you read the words aloud, notice, stop, go back and read again carefully. If meaning does not appear as you listen, notice, ask the reader to go back and read again. These are in fact very tight constraints. We become acutely aware of the difference between reading as just words strung together and the moment when understanding happens. This may sound a tedious business as indeed it takes a long time to read a short article this way, but the experience is far from tedious.

It can become electrifying, especially as the early concerns to 'perform well' give way to being intrigued by the phenomenon we are exploring. Readers, including those whose first language is not English, find themselves exploring the sounding of phrases and sentences, emphases, pauses, tone and breath and finding that a dense impenetrable piece of

text suddenly jumps shockingly to life, meaning appears like a miracle, physically affecting many people who sigh, exclaim -aah, mmm, YES! Sounds of relief and of pleasure reverberate.

To offer a flavour of what we were doing, here are a few early paragraphs from the Bortoft article. I have added textual emphases to approximate the experiments in saying.

"*Description was for me a practical activity …… and very difficult. You think that when you describe something, you just look at what's there and put it into words. But when you get to the level I am talking about you find it is NOT like that at all!……..because it isn't there. (because IT isn't there) (because it isn't THERE) Actually it is not there until I describe it (Actually it is NOT THERE until I describe it.)"*

"People say – that's just a description …we want an explanation! – but the mystery is in the description – that's the remarkable thing. Once you have got a description you can invent explanations ten a penny."

"In English you say you think about something, but this is not what you do. You think it, you do not think about it. You think distinction, you do not think about distinction."

We took all of ten minutes on the following sentence:

"*This is the fundamental phenomenological step – from what appears, to the appearing of what appears*."

(*If you are unfamiliar with this sentence, you might try reading it aloud several times in different ways until the full import arrives in you. You really GET IT!)*

We begin to appreciate that not getting it is valuable. It creates a space in which we experience a tension, the potential of not yet understanding. The sentence remains just words strung together, a what, littering the page, left stranded from it's source, it's appearing, which continues to tantalise. People offer each other clues. "*Try making a big pause here*." "*Stress this syllable*." And someone recognises: "*It's like when we were working with visual perception and the duck/rabbit drawings, or the two vases/faces. People said look here is an ear, here a nose…Trying too hard gets in the way. Suddenly understanding happens, like seeing happens.*"

Edmund Husserl: '*The word phenomenon is ambivalent because a phenomenon is not only something which appears, but appears as appearing. There is the shock of appearing*."

"It is really physical. I remember reading a book on a train and became so agitated with the meaning stirring in me, I had to get up and walk around."

"Like with the chestnut tree. Oh that's another leaf. But when I stop and I look and then I see it – it shows itself as leaf, it appears to you. It happens within you. It creates itself into you. It births in you. "

"Does that mean it is in the seer?"

"It is in the act of seeing, the act of distinguishing."

"It's a kind of reciprocal recognition – I also feel seen."

"But then naming seems to shut a door in me."

"Now I realise why I feel so uncomfortable with the DSM – the classification of mental diseases and their symptoms. I can see that the DSM is a an arrangement of finished products of 'seeing/understanding'. And I begin to glimpse what we mean by a holistic practitioner rather than one who matches DSM diagnosis to already complete patterns of symptoms."

"The difference between a kind of explanation and the describing – the event of reciprocal recognition between patient and practitioner when there is that YES – that sense of meeting and being met."

"Being habituated does a disservice to the world."

"Yes we are moving from a technical, instrumental notion of scientific inquiry to a science of living meaning."

"I am remembering those Portuguese adventurers sailing a boat to an island – the indigenous people could not see it. Until it was shown to their chief who saw it. When he could point it out then all could see it too. Potential was there but not for them until that moment."

"This reminds me when my wife got pregnant I suddenly started seeing pregnant women

everywhere and seeing the beauty in it more and more. My world changed. I changed."
"Can we see how the text we read together is proliferating into the resonances amongst us?"
Someone suddenly gets up and moves to the whiteboard. "I want to try and draw it: the space of appearing, the space where things appear."
"*When you are in the space of appearing you cannot describe it. Only afterwards. There is an event horizon. When our normal mode of articulation fails, one falls forward, one is committed to know something, but not till one emerges on the other side. We are beginning to talk physics*."

Someone else gets up: "I am spinning under your drawing. Drawing it, showing it, dancing it, singing it, math-ing it – all ways of saying!"

There is a burst of energy in the room, people speaking simultaneously "expressive arts….patterns of growth….spirals…….chiasma…presence…"

And then a long pause, a quiet flowers in the room. Then we read the last paragraphs:

Bortoft: "*The happening of appearing, the appearing of what appears, is a manifestation of the thing itself. It actually is there. It is not a representation of it, it is direct because it is appearing. If it appears it must be the thing itself. That's an astonishing thing.*

This the great step forward of the 20th century and it has hardly been noticed.
Things exist but may not have appeared. There is a depth in appearances and that depth is the appearing. Be-ing not an entity behind, which then appears. Be-ing is appearing. This is the dynamic depth of the coming into being.
The word being is both noun and verb, but there is no two world ontology but nor is the world reduced to a flatland. The depth is the appearing itself, which is dynamic.
The world is totally dynamic. It can't be understood in any other way. This is remarkable."

There are sounds like *WHOOOF* in the room, long out breaths.

"Can I say it in Chinese? At least, translated.."
"*The Dao that can be told is not the eternal Dao.*
The name that can be named is not the eternal name
The un-nameable is the eternally real
Naming is the origin of all particular things
Free from desire you realise the mystery
Caught in desire you see only the manifestations
Yet mystery and manifestation arise from the same source
This source is called darkness
Darkness within darkness - the gateway to all understanding."

There is a very long vibrant pause.
And we all go for lunch.

Patricia Shaw *has developed approaches to organisational leadership, learning and change that pay 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. She is a Fellow of Schumacher College, guest Professor at Copenhagen Business School, Denmark and a Visiting Professor at The Business School Hertfordshire University.*

INTO THE FLOW OF AN EDUCATIONAL ENTERPRISE

JULIANA SCHNEIDER

"All is in flux. Perhaps this is the place at which to start" - Ludwig Wittgenstein

Moving, speaking, thinking, differently

A few months ago, someone close to our activities at Escola Schumacher Brazil asked a colleague and I this question: 'Are you happy with Escola Schumacher Brazil's activities? Is what you wanted actually happening?' This is such a common and obvious question, yet it was a question we couldn't answer because it was posed in a way that made no sense to us. Reflecting on this scene now, I believe it reveals a tendency to articulate experience as if it happened in a certain order: first the things we want to see happening exist in our minds as desired goals and then we enact them in experience and bring them into reality. But what if this isn't the way things happen at all? What if there is another order, less to do with having our enterprises as 'things' in plain view and more to do with the unfolding 'current of their formation'?

I have been trying to live into this question since studying the MSc in Holistic Science at Schumacher College during 2011/12; I have been immensely helped by being in conversation with many writers and practitioners such as Patricia Shaw, John Shotter, Shantena Sabbadini, Tim Ingold, Iain McGilchrist and Henri Bortoft. Here I want to explore some of their ideas in relation to my practical involvement in enabling 'something like' a Schumacher education to blossom in Brazil. To see how we could use this phenomenological approach to initiating and sustaining a small educational enterprise. I use Ingold's form is asking what does it mean to 'return to the currents of the formation of things'?

Another question I am asked a lot is 'was it your idea to bring Schumacher to Brazil?' and again this language feels very unfitting. In setting up Escola Schumacher Brazil I have found that the language available to account for the happening of an enterprise is not appropriate if one is to do justice to how this really happens. I feel I have had to become more attentive to ways of giving voice to the non-linear patterns in which events take shape, a process as clumsy for me as learning a first language. For example, even saying "in setting up Escola Schumacher Brazil" I am already falsifying the movement by implying I have gone out to set something up as if there was such thing as 'something' prior, or even separate, to the action. It is as if action was a projection of a-ready-made thought, existing inside the mind, into reality. This ignores what Ingold calls the 'relational constitution of being' in which subject and object, self and world, co-arise in living experience – a process which Henri Bortoft *(2010)* calls 'the appearing of what appears'.

"All is in flux," says Wittgenstein. But, we ask, where to start then? The difficulty is that, as Shotter *(2008)* reminds us, '*The retrospective stories we tell each other about our actions inevitably miss out reasons for why we nearly did something else at each step in the process*,' and thus gives a much more singular, one-sided notion of how something happened in contrast to what it felt like to move with it. The phrase 'taking Schumacher to Brazil' had existed in the conversations of many Brazilians who had been at Schumacher over the years – Brazilians being the first nationality with more Schumacher alumni other than the British.

The coming into being of Escola Schumacher Brazil

In 2013 people at the college began talking about 'Schumacher Worldwide' in an opening up to other potential forms of Schumacher elsewhere in the world. I was the postgraduate volunteer coordinator at the time, coming to the end of my second year living at the College, and I found myself together with Mari Turato who was studying for her MA in Economics for Transition, often in the midst of conversations

with others where the question of something 'Schumacher-like' in Brazil was very alive. These conversations created a lot of enthusiasm and at the same time a vague anxiety generated by attempts to direct what was beginning to happen– 'where are we going with this? What do we want to achieve? If we do this in Brazil then does this create a path that we can take elsewhere?' Many 'what if?' questions began to be asked and suddenly reality became hypothetical - happening in our minds before it actually unfolded in experience. This way of going about human initiatives means that the response to the spontaneous calls of the surroundings (in our case many Brazilians over the years getting in touch to express their interest in Schumacher) is overridden by the 'Cartesian anxiety' (*Shotter, 2012, p.5):* "*an inability to think partially while still in the midst of uncertainty*". Then action becomes a means to deliver pre-agreed products, and by detaching action from the risk that is immanent to it as we try to anticipate developments, potential is lost.

One afternoon Mari and I gathered with a few other Brazilians who happened to be at the College for a short course. One of them raised the need to decide whether we should translate material to Portuguese or would we have sessions in English; very quickly an education centre like Schumacher was being envisaged and questions raised about how it would run. Another alumnus asked us if he could contribute by doing market research for us in Brazil which would guide us to what courses should be offered, what length, what themes etc. This way of thinking about institutional activities very quickly showed itself exhausting. We had lost touch with our living reality and were fantasising about making things happen. Thinking about that scene now, this was a key moment for both Mari and I as we realized there was something not quite right in how we were approaching this move. Becoming more aware of and acknowledging this brought an immense sense of relief to the endeavour and yet, the question of how to go forward remained unanswered. But this, I want to emphasise, is the very point – such a question cannot be answered in the abstract but only in the movement itself.

To stay with the uncertainty of that movement requires a different orientation, what Keats *(1817)* called' 'negative capability'. This is not a mental process but is more like developing organs of perception as Goethe suggested happens when we thoroughly observe a growing plant. From this perspective, uncertainty is not 'not knowing' but knowing of a different kind, rooted in the ground of our lived experience and our ability to respond to its texture. It has much more to do with the immediacy of our sensory engagement with our everyday lives and the attention we pay to what is going on around us.

To simply move closer to what we felt was already happening meant at the time that Mari and I wrote to alumni in Brazil with a tentative invitation: would they join us for a weekend gathering or for a dinner in Sao Paulo? Many of them responded with willingness to do so and Mari and I worked on a budget with estimates for what it would cost to have Jon Rae, Head of College, and Patricia Shaw, Fellow of Schumacher, for 10 days in Sao Paolo. Rather than jumping ahead we were now 'inviting small possible steps by paying attention to our own sense of nextness'.

Having estimated the costs for these 10 days, it seemed that the only way this could be viable would be to present a project to potential funders in Brazil. But, of course a project usually sets out clear goals, expected outcomes and deliverables – how would we do this without falling again into the traps of projection? This felt very challenging! In a conversation with Patricia Shaw we grew the confidence to write the story so far of the spontaneous relationship between Schumacher and Brazil and the desire of many Brazilians for something to unfold in their country. We made explicit how the conventional way of asking for funds would be to promise returns and that we were not willing to do that. We found a sponsor who asked only to have a lunch and conversation with us during the 10 days that Jon Rae and Patricia Shaw were in Brazil.

One could argue that to find a sponsor not interested in the deliverables and goals is not something likely to happen – and that we were lucky. Maybe we were indeed, but we were only 'lucky' in the course of proceeding in an unusual way. Perhaps the tendency to compromise comes when we do not expect to be surprised by how other people may actually resonate with a different narrative. This route we were taking meant we were less attached to what we wanted to gain as a result than to a movement that felt right as we took it.
Although wanting to achieve something is natural, to take seriously what 'just' happens is the difference of a phenomenological approach. Such an approach means that activities are always emerging through our relational involvement in the world from within the multiple interactions surrounding us, and our bodily responses to them. It is through this weaving that a form (this being a course, a programme, a partnership or whatever) is becoming itself although we may not be able to fully see its final shape as we move towards it. And it is through our involvement with the formation of 'things' that our very sense of purpose arises.
To work this way means staying fully 'in touch with the developments of what happens when you do what you do.' Writing this I find myself seeing the image of a potter with his/her hands on the clay literally giving shape to something through its formation. However, in the world of human action the challenge is that as we act there is nothing visible before our eyes like a ball of clay, and to move with it, "*We need to get inside the developing nature of the invisible but complex dynamical events that constitute the unique and distinctive 'it' characterizing the meetings in which we are involved*" *(Shotter, 2008).*
Those early 10 days in Brazil, during October 2013, involved many sorts of meetings with people: sharing meals with different alumni, visiting a farm owned by a couple who had visited the College at the time when conversations for this trip were happening, a weekend outside of Sao Paolo with 30 alumni, a dinner for 50 people at the vegetarian restaurant of an alumnus. These conversations were a mix of organising and being taken by surprise - some of these encounters were intended and other encounters just happened. As I recall now, none of these conversations held a sense of 'in order to' as I have experienced with many so-called experiential methods, but they were like life, ordinary. Our openness did not come from an 'open methodology' but from an openness of spirit, a willingness to meet and take our experience seriously. It was in this attentiveness that the next steps would happen - in being fully in the present the potential 'future' arises.

A paradox of active receptivity
I would like here to look deeper into some of the detail. For example as people were confirming their participation on the weekend gathering, one email arrived from a woman wanting to know more details of what would happen during those two days we would spend together away from Sao Paolo: "what will the agenda be?" she asked. Mari and I felt stirred. We had not felt the need for an agenda for the weekend. We did know clearly what the two days would *not* consist of - not talks or lectures nor sessions to plan bringing Schumacher to Brazil. Rather we were concerned with encouraging conversations that would shape the movement of activity rather than the other way round.
The 'Power of No' was the title of a talk by Iain McGilchrist, in 2015, at Schumacher, proposing that every 'yes' is reached only on the far side of 'no, not quite'. For him, the high appreciation given to 'yes' in our culture is 'a cruel deception, a consequence of rigid, linear thinking'. By taking seriously the NO's that arise in the midst of our movement we are able to hold space for something to emerge. This is not a passive waiting, as emergence, a term much used in the sciences of Complexity, which has often been misunderstood in the field of social sciences. Henri Bortoft describes this way of responsiveness as being 'actively receptive', saying that receptivity is a paradoxical state, more subtle or finer than being active or passive. Being open thus includes the bodily responses we sense in ourselves from within a situation. This means putting our discernment at the centre – a difficult task for the field of social sciences as it

makes it hard, if not impossible, to replicate action, as many methodologies set out to do. So how did we respond to that email asking for an agenda? We described how we imagined the contours of our experience: "during those two days we will cook together, clean together, sit to talk together, share meals together, walk together. We will be in a big group and in smaller groups"..... At the end of the weekend, in a final session – that very participant shared with the whole group how she had been anxious beforehand and had written to us wanting to know what would happen, and she realized after the 2 days how grateful she was that the space between us all had not been filled up by our suppositions of the topics that would have mattered to the group, but that these were able to fill the space spontaneously as they arose. In doing that, we all allowed conversations to fertilise the soil of what became possible instead of talking about a future, hypothetical Schumacher College in Brazil. This difference between allowing encounters to shape what comes next is radically different from gathering to decide on a shared future.

As I write about this openness of being agenda-free, I am aware I may be interpreted as 'against agenda' or 'against plans'. This reflects the tendency we have to think in terms of polarities and not in movement, which is paradoxical for our thought. In the activities I have described, there is also planning but what matters is the attention to the experience in which the plans we make arise and change, emerge and dissolve.

In the same way that phenomenology can easily end up caught by 'intellectual paraphernalia', I have often seen ideas that point to a dynamism like complexity science for example, being encapsulated by the rigidity of the mind. New methods get developed in the social world: for speaking better, to connect groups to a dream and purpose, to host others better in an event, to name but a few. They all hold the Cartesian assumption of 'application', i.e. that thought comes first and then practice follows. The unintended consequence seems to be that although we master ourselves at a certain prescribed flow, we become inept in sustaining a movement with others in between the events of the method - for whilst these have a beginning and an end, human action is indivisible and infinite.

The language-world we are familiar with is immensely fitting with the world of objects, leaving us stranded when it comes to this arising of form that both phenomenology and complexity reveals to us. We abstract life from its ongoing movement into static 'counterfeit wholes' *(Bortoft, 2010)* and before we know it, we have become the emissary of the objects of our own creation.

Rumi, the Sufi poet reminds us: "*Life, like a stream of water, is renewed and renewed, though it wears the appearance of continuity in form*". The desire to continue collaborating with the farm we visited during those 10 days led to the first 'Schumacher Experience Brazil', a week organised 'by Brazilians, for Brazilians in Brazil'. The intense cooperation generated the beginnings of a loose 'faculty' willing to help teach, organise, support and administer such activity. As interest developed we were able to offer an eight-months long 'Schumacher Certificate Programme', which was fully subscribed from the start. At present more than 100 students have joined courses and programmes through 2015 under the name of Escola Schumacher Brazil with the blessing of the Devon based College which is our source of inspiration.

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Juliana Schneider *(MSc Holistic Science Schumacher College 2012) is the Head and Co-founder of Escola Schumacher, Brazil. She is a practitioner of the science of complexity and offers us new ways of seeing to meet the challenges of the 21st century.*

http://escolaschumacherbrasil.com.br

JOSH LEVINE

Origin of the Nine Precepts

The idea for creating the Nine Precepts sprung from discussion with scientist Rupert Sheldrake who has developed the theory of morphogenetic fields and Taoist scholar and physicist Shantena Sabbadini who has translated Tao Te Ching and the I Ching. The combination of these two disparate, yet oddly congruent, fields of study started me thinking about cultural forms (whether material or immaterial) which act as attractors, and the function that written spiritual works such as the Tao Te Ching play in human culture and discourse. Sabbadini mentioned that the Tao Te Ching functioned as sort of a vessel that held the wisdom of day and of the Tao. The Tao means something akin to the way of life or way to organize human life. Human life and the ways to live it were always in a constant state of change. There is no constant Tao as ways to live are always relative and changing. The language of words can not touch the reality of life, so the Tao teaches that we must focus on the experience of living. Sabbadini does something ingenious in his interpretive guide to Lao Tzu's Tao Te Ching: he offers a multitude of possible interpretations of key lines in the text. Alongside this, he offers charts that list the many possible literal translations of each Chinese characters of the text. One can see why so many scholars in the West were called to mine the text for themselves, and present their own unique translation of the perennial classic. With this multifaceted presentation, Sabbadini offers up the wisdom of the Tao in a written form that beautifully mirrors the Taoist philosophy of an ever-changing, transient world that transcends it own definitions and boundaries.

These juxtapositions of the form and the formless, of translations that offer up alternative translations, of morphogenic language fields that may exists as immaterial forces, shaping the development of living beings, started me thinking about cultural forms for this age. How do we create a new guide form that will be a vessel (Sabbadini's terms) to carry or hold all the good and noble things we have to offer? What would a Tao Te Ching written for our age look like? I began to imagine a Tao of reciprocal ecology, a new field of study that explores our social relationships with plants, animals and other living beings. What kind of form would attract people to not only start thinking more about their relationships with other forms of life, but also start thinking more consciously about how their own actions in the world affect the lives of other beings, both positively and negatively? What kind of written form would help people not only think about their interactions with other beings, but also incorporate some of the philosophy into their own internal guiding principles, and begin to act upon these values? The form would need to be open to variable interpretations to speak to a wide variety of people from all different cultural backgrounds, but at the same time, have a central firm message at its core. It would need to be in a form something like the Tao Te Ching... but shorter (as our collective attention spans are now shorter)... and more memorable... and more easily digestible ... and so the Nine Precepts of Gentle-Doing Ecology were born. (While this last statement is meant to be partly tongue-in-cheek, it is also partly true- we must create cultural vessels to hold the restless, impatient spirit of the time in which we live...).

Rules of Engagement

In the playful, interpretive spirit of both the I Ching, and Goethean science scholar, Henri Bortoft's work on the hermeneutical tradition, I have decided to set up some unique guidelines for my discussion of the Nine Precepts. While I have written the Precepts without directly relying on any other texts, they have been influenced, of course, by all of the readings, teachings and discussions I have taken part in during the course of my education. Upon examination, the Nine Precepts share a good deal both in spirit and in substance with the Eight Point Deep Ecology Platform written by

Arne Naess and Lao Tzu's Tao Te Ching. In my discussion on the Nine Precepts, I will note some of the commonalities between the texts, but I will make reference to the Nine Precepts as if they were written by another author. The idea here is not to excuse my responsibility as author, but rather to keep the meanings of the Precepts alive and open to interpretation so that the reader will find his own way in engaging with the dynamic text. As Bortoft writes: "*The dynamical approach to hermeneutics frees us from the constraint of believing that the meaning is either determined or undecidable, by showing us that it is in fact inexhaustible*" (*2012, loc. 2701*). To further this experiment in opening up and 'growing' the meaning of a text, I have asked my colleague, He Longxiang, to translate the Nine Precepts into Chinese, and then back again into English. While I have shown Longxiang some my initial notes on the Precepts, and have had several short discussions with him explaining my intentions in writing this piece; the translations are wholly his, filtered through his own unique linguistic, cultural and personal experience with the world. Toward the end of the paper I will provide the text of Longxiang's translations, and discuss some thoughts on the possible benefits of leaving a text alive and undeciphered, and open to further interpretation.

The Concept of Wu-Wei and Gentle Action

We will begin with a brief discussion of wu-wei, the Taoist principle of non-action which I believe might prove useful as an ethical underpinning of a new positive ecology movement. While often translated as "non-action", wu-wei may be better understood as gentle, right, non-egocentric or harmonious action. It asks that before any action is undertaken, that one first considers the action from the perspective of a long-term holistic view of an interdependent, interactive natural world. The action may be evaluated in terms of whether it will be in harmony, and find a kind of equilibrium with all of the other living beings and systems in the world. Philosopher Chung-ying Cheng writes, "... *the ecology of the earth should provide a model for human non-action and natural spontaneity in which one must contemplate and reflect on one's creative activity so that it matures to a real fulfillment of value at large." (Tucker et al.1998, p. 229)*

In the Tao Te Ching, Lao Tzu asks the reader to contemplate the principle of wu-wei:

Can you penetrate everything with your inner clarity and putty without having the need for action?
Generating and nourishing,
generating and not possessing,
being effective and not retaining,
Increasing and not domination: thus is the secret Life (10).

Physicist and writer F. David Peat has written how this concept of gentle action *(Peat, 1989)* might be key in effectively shifting organizations and societal thinking in a way that is in greater harmony with the rest of the natural world. He contends that rather than imposing an abrupt external change on an existing living or social system, (which are fundamentally non-local and holistic systems), that a small thoughtful shift from within the system may act as a balancing corrective on the system. Having a greater understanding of the system allows the change-maker to know the tipping-points or small actions that will activate the whole system to make a positive change. This, too, is the perspective taken by much of holistic medicine: namely that gentle actions including mild medicines and therapies applied at the right time, in the right manner, will bring the patient back into a more balanced state of health. Medicines that are too strong in their action, such as most pharmaceuticals, push the bodily systems too quickly and too strongly in one direction. There is, therefore, a counter-reaction to too strong medicines which might manifest as immediate side-effects or long-term imbalances in the patient's health. Keeping the way of the Tao and the strength of small, thoughtful gentle actions in mind, let's now take a look at the healing prescription of the Nine Precepts.

Nine Precepts of Gentle-Doing Ecology

1. Let nature be
2. Life may eat to live, but ideas should not hunt
3. In all kinds there is great beauty and worth
4. Give love to those with you
5. What life is there, belongs
6. If you are great in number, do less
7. More sharing - more alive, more connected
8. Learn by soft-action, soft-looking
9. Allow the change to be to be

One Interpretation of the Nine Precepts

1. **Let nature be**

This concept, though just three short words, asks us to allow nature to self-will, to intrude less on her processes, and lessen the imposition of our many wants and needs on other living beings. If enough land is given back to nature, it will in time, enhance trophic diversity. Trophic diversity leads to stronger, healthier, more resilient ecosystems.

Of course, human beings, by their very nature are disturbers of nature, and with a growing (or even constant population level), likely only a small fraction of the land on earth will ever be voluntarily allowed to revert back to a wild state. This is where the concepts of wu-wei and non-interference come into play. We must continually, consciously access how our interventions in natural systems can be minimized, so that we take the most harmonious or 'right' course of action. It is only then that our societies can begin to regain the delicate balance with the Tao and the rest of the natural world. An acceptance and understanding of the way and rhythms of the Tao, can lead to a stance that is at peace with letting the living beings and systems of the world do their own thing without us feeling a need to intercede.

This precept echoes point five of Arne Naess' Eight Point Deep Ecology Platform: "*Present human interference in the non-human world is excessive, and the situation is rapidly worsening*" *(Naess, p. 68).* As Naess states in his comments, human interference in natural systems has gone on since time immemorial; what is at issue here is the type and extent of the interventions and consequential destruction. Naess goes on in his commentary to advocate for putting aside a lager amount of land that may be left wild.

Lao Tzu's Tao Te Ching concurs:

Less and less do you need to force things,
Until finally you arrive at non-action
When nothing is done,
Nothing is left undone.
True mastery can be gained
By letting things go their own way.
It can't be gained by interfering. (48)

Summary:

Let nature be and self-will
Do not disturb - let nature repair
We by our ecological nature are disruptors, but we need to disrupt less because there are too many of us

2. Life may eat to live, but ideas should not hunt

The first precept, let nature be, leads into the second in that it asks us not to kill (or modify) any living being unless that being's life is being taken to feed another living being. This idea is allied with the third point of Arne Naess' Eight Point Deep Ecology Platform: "*Humans have no right to reduce this richness and diversity except to satisfy vital need*" (ib.). The word 'vital' is well chosen here, as in addition to eating, we may also kill another being in order to protect the life or health of a loved one, or for example, to build a house.

The second half of this precept is perhaps a little more puzzling to decipher: what does it mean that ideas should not hunt? What the precept is getting at, I believe, is that humans should not seek to kill or eradicate animals (including other humans), plants or other living beings because they believe they shouldn't be in a certain place, at a certain time. The idea of native and non-native plants and the concept of invasive species are just that, ideological stances that when examined closely have very little science or careful thought to back them up. These stances are often simply opinions based on the erroneous conceptions that an ecosystem should be static and frozen in a moment-in-time, rather than the ever-shifting and dynamic living systems that they truly are. Though an in depth discussion of the merits of this perhaps controversial opinion is beyond the scope of this short commentary, we might simply say that humans have created lots of pain and suffering in the past when killing for strongly-held ideological beliefs. This second precept asks that we do not kill other living beings when the killing is based on ideological belief-systems concerning the way the world should or should not be.

Summary:

Life should not be killed for an idea

Do not kill any being unless that being is being eaten to feed another being
Ideas are often wrong; we are not wise nor kind enough to determine who should be eradicated.

3. In all kinds there is great beauty and worth
This precept implies that all kinds of living beings have intrinsic worth and are beautiful in their own way. While their beauty and worth may not be obvious to us at all times, the more we come to understand the interconnectivity of the world, the more we can see that every being, (even ones that seem repugnant or noxious to us, seem to have no discernible value for the human species, or threaten our bodily health), plays some important, integral role in the living world.
This precept in concert with point 1 of Naess' Eight Foundational Principles:" *The well-being and flourishing of human and non-human life on Earth have value in themselves (synonyms: inherent worth, intrinsic value, inherent value). These values are independent of the usefulness of the non-human world for human purposes."* and point 2: "*Richness and diversity of life forms contribute to the realization of these values and are values in themselves*" *(ib.).*
Summary:
Do not judge one kind of plant or animal or other living being as superior or inferior to another; each kind of being has a right to live.

4. Give love to those with you
We, by some strange perversity of our human nature, often most appreciate the animals and plants that are rare or live far away from us in a distant land or sea. We must learn to cultivate an appreciation and love for the pigeons, the cockroaches, the mice, the rats, the raccoons, the deer, the dandelion and the common plantains of the world that live by our doorsteps. These are the beings that share with us, live near us, that offer us opportunities for reciprocity, and for wild plant and animal companionship. We may choose to create boundaries, and keep them from entering our homes for reasons of health and sanitation. We should not, however, forget that their presence in our lives is a gift.
Therefore, if you dedicate your life for the benefit of the world, you can rely on the world.
If you love dedicating yourself in this way,
You can be entrusted with the world. *(13)*
Summary:
Love the plant and animal that live near you (in your biodia), that want to share with you -their presence is a gift and should be treated as such

5. *What life is there, belongs*
The idea being expressed here seems to be that we shouldn't think we know what plants and animals should belong in our yard, in our parks or in an ecosystem. We should simply know that the ones thriving and living there at this moment in time - belong. Understanding that we are surrounded by other beings that belong to the place where we live may also lead to us feeling that we too belong in this greater community of living beings.
Do you want to improve the world?
I don't think it can be done.
The world is sacred.
It can't be improved.
If you tamper with it, you'll ruin it.
If you treat it like an object, you'll lose it. (29)
Summary:
Know that the living beings living in a given place at this moment in time – belong.

6. If you are great in number, do less
There is little doubt that the extent and degree of anthropogenic environmental damage that has occurred in the last three generations is due to an overpopulation of humans on the earth. In less than sixty years the human population has more than doubled from an estimated 3 billion in 1960 to just under 7 billion in 2010. For whatever reason, this crucial fact seems to be less talked about among environmentalists and public figures than it was in the recent past. This large jump in human population has exponentially increased the rates of species extinction, climate change, land development and natural resource extraction and depletion. Though, as Naess points out, the decrease and stabilization of the human population may take hundreds of years to achieve, at this present moment in time, humans who are alive must begin to do less. This means: having less children, polluting less, using less natural resources, and developing less land.

Naess in point 4 of the Platform: "*The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of non-human life requires such a decrease*" *(ib).*

When man interferes with the Tao,
The sky becomes filthy,
The earth becomes depleted,
The equilibrium crumbles,
Creatures become extinct. (39)

Summary:

Be less, do less- there are too many of us and we need to disrupt less and use fewer resources
Less reproduction, less use of resources.

7. More sharing - more alive, more connected

This concept of sharing and reciprocity encourages people to be less self-centered, and reach out and share both their material resources (land, food, shelter, etc.) and social relationships (such as companionship, play, love, protection) with other plants and animals (including other humans). This practice of having social relationships with other non-human beings is known as reciprocal ecology. Practicing reciprocal ecology makes the practitioner feel more connected to their greater community of living beings, and to the world. These feelings of emotional and social connection with other living beings results in people caring for and protecting those with whom they have a social relationship. Reciprocity, sharing and friendship with other species all contribute to positive emotional feelings of aliveness and happiness in those doing the sharing.

Summary:

To share more is to be most alive and connected
Share what you have with others living beings
Share food and water and companionship

8. Learn by soft-action, soft-looking

A more intuitive way to phrase this might be: learn by soft-looking (careful observation) and then proceed to soft or gentle action. The action taken should be carefully considered, and have a positive impact on other living beings. However, putting the words "soft-action" first emphasizes to the reader that each of our actions has consequences in the world which need to then be carefully considered before taking our next action.
Here the concept of wu-wei may be thought of as harmonious action. When a living system is healthy, it is in a state of equilibrium that at the same time is responsive to ever-changing external and internal conditions.
A good example of this precept in action (or non-action, if you like) is the practice by good farmers who watch and carefully observe their land for a year or longer before they begin to cultivate it with crops. They notice where the sunshine is abundant and where there is shade at each hour of the day, throughout each season. They notice which kinds of plant communities already exist or volunteer on the land. This knowledge can give them information on the soil type, soil-mineral content, water supply and organic matter in the soil. They watch the animals, large and small, that come and go on the land. They notice how the waters move across the surface of the land after a heavy rainfall, and how the waters drain. They observe the structure and pH of the soil, and how it changes with soil amendments which they gradually add. All of this information, gained through patient, careful observation, can inform a wise farmer on how to best make use of the land for his own purpose while also maintaining, or ever improving, the health of the land for the living beings that live there.

Summary:

Observation not intervening
Stand back and watch and let nature self-will
This is how we can learn how healthy ecosystem grow and change

9. Allow the change to be to be

I believe what is meant here is the living earth and all of her beings are in a constant state of interdependent flux, exchange and evolution. We are just one, over-abundant, very disruptive animal that needs to humble itself and let nature get on with her processes. We need to recognize this in our nature and then let go of our obsessive need to modify and control all living being and systems. We need to let nature be.

Summary:

Let the Tao be

Nine Precepts of Gentle-Doing Ecology
柔和行動生態學的九個守則

nine principle: soft / harmonious movement / action to the field of life

1. Let nature be
   自然而然 being as it is originally
2. Life may eat to live, but ideas should not hunt
   天作孽，有可違，自作孽，不可活 if the heaven make hunt, people can escape;
   if the people make hunt selfishly, there is no way out
3. In all kinds there is great beauty and worth
   真常應物，大美自在 see the being with equanimity, the beauty has been already there
4. Give love to those with you
   己所欲，施于人 give the things that you like to others in community
5. What life is there, belongs
   什麼是生命，歸屬 come back / return to family / home
6. If you are great in number, do less
   窮則思變 thinking about changes when it is in extreme situation
7. More sharing - more alive, more connected
   分享帶來生命力 sharing bring life
8. Learn by soft-action, soft-looking
   輕柔行動中學習，細緻觀察中學習 lightly / slowly / gently learn in motion / movement action; delicately / carefully, learn in observation
9. Allow the change to be to be
   讓自然發生 let the dynamic nature happening

(Translations by He Longxiang, 2015)

Rather than analyzing the unique and interesting changes that have occurred through the process of translating the Nine Precepts into Chinese, and then back into English, I'd like to invite the reader to compare the meanings of the two versions of the text for themselves. Personally I find Longxiang's translations of the Nine Precepts poetic, beautiful, and somewhat mysterious. In some small way they point to a different world view created perhaps in part by a character-based form of written language. The differences in meaning between his translation of the text and mine cause me to reflect upon my writing and the meaning I was trying to convey. Without a doubt, keeping the text open to interpretation has increased the meaning of the text. As Bortoft writes: "...the work becomes itself more fully with each manifestation - we could say that the meaning of the work 'grows' with interpretation in different contexts- so that the work's reality is increased with each event of understanding" (*loc. 2742*). Here, Bortoft points out, we can experience the coming-into-being in our understanding of the text. As in Sabbadini's Tao Te Ching, the variations in translations of the text that he provides do not lessen its value, but rather allow the text to be a living cultural vessel that is able to accommodate multiple meanings.

The Future of the Nine Precepts

The Nine Precepts of Gentle-Doing is a small gesture toward creating a cultural vessel that might hold meaning for some. I have played with leaving its meaning open and able to change with the spirit of the times. I have tried to create something that might endure, something that might be interesting to others with different perspectives on the world. If I have understood something about the Tao, the concept of wu-wei and the culture and times in which I live, perhaps the Nine Precepts could be used to make a gentle adjustment to the way in which we, as human animals, live with others.

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Josh Lev (MSc Holistic Science 2015) is the inventor of numerous technologies, artistic devices and cultural ideas. He is currently writing Of All Kind: An Introduction to Reciprocal Ecology, which explores the social dimensions of our relationships with animals, plants, and other living beings.

THE CREATIVE RELATION OF WHOLE AND PART

PHILIP FRANSES

Part 1: The Dance

Creative novelty

Our starting point is a simple shift in the relation of whole to parts. Normally we imagine the whole as something already there and the parts as the logical constituents. This article follows a long tradition, where the whole comes into being through the part; and the part is representative of the whole. The whole and the part are in a dynamic interaction. There is no whole without the part, and no part without the whole. The relation of parts to the whole inhabits the novel, which is thereby given the means of expression.

Circular definition

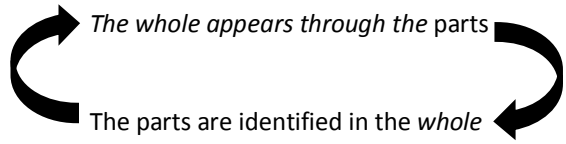
One of the dilemmas is that of circular definition where we define the whole through the parts and the parts through the whole. Immediately there is a problem in this circular definition. Do we start with the whole and get to the parts and then go back to the whole? Or do we start with the part and through this get to the whole? We seem to find that the dynamic of whole and part is illogical. We need another approach before we can deal with this circular definition.

That which is not yet set

The approach requires an attitude of *that which is not yet set*. This could also be described as something emerging, or about to emerge; still undefined; not yet categorised, fixed or compartmentalised.

Play

In order to approach this circular thinking, the whole is in the part, the part is in the whole, we have to develop this attitude of *that which is not yet set*, or not yet having a definition so we are able to play around with this dynamic before it realises itself. We can play with the whole and the part, before they are actually committed to a form, to a definitive relation. The circular definition of whole and part is between two statements:



Each statement rests for its definition on the other one. So we have a circular type of logic, where we do not know which to begin with. The crucial point is that we cannot get out of this dilemma rationally by fixing the whole to allow us to know the parts or vice versa. We have instead to approach this circular definition in an existential way by starting with the attitude of *that which is not yet set*. This attitude allows the possibility of meeting the whole and the part on their journey of mutual transformation. We allow the dynamic interplay of whole and part to realise together a form. The play of whole and part precedes the arriving at form. We are able to live with the coming-into-being of the form, by cultivating that attitude of *that which is not yet set*.

Twofold arising

The pre-existence of *that which is not yet set* has the two possibilities for expression, as wholeness or part. It is an emptiness, that is not dead or passive, but which has two modes of expression implicit or latent within it. Because there is this double possibility of wholeness or part implicit within that emptiness, it gives the coming-into-being out of *that which is not yet set*, a form or structure. Both wholeness and the part are embedded within the attitude of developing themselves through *that which is not yet set*.
First let us look into wholeness.

Wholeness

We meet wholeness, not as a thing or something that is already there. We meet wholeness elusively, on a path that leads through that moment to other moments. It is not something that is ever finished. It appears to us at a particular moment, but that moment

does not exhaust what wholeness is, or what it tries to tell us, or what it is communicating about the world. Wholeness always meets us in a way in which there is something beyond, along its path, which we have to wait for or allow to unfold. Wholeness gradually reveals itself, by always transforming itself into something new, in a process that is never finished.

Travelling illustrates this. When I go travelling, I set out with a fixed idea of what I am trying to do. And the first days are a complete nightmare because I am trying to follow this plan I thought beforehand. And then I have one disastrous day, where my bag gets stolen and it rains all day and I think I should better go home. And then I realise I have to surrender. And once I have surrendered and start living in faith, then this trip has a meaning for itself. Amazing things start to happen, because I am not in control any more, I am just allowing what appears to come. It might be a meal with friends, or a temple I see, or a village I visit, each event having a quality that leads onto the next.

The implication of this understanding is that wholeness is always something we are meeting newly. We never understand it, we never fix it, we never say, "this is what wholeness is". It is always presenting itself to us newly. There is always the chance that wholeness may appear to us in a different way. Wholeness has a concentrated quality of all things and can tell us something beyond our fragmented knowledge. Wholeness is always leading us beyond where we are. Wholeness is always taking us further, asking us to participate in it in order to give it expression. But that participation never exhausts it, we never come to the end of it.

The parts

Wholeness is an elusive concept. But equally when we come to the parts that are identified in the whole and we approach them with the attitude of *that which is not yet set*, we again meet something that is not yet fixed. A part is something that fits exactly as one piece of an exhaustive description of a phenomenon. We could say, "leaves" are the parts of the tree. But when we look closely at leaves, we find that each one is different and that the cloak of part-hood fits rather loosely. The parts are also wholes in themselves at another level of nesting.

The Large Hadron Collider is attempting to get to the fundamental particle, or parts of matter. But what we understand as the parts of matter has shifted greatly in the last hundred years. First the atom was the fundamental part, then there were protons, neutrons and electrons as the fundamental parts; then they worked out there were quarks in the protons and the neutrons; then the quarks had flavours and colours. And in the LHC experiments, now there is an excitement that they might find a new particle foundation.

Even after years of experiment, the problem remains in physics about the fine-tuning of the properties of the particles in such a way as to allow a universe to develop through them. Even at the level of the particles there is a sophisticated interplay that has to be just right for the order of the universe to have emerged through them. An answer to this conundrum is that the part is not just a static element of an objective universe, but the part is primarily related to a dynamic whole. The part is adapting its foundational basis in order to allow the whole to be born through it. The part is something that is becoming itself in order to realise the whole. This gives us another way to see development as the fitting of the parts to the whole in a pre-play of existence.

Growing

That which is not yet set puts in another perspective the dynamic between the whole and the part. *That which is not yet set* is a condition of growing, not yet fixed, a growing towards what is going to realise the form. The growing is not a material consequence of the causal interactions of the atoms or proteins. The growing is an attitude of something that is not yet set and is trying to find itself through the potential of wholeness and part. Growth is a consequence of something that has to transform itself to become itself. It is nothing when it starts, but there is the opportunity that through its journey, it can become itself.

Being

There is no being before the journey. There is a necessary journey in which *that which is not yet set* of wholeness, and *that which is not yet set of* the parts, find a way of relating together that realises being. The whole is self-differencing in the parts, and the parts are the journey to the whole. Both these things are happening at the same time. The difference in the parts is the journey that allows the whole to be. The conundrum, of the whole that appears through the parts and the part that is identified in the whole, is miraculously resolved. And when we see it we feel the miracle. Suddenly everything is fitting together. We haven't started with the whole and then tried to find the parts, and we haven't started with the parts and then tried to piece together the whole. When we allow the dance between the two, the whole is the origin of the parts in its differencing and the journey through the differences is the ground of the whole.

Singularity of identity

The relationship between the whole and the part is realised in another dimension. The happening, retrospectively, gives a logical connection to all the partial expressions on the way, so that all of the growth of the parts perfectly fits the *whole.* That moment in which all possibilities connect is in the dimension of the identity of the being becoming itself.
The dimensions of whole and part fall together into the fulfilled unity of being. We might say, "*I had this fantastic journey*", and yet the response of someone seeing just the finished product of existence might say "*Did you*?"

Part 2: The challenge

Whole and parts have to find relation to each other in order to know themselves. Different cultures have expressed this in different ways. The whole-part relation can be explored through the different ways it has been practised in cultures.

Harmony of the One

The Ancient Greek culture saw wholeness as the essential thing. This is illustrated in their relation to number, as Klein writes:

'The discreteness of "numbers" is based solely on the discreteness of the units. This discreteness makes something like a "count" and a "number" possible; as "a number of…", every number presupposes definite discrete units. Such discrete units form the homogeneous medium of counting only if each unit, whatever its nature, is viewed as an indivisible whole. That is why Aristotle can say: 'Every quantity is recognised as quantity through the one, and that by which quantities are primarily known [as quantities] is the one itself; therefore the one is the source of number as number.' *(Aristotle quoted in Klein, p.53)*

Only in relation to an indivisible one in the world, do two, three, four… have any meaning. For the Greeks, there is no such abstract thing as number. One, as the indivisible unity, is the basis of the world. This was given expression in the aesthetic of proportion, ratio and harmony. Proclus meanwhile in the 5th century AD was equally exploring the existential ground of the cosmos.

'The concept of the One is the ground of the cosmos. The form this cosmos takes is phenomenal. It is the divine self-appearing which is the same time a divine self-othering and a divine self-return or identity. The Principle of the One qua One is simply its primary simple singularity. In phenomena this singularity, in its otherness and identity, takes various forms'.

Proclus is led therefore, to consider what the structure of these forms can be.

'The whole cosmic order has its structure in unity and being. Being is the self-negation of the One, the self-diremption into otherness or division. Being is thus the unity which negates itself and then is self-negated'. (Lowry, 48-49)

Proclus is working with the One and the many, but he is starting with the One. The One breaks apart into otherness and then returns to unity. And he calls that production, return and wholeness. Wholeness is always trying to produce itself into many and then there is a movement of return back into identity, the completion of the cycle.

Competing parts

Through the Roman civilisation and the adoption of Christianity, culture moved to another notion of the relation of wholeness to the parts. Wholeness identified with God was completely hidden from us. But God had given us an intellect capable of perceiving the many. The relation of whole-part turned around.

Oneness became this hidden secondary thing and the many became the world on which we primarily focussed.
'The pure intellect in itself has no relation at all to the being of the world and the things in the world. What characterises it is not so much its "incorporeality" as just this unrelatedness'.
Descartes examples are characteristic of this.
'We must comprehend that the power through which we properly know things is a purely spiritual one and no less distinct [separate] from all body, than blood from bone, or hand from eye.' (Klein, p.202)
Wholeness is exiled to such an extent that all we are left with is the many. Wholeness is hidden as something before the parts. The only bridge to the whole is man's intellect.

Choice

This relating of whole and part that keeps reappearing through cultures is found again in quantum theory. Quantum theory deals in a world of possibility of all the particles before we can say anything about any individual. Wholeness again becomes the question that engages scientists. One answer is to rely only on the mathematics, which allows a calculation of the outcome of any experiment. But Pauli, Bortoft and others have a different approach. We can understand the experiments by saying that the enigma of the wholeness and the part is not in the mathematics, but in this very fact, how *that which is not yet set* can reveal itself both as the whole and as the part. This two-foldness is the very nature of how that which is possible can express itself. Bortoft even gets to the point where he can feel his mind jumping between these modes. One moment, he is the unseparated whole, and the other moment, the separated part, the particle.
There are two perspectives on this science. When we close our fist, we hold the fixity of the element of matter that is the atom. When we open our fist, *that which is not yet set* is seen in the unity of whole-part resolution. This two-fold nature in *that which is not yet set* allows one to directly experience the puzzle in quantum theory without any difficulty, the structure already there, in the forming. Science reunites with the actual journey into wholeness, which is the driving impulse behind every culture. We are involved in the whole-part relation as the very act of the world revealing itself. It is a highly creative and vital work that re-appears in this age, at this time, with our science and with our need to return to wholeness.

Even when we have abandoned the whole and made something separate of the parts, there is still this possibility of wholeness manifesting itself in this world. We do not start with the whole as the Greeks, nor with the parts as in classical science. Our endeavour is to surrender to this journey of wholeness and part, not by imposing an understanding, but by allowing the dynamic to express itself. *Without imposing a template, we allow the dynamic between wholeness and part to find its own expression.* Our faith is, that without any framework, the dynamic of wholeness and part still plays itself out. We surrender the primal relationship of whole and part, to its own realisation.

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Philip Franses *is the senior lecturer on the MSc in Holistic Science at Schumacher College. Having studied Mathematics at Oxford, Philip went on to explore the dynamic connection of science and spirit. He leads an enquiry forum called Process and Pilgrimage. He is the Editor in Chief of the Holistic Science Journal and author of Time, Light and the Dice of Creation, Floris Books.*

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EDUCATION AND THE PRESENCE OF THE UNKNOWN

CRAIG HOLDREGE

Most parents are deeply concerned about the education of their children. They want their children to become capable individuals who live satisfied lives and who are productive in their chosen professions. They feel that school education should facilitate this development: it should give students the knowledge and skills to master life and to find and thrive in a good job.

Nevertheless, parental thinking about "what is education for?" tends to shrink toward the short term. Are you preparing my teenager for college? In such a frame of mind, thinking about education becomes narrow. Each stage of the educational process becomes the preparation for the next: kindergarten prepares for elementary school, which prepares for middle school, which prepares for high school, which prepares for college, which prepares for a profession. When curricula are developed out of this perspective, the tendency is to bring what is perceived as needed at a later stage into an earlier one When education is mainly viewed as preparation for a next stage of education, for a particular professional outcome, or for furthering national interests, then the student must be molded to fit a particular system. We make the future—as the goal to be reached—into something specific and bounded that we can get a grip on. I will call this the abstract future.

The Unknown Future

But the abstract future is not the real future. The future is something unknown; it is full of surprises. If you reflect on some of the most important events in your life—ones that evoked growth and development, that allowed something new to happen—they were probably not events that school explicitly prepared you for. Were you taught how to find your life's partner in school, or prepared for that moment in your life when your first child is born and your life radically changes? Even if someone had told you about the transforming effects of such an event, the actual experience is something wholly other than hearing about it.

Or think of cultural change. Who would have imagined 50 years ago that the book of an unassuming scientist would help ignite a new kind of environmental awareness? I mean Rachel Carson and her book *Silent Spring*. Which educational institutions in the late 1950s and early 1960s were preparing students to be receptive to what Rachel Carson presented? The reception of her book was a surprise, unexpected and exceedingly important.

The future is not an extension of the past; new things do happen. So if we, as educators (and I include here parents as well), think mainly about preparing students for later life viewed as an extension of the status quo, then we are ignoring some of the most vital aspects of human life.

But what about preparing for an unknown future, for the future we cannot imagine? How might we craft educational programs that help students develop capacities for creating a future that we can't see? That is hardly easy, and may even seem impossible. However, it's what I want to focus on here.

A few years ago I gave a talk at a high school graduation ceremony in a Waldorf school. In considering what I would say in this brief talk, I knew that I didn't want to say, "I hope the school has prepared you well for college or for life." Since you have just read what I wrote, you know why. In one moment it came to me: no, the goal is different. I need to say: "My hope is not that the school has prepared you for present-day culture and its existing forms and processes. Rather, my hope is that you have been educated in such a way that the world is not prepared for you. I hope you have not been hindered and that you may even have been nurtured and encouraged to develop ideas and to do things that no one expects—not in order to be different, but because you

sense what needs to happen." I added, "don't listen to people who tell you, when you are following a yearning or birthing an idea, that can't be done.'"

In a similar vein Rudolf Steiner wrote about the goals of education in an essay he published shortly before the founding of the first Waldorf School in 1919:

'What we teach and how we educate should be derived only from our knowledge of the becoming human being and his or her individual potentials. A true science of the human being should be the basis of education and instruction. We shouldn't ask: What does a human being need to know and to master for society as it exists? Rather: What are a human being's predispositions and potentials for development? Then it will be possible for each generation to infuse ever new impulses into society. Then what flows out of these full human beings can live in society rather than a new generation becoming a result of what existing society wants to make out of it'. (4 August, 1919; p. 26; translation by C. Holdrege)

I cannot possibly unpack all that is implicit in these few sentences. How do we teach without imagining a finished product or clear-cut goal? How do we work with a potential neither realized as yet nor fully known? Here I will focus on high school education, although much of what I bring is relevant to learning more generally.

Who Are You?

As an educator, I believe that the fundamental question about the student becomes: Who are you? I am working with you on a daily basis and yet I don't know you. What is it that you want to realize in your life? Neither I nor the student can answer these questions. If we could, it would mean there was no development. Everything would be clear. Through an ever-renewed effort to engage this questioning, searching attitude of mind and to work with the students out of it, something new and essential arises in the learning community. What happens is that the students become "large"; that is, I don't just see them as adolescents now with their quirks, gifts, and difficulties, but as participants within a developmental stream of human life. Second, I acknowledge in the students a dimension of inner depth—a realm out of which their individual questions and strivings arise. This realm remains hidden for me if I get caught up in the outer trappings of adolescence. I know that in each student something wants to grow like the growing point of a plant— vulnerable, tender, and full of life. I don't want to crush that! I'm dealing with a kind of "holy of holies" in each student that warrants deep respect. It needs protection, and it needs soul space and biographical time to develop.

In this attitude of mind I become a listener. Can I hear what it is that you are really asking—and listen through the pointed question or the cold logic with which you argue? I'm trying to hear the meaning or intent that arises out of the deeper, hidden source that speaks "between the lines" in word, gesture, and action. And inasmuch as I do hear something, my inner response is: how can I serve what you are saying through my work with you? This is, to state the relation differently, the attitude of teacher as a midwife, who helps give birth to that which wants to come into the world and thrive.

In my experience, students notice whether you are working out of such an attitude—which is not explicit but implicit in all the smaller and bigger interactions that occur. It provides a kind of fertile ground out of which manifold learning experiences arise.

I remember quite vividly an interaction with a student at the beginning of my teaching career. He asked a few questions and they were leading off topic—which can be fine. But then I noticed that there was more going on—he was trying to get me off topic. At that moment I abruptly shifted back to my chosen theme and we moved on. I reflected on this experience and realized that in a sense the student was testing me, and in so doing he was implicitly asking: Who are you? Do you know what you are doing? I never said a word about what had happened. After this class our relation shifted. He had been distant, displaying in class a fairly distinct attitude of disinterest and, on the

surface, a look of: “Who are you to be teaching me?” In that class we had met each other below the surface—closer to the source—and from then on we could interact in more human ways.

The Curriculum—A Task Not a Thing

Every school has a curriculum. It usually consists of guidelines for what is to be taught in the different disciplines and grades. Unlike a walnut that falls on your head when you pass under a tree in the fall, the curriculum is not an act of God or Nature. It is something human beings create. In Waldorf education the curriculum goes back to lectures of Rudolf Steiner and to Steiner’s conversations with the teachers of the first Waldorf school. Before I started teaching in Germany I heard, for example, that in the ninth grade one (the ominous “one” who is both everyone and no one) teaches human biology with a focus on the senses, muscles, and skeleton. I was referred to Karl Stockmeyer’s book on the curriculum. Stockmeyer, a teacher in the first school, took on the monumental task of pulling together Rudolf Steiner’s remarks about what could be taught in the different grades and subjects.

To my surprise, I found only one quotation for the ninth grade in Stockmeyer, and no commentary. Steiner had said nothing about the senses, muscles, and skeleton in this grade. What he said was:

‘Continue the study of the human being so that the students receive a proper grounding in human biology [Anthropologie]. This should be done in concentric circles, expanding from class to class and the other sciences should be added’. (September 22, 1920)

Steiner does mention teaching the senses, muscles, and skeleton in the eighth grade. And, in fact, many eighth grade teachers have done so and are doing so around the globe. I don’t know how or when the tradition began to teach these topics also in the ninth grade. Interestingly, this tradition has not taken hold in the United States, where another tradition has developed to teach internal organs and systems (circulation, nervous system, digestion, metabolism, etc.) in the ninth grade, a topic that is often covered in Germany in the tenth grade. And in the United States embryology is usually taught in the tenth grade, while in Germany it is taught in the eleventh grade. I have heard good arguments for both traditions.

I’m not interested here in whether one tradition is right or wrong, better or worse. The Steiner/Waldorf curriculum is not a “given” that a teacher simply has to accept and implement. It is not some lasting edifice that stands on its own for as long as possible, to which perhaps we occasionally make additions or subtractions. It has developed—and needs to continue to develop to stay alive. In a living organism even the bones, the most architectural parts of our body, are continually being built up and broken down, and adapting to new activities and to stresses and strains that life puts upon the body. They are permeated by life. I believe that we can view the curriculum as something alive that does not exist by itself but is being continually shaped and re-shaped out of the activity of all those involved in the educational process.

From the teacher’s perspective the curriculum then becomes a search, a question, a matter of research. When, for example, we take the “indications” in the so-called curriculum and follow them back to their source in Steiner’s lectures or the meetings with teachers, we begin to see them in their respective contexts. They cease being isolated instructions. Moreover, most of these suggestions are anything but straightforward. What might it mean to teach about the organs and their functions in relation to the soul and spirit in the tenth grade? What did Steiner mean by emphasizing “mutual causation” (“*Wechselursachenverhältnis*”) in eleventh grade biology?

These and many more indications are challenges and questions, not contents to be implemented. We could also say: the curriculum points in a direction; it is food for thought, and the essential thing is that we become active in crafting the curriculum out of our inner efforts, the work with the students, the conversations with colleagues, interactions with parents, and so on.

Engaged Learning

When, as a young teacher, we enter a school, we enter a particular context. We may well be told that in a particular class this or that subject matter is usually taught, and we can take that as our starting point. We can study Stockmeyer or newer books on the curriculum such as the one by Richter and Rawson *(2000).* We can go back to Steiner's writings and study them. We can talk with our colleagues and experienced teachers from other schools and ask what they teach. We can collect work from students who have been taught by different teachers. All this can provide orientation and help us on our way. It's the time of apprenticeship as a teacher.

But what is essential during this time is that the recommendations we receive from the outside are not simply taken up and implemented. We need to be inspired by what we teach. The inspiration comes when an idea or recommendation resonates with what each of us as a human being and educator feels to be important and essential. When teachers feel compelled to teach something based on outer authority, the teaching can hardly be authentic and will bear little fruit.

Once a new teacher I was mentoring tried some of the things he knew I had done. He told me afterward that the classes weren't going well. I sensed that he was trying to imitate what I was doing, but wasn't really all that moved by it. When a next block was about to begin, I didn't tell him what I'd done. I said, "Teach something you are interested in and passionate about, that you feel the students might take interest in." He took up a content area that he knew well and that he found significant and interesting. He began teaching out of himself, and the content was permeated with his being. This is, I believe, what the students perceive and acknowledge. The classes went much better. The students were more involved and interested.

Of course being inspired about a topic is not enough. After a year or so of teaching I was asked to teach geology in the ninth grade. I said I would. I prepared, spent time in the Alps, scouted out areas nearer my school for field trips, and so on. After all this I had thought: this may interest me, but it's not going to interest the students. I had a horrible feeling that the block would be at best a minor disaster. Luckily, I was able to arrange a conversation with Guenther Zickwolff, an experienced teacher. We sat together for an hour. He did not focus on what to teach, but described how he brought geology to life in the classroom. After that hour I knew what was missing in my preparation. Zickwolff had described riddle after riddle that geologists had faced when confronting the world of rocks, mountains, glaciers, etc.

I realized, for example, that my task was not to tell the students that rock layers have different ages. Rather, I could let them follow William Smith's wandering through England examining rock layers, collecting and comparing fossils from different layers. What did it mean that some fossils were only in distinct layers and that he could find these "index fossils," as he called them, in various parts of England? How could we understand that the fossils resembled aquatic organisms? How might we think that the layers of fossil-containing rock came about? What might our musings lead us to think about the difference between upper and lower layers?

After trying to craft learning encounters in this way with the students, it became increasingly clear to me that they were learning to experience the world as a world to be explored rather than a set of facts to be learned, and also they were participating in how living science unfolds. I tried to become more aware of and to avoid the teacher's tendency to provide de-contextualized answers to questions that the students never asked ("there are three fundamental types of rocks…"). We explored together, often guided by the work of great scientists who had explored before us and who show by example what it means to be a careful observer, to be persistent, to ask questions, to learn from mistakes, and to recognize relations that at first are not readily apparent.

The effort revolves around letting a process unfold in which the students can participate and take interest. And interest is strongly

awakened through riddles, for when riddles arise in us, we become active and engaged in a search. We don't begin with answers to questions the students never had; we provide a context that leaves space and time for the students to explore, to formulate ideas themselves and to consider how their ideas relate to the phenomena. Riddles are an opening into the unknown future.

What's important is that we have entered a process of inquiry that does not stop as long as we teach and learn. We have left behind the curriculum as an authority that says: "this is what must be done." The individual in us needs to be active and striving, and questioning the courses we develop. In this effort (and it is the ongoing effort that matters) I meet as a developing, searching being the students as developing, searching beings. In other words, we meet as beings of activity, as beings therefore not limited by what is and has been; we are open to the potential we call future, a potential that as a source of life can work into the present at any moment.

The Presence of the Unknown

I often taught a botany block in the 12th grade near the end of the school year—right before the students were to present their individual year-long projects and before their stage play. In other words, not exactly an ideal situation for classroom learning. I developed the block as a field course and the plants themselves taught most of the content. We'd go outside nearly everyday and observe, describe, and identify wildflowers growing in the different environments around the school. By entering into a dialogue with the plants through their work, the students recognized that plants are quite remarkable creatures. And in observing many different plants they began to get a sense for different growth forms, flowering patterns, and the relations of specific species to specific environments.

In one class, toward the end of the block, we were sitting at the top of a wooded hill studying the wild columbine, a plant that grows on rock outcrops. It was hard not to be drawn to its remarkable hanging and highly structured scarlet-red and bright-yellow flowers. While the students were observing, writing, or drawing, one of them asked, "Mr. Holdrege, where do all these plants come from?" Out of the whole situation, it was clear to me that this was not a question to be answered. Every answer would have fallen flat in light of that which, for a moment, this student had inwardly touched. I think I just looked at her and nodded in the inner acknowledgment that I have the same unanswered question. This was a golden educational moment that I cherish to this day. Something of the normally un-manifest and deep nature of plants had become present in this student's soul and her response to this meeting was wonder and a question. The experience of such a presence is not clearly outlined and definable because it is an opening into a reality that can still become, that has depth and potential. For this reason it is experienced as alive and vital; we touch a common source of becoming in ourselves and in the world.

Every time wonder arises in the encounter with the world; when questions spring up; when the students see riddles that ignite inner movement; when answers not only bring satisfaction but are an opening into even deeper questions; when the students are experiencing a teacher who is also searching and learning—in all these ways the unknown becomes present in education.

Education as Encounter

What I have been describing is education as personal encounter. For teachers, there is so much that we can bring the students into contact with. We have to be selective—especially since encounters don't just happen; they grow out of engagement and dwelling with things. So the question arises: what learning situations do I want to facilitate for the students – which processes do I want to help get started—so that I prepare the ground for encounters? What is worthwhile for the students to engage in and learn from? At the beginning of a block or course, I asked myself such questions. They helped me to think more about why and what I was doing and also to become more attentive to those times when I

felt that encounters were actually taking place. Over time you can begin to develop a kind of sense organ for the quality of encounters. You can't make encounters happen, but you can become aware of them when they do happen and reflect on the processes that facilitate their happening.

The philosopher Albert Borgmann speaks of "reality" taken in the sense of genuineness, seriousness, or commanding presence, the sense we have in mind when we speak of real gold as opposed to things that merely glitter and of a real person, a *mensch*, as opposed to a dude" *(1995, p. 38).* He goes on to say:

'What is eminently real has a commanding presence and a telling and strong continuity with its world.. Whatever engages our attention due to its own dignity does so in important part as an embodiment and disclosure of the world it has emerged from'. (pp. 39-40)

There are many presences we can encounter: a biographical story, a rock formation, a plant, wood or stone in carving, a great novel, the images of a poem, serious conversation in the classroom, a camp fire, a myth, carrots waiting to be harvested, or questions of an inquiring scientist. All these "things" and many more are genuine presences that the students can meet. They all are rooted in larger contexts—they aren't glitter and surface, but have depths to reveal, each in its own way. Meeting them can let us glimpse or touch the deeper unknowns of the world and ourselves.

In such encounter-based learning, education becomes life. It is not a preparation only for what comes later in a linear sense. This is an insight and a practice that inspires: education is about real encounters! It can move us to review and assess our current practices so as to consider how much encounter-based learning is actually occurring. This, in turn, may lead us to seriously question some forms and practices that schools have taken on. Might we need to strip school of some of its artificiality to make room for the dynamics and explorations that are needed to breathe more life into education? How might we de-school school so that we more adequately serve young people? What would we do if we could move beyond the mental pictures of "school" and beyond habits that limit our imaginations? As with anything real, these questions cannot be addressed abstractly and generally. They need to be addressed concretely, on the ground, in ways possible and appropriate for groups of educators and students working in different cultures and countries.

Wherever in the world students are engaging in some form of exploratory, encounter-based learning, something important is happening. These young people are plunging into processes, experiencing challenges, grappling with difficulties, raising questions, and working with nascent insights. Through encounters with genuine presences they have experienced depths and meaning and becoming. They are not separate from these creative sources. We have reason to hope that the world will not be prepared for what they bring to it.

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Craig Holdrege** is the Co- Founder- Director of the Nature Institute in Ghent, New York. His passion is to develop what Goethe called "delicate empiricism" — an approach that learns from nature how to understand nature and is infused with a cautious and critical awareness of how intentions and habits of mind affect human understanding.* ***http://natureinstitute.org

THE FLEXIBILTY OF ELEPHANTS

Learning Goethean Science at Elephant Nature Park ***SHAUNA NIAMH FENLON***

I began looking into Goethean science because I felt frustrated in university while studying life sciences. I felt like I was being drawn away from the world and into mathematical formulas, data analysis and unnatural things that were meant to tell us about nature. No matter how much I studied it, I never felt any closer to the natural world around me. I learnt theories, equations, did computer simulations, analyzed results with graphs and figures and statistical tests that were based on generalized formulas, but we only left the classroom or lab to study outside in nature about 3 times in 4 years. I felt like I was moving down a dark tunnel becoming figuratively blind to all things natural around me that I loved and wanted to understand. Mostly we focused on physical, correlation-based causes of natural phenomena, not the phenomena themselves. Working out underlying mechanisms was interesting, but I felt they got more credit than they deserved. They were supposedly an explanation for natural phenomena, but they are only one part. Where are all the others? As Craig Holdrege puts it:

"*How can a phenomenon be explained by something that is supposed to underlie it and that is always less than the phenomenon itself? What am I doing by leaving the phenomenon in order to explain it?" (Holdrege, 2005; p 27)*

Answers felt empty and the theories seemed abstract. I felt like the things we were learning were made more complicated than they actually were by the way we were trying to explain them and I often didn't even know what I was studying. For example, I could do pages of mathematical calculations, while not knowing what they represented and still get full marks. There seemed to be little relevant, real-life meaning to the things we studied. I can explain to you using a series of chemistry mechanisms why leaves are green, but I'm not sure what it means to have green leaves.

As well as the limiting direction this over reliance on reductionism can bring, there is also the issue of an over-emphasis on the physical through materialism. "Science", as I experienced it, dealt only with certain aspects of life. Because it couldn't quantify other, mostly non-physical aspects of life, they were ignored, not taken into consideration during investigations and left for another field to study, such as psychology or phenomenology. This is frustrating because to me it makes life science research somewhat pointless. It surely works for mechanical science, especially technology, but it just didn't seem to have the answers when it came to biology. This is the study of life and non-physical things such as emotion and the constant changing of nature and natural things cannot be disregarded - they are also a part of life. We need a way to see all aspects of a natural phenomenon together as one, not separately as physical and non-physical aspects.

Goethe's Method offers a new broader perspective that can help us incorporate both quantitative science and qualitative, experiential based science into our current investigative methods. This would help us to see natural phenomena in relation to the whole, to avoid isolating phenomena from their contextual background and in turn to prevent objectification of natural things. I believe that incorporating this method into our current popular methods in science will not only broaden the scale of our understanding of nature but make us, the investigators, a part of nature as opposed to outside observers. From this perspective we become responsible for it and so I also believe these methods could have huge benefits in improving ethical standards and conservation efforts. It would start by creating a more understanding, involved and responsible community.

Elephant Nature Park (ENP)

The following is an investigation into Goethean style methods implemented at Elephant Nature Park (ENP) in Chang Mai, northern Thailand. Elephant Nature Park is an elephant rescue and rehabilitation centre. The woman interviewed is Jodi Thomas, a staff member at

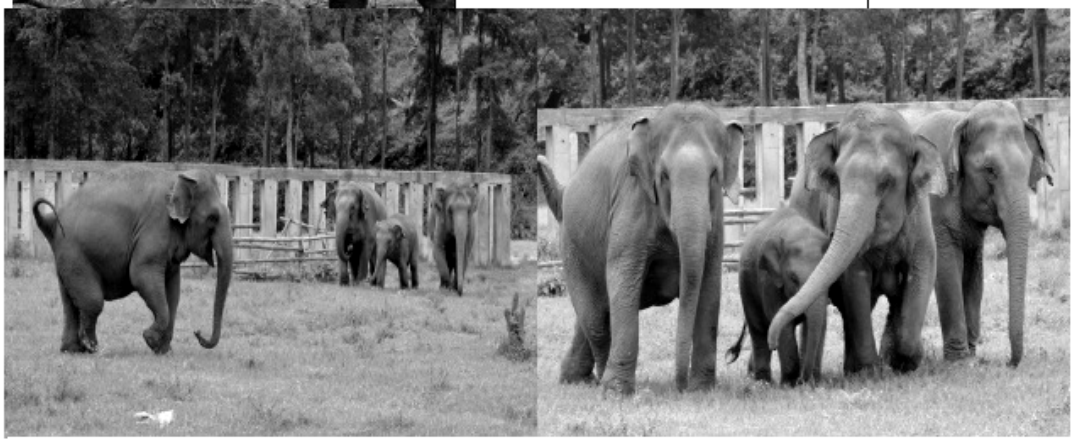
ELEPHANT NATURE PARK *Photos by Shauna Niamh Fenlon 13/07/15-27/07/15*

Left: Jodi (the woman taking the photo), is able to differentiate between an elephant saying "Hello!" to her out of recognition or a curious elephant that might cause trouble by reading their body language, a skill they have developed over time. This one she knew was only saying hello so she allowed her to come right up to us and run her trunk all over Jodi before she glided off again to join her family.

Left: Here you can see the sensitive lip at the end of the trunk that can smell, touch and act as a delicate, mechanical tool showing the versatility and adaptability of the elephant.

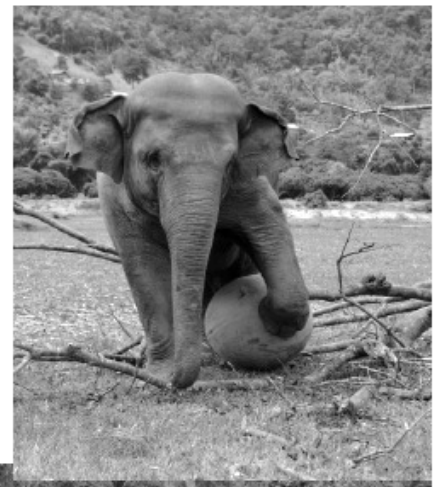
Right: This picture shows the versatility or flexibility in choice of food. The elephant can reach high or low, so a lot of strength is needed to pull down a branch and delicacy is needed to strip the bark off it. The wide range of food available then makes for a greater range and flexibility between habitats and digestion.

Left: Two elephants stripping bark from a tree branch using delicate accuracy made possible by the tip of the trunk.



Above right: This photo shows the matriarch system of group care for the sick and young that sees ever changing roles in the life of an elephant. As matriarchs die and new babies are born or reach maturation they take on new roles as care givers or receivers.

Right: Here is baby Doc Mai playing football. He's 5 years old and was born in the park so has never had his spirit broken. Breaking an elephant's spirit is the Thai term for beating or torturing an elephant into submission so that they can be used in tourist camps for logging or other human gain.



Above: Here are pictures of the whole family trying to play football. As Holdrege described, the elephant never ceases to stop being flexible in their ways and at any age and after much trauma, they will invest in some fun play time.. Especially if there's water nearby!(below left).

Above: The older elephants joining the youngest to play.

Above right: This elephant is blind from beatings, hooks used for riding and previous abuse before she came to ENP. She got a fright from a human that wandered a little too close on his way to the dog sanctuary and started stomping around with her tail in the air, making a trumpeting sound by banging her trunk on the ground. Her adopted family soon came runnina to calm her down.

ENP for almost 13 years at the time of the interview. Mostly it was her job to figure out what was best for the elephants and make sure that was what was happening, she works closely with the animals and write blogs about them and the work and philosophies of the founder of the park, LekChailert. She was also responsible for educating the volunteers in how elephants work and how to behave at the camp in the elephants' best interest.
What makes this park great is its opposition to Phajaan which is a method of "breaking an elephants spirit" also known in English as "elephant crushing". It involves separating elephants from their families at a young age, keeping them confined in a cage and beating them and torturing them until they are submissive to humans. This usually takes around 3-6 years and is used to domesticate wild elephants for use in circuses, tourism, street begging, logging and other work. This, as I see it is a problem resulting from human disconnection with nature that can occur as a result of our outside observer position when studying them. Instead of seeing elephants and ourselves as part of the same animal kingdom, we see them as something separate and different. It then becomes harder to empathize with them, to see them as living beings with feelings, emotions and basic rights to a life free from torture. We have objectified them.
Many people do not realize that it is not in an elephants' nature to let a human ride on their backs or tell them what to do, it is not in their nature to work everyday of their lives for human benefit. Such people don't even question how the elephants they see in tourist camps ended up doing these unnatural things. They pay to have an experience with them and so they are indirectly paying to have them broken without even knowing it. They are seeing the elephant as something useful for humans, something entertaining or helpful, not as animals in their own right with their own way of Being and relating. This is part of the reason that a new methodology in science that allows for active participation in nature by both person studying and 'thing' to be studied is so necessary. We need to start seeing animals for what they are, not what we want them to be, in order to overcome worldwide problems of animal cruelty and to help conservation.
I told Jodi about Goethean science and she agreed it sounded very close to the methods that she uses to understand the elephants and spread that understanding.
Then I asked if she carries out any experiments to learn about the elephants. And she responded:
"*No, not so much experiments in the sense that they're not planned out experiments but we do positive reinforcement target training. In a way that's an on-going experiment because your using a special theory of training that has very specific rules and guidelines and then each animal is going to respond at a different speed, in a different way*."
I thought this was a nice description of an open-ended approach in which the process itself is crucial and on-going. It's still guided with rules and guidelines, but it allows for different outcomes, which is very much in line with Goethe's method of investigation. She continued to say why they need positive re-enforcement training, which was purely for medical treatments and husbandry. The elephants were not being taught entertaining tricks and they were not being trained for work or for riding. They were allowed to be elephants and nothing more or less. They allowed no negative re-enforcement and it was the choice of the animal to engage or not engage for a reward of food.
"*Even right now, Hope (teenaged male, born in the camp, never broken) has clogged temporal glands and is in full musk and is very aggressive and unpredictable and in a very explosive state he still chooses, because it's a choice, to cooperate, to line up and allow the area to be touched so it can be washed and cleaned."*
"..it creates a mutual trust and co-operation based relationship."
This shows the mutualism and respect that Holdrege described as necessary for delicate empiricism (*Zarte Empirie*), a mutual, trust-based relationship is crucial for avoiding objectification of the thing being studied. Jodi then described the process of positive re-enforcement training using food as the re-enforcement for desired behaviour. The elephant is lead to the enclosure wall, for the safety of the vet on the other side, using snacks

as encouragement. If the ear is needed for a blood sample for example then Chris or Jodi point to the part of the body they need and show them how they want them to turn using their own body language. They wait for the elephant to mimic them, or offer them the body part required and when he or she does, they're given more re-enforcement in the form of snacks. Chris is another full time employee at ENP who specializes in Positive re-enforcement target training. She has worked with many different animals in different situations.

"You bring the elephant up, over time he's learnt to read your body language just like you are reading their body language."

This shows the emphasis on the time required to gain such a level of understanding with an animal as well as the active participation required to get the elephant involved - you have to get involved. Again, it's open-ended in terms of how the outcome will look and it shows a huge amount of respect for the animal and what they want to do.

When I asked Jodi what senses she uses most in studying the elephants, she responded:

"*All of them! intuition included, observation skills are the most important though, watching subtle movements, watching body language, posturing, listening for vocalizations, getting a feeling for what that means based on the situation so all of them I would say*."

This is a very Goethean approach. Intuitive observation is most important for "getting a feeling" for the essence of the thing based on its context. It is also in line with Goethe's Zarte Empirie, as Jodie is focusing on, not only the physical aspects she can observe, but their relevance to everything else, their context and meaning, she's using qualitative and quantitative science.

Something really interesting here is her artistic way of investigating this meaning. In order to help her understand the phenomenon being studied she has to try to describe it, repeatedly in different ways, and in a sense from different perspectives, similar to Holdrege, she constantly refers back to the question:

"*What is their essence? What is it that makes that elephant that elephant? How can I capture that in my drawing, like with a line, with an image. So usually along with writing about them, following them, watching their interactions, I draw them, I paint them, I photograph them in order to best capture their essence*."

"*When I'm drawing them its like I'm meditating on them as well, because I'm just sitting there and I'm completely connected with that animal, by the time I'm done drawing them I feel like we've had a deeply personal experience and that I really know them. Even though I try to focus on less detail and more the essence I notice the way the depigmentation starts to loosen up, I notice that this eyelid is droopier than the other one and you just really start to get so much more of a feel for who they are because you've spent this time completely focusing on them. You need a lot of intuition*."

Here Jodi not only describes her own reality of a direct firsthand experience, drawing away from analyzing the details and focusing on the whole, but also describes the way the essence of the thing, the thing itself you could argue, is present in the parts as Bortoft argues *(Bortoft,1971),* and Holdrege *(2003),* you can see the whole in each of the parts. It's in the depigmentation of the ears, and the eyelid droops. But, also, that this takes time and most of all, empathy;

"*You've got to put yourself in their shoes, you've got to ask yourself, 'what works best for them'?"*

"*My time here with the elephants has made me that much more fiercely respectful and made me want to protect and to fight for the rights of every aspect of nature. The more you understand the more you see no one animal is more important than the other we're each part of it whether it's a frog in a puddle or a tree or a mountain or elephants or whatever and we have no right to play god whether or not I could do this as well with animals I don't know, I think I can with practice, but with these guys it's because I do know them so well, I pretty much know what they're thinking and it's a very sure feeling that comes over me.*"

And again to summarize, Jodi describes the effects these methods have on her and her surroundings, the profound respect that motivates her to care about and act positively towards all aspects of nature, how she came to this understanding of natural wholeness through the parts, us and the elephants but how that took time, engagement, active participation and especially mutual empathy.

ENP's methods, as outlined by founder LekChailert and implemented by Jodi Thomas and her colleagues, are very similar if not the same as Goethean methodology. ENP is made to be the great, award winning, animal, forest and culture saving park that it is, by its holistic methods and attitude of respect for nature resulting from the increased focus on experienced based understanding. The elephants here are slowly readapting to their natural ways with freedom from work and abuse, medical care if they choose it, and safety from poachers, in such a way that respect for the land and culture of the place is maintained too.

I truly believe that if more institutions incorporated more of this integrative holistic methodology, such as Goethe's, based on theoretical learning backed-up by experience and respect for nature, then we will overcome the limits of using only our current methods so as to improve scientific ethics and make way for a scientific community that really cares about the natural world. Conservation efforts would massively improve in terms not only of elephants or buffalo or animals in general, but the whole natural world and our responsibility to it.

Holdrege's flexible giant

In reference to Holdrege's work in *The Flexible Giant* I would like to show support for how accurate I found his descriptions to be, I read the paper after my own experience with elephants.

Looking through my notes from the trip I found my own closest interpretation of the ur-phenomenon of an elephant was its ability to adapt on a personal, individual level. This was mostly apparent to me because I had read about the strong family bonds female elephants form. But the elephants I had been observing had all been rescued from abusive backgrounds, and had long been separated from their biological families. What struck me was that in the park, all the elephants had adopted families, they were almost all orphans bar the few born at the camp, but all had formed bonds and there were more than 3 large families still accepting new comers into their herd to become part of the matriarchal care system. Even though these elephants had mostly been captured and separated from their families before they were 5 years old, they still all adapted back into family life once it became available. This, I would consider a part of the flexible nature Holdrege *(2003)* describes.

Some pictures of other parts he noticed as major indicators of the essence of an elephant, that I too took particular notice of are included in this article. You can see that the description of the elephant Holdrege describes is truly reflective of the nature of an elephant as experienced in real life. He paints a vivid picture that gives you a feel for what the elephant is like as well as an understanding of the theory of how they work.

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Figures: All photos are my own and were taken between the period of 13/07/15-27/07/15.

Shauna Niamh Fenlon *is a graduate of Trinity college, Dublin, specialising in zoology, botany and genetics with an interest in holistic science and conservation.*

At Schumacher College we begin the MSc in Holistic Science with an exploration of wholeness through the phenomenological work of physicist and philosopher Henri Bortoft (1938-2012). Phenomenology can give the impression of being intellectual and abstract, but in fact it has at its core, very little to do with academic philosophy, since the focus is on the direct experience of nature's wholeness. For me, wholeness is somewhat like encountering a deer in the forest - for a moment you catch a glimpse, and then it's gone. Or it's like holding water in your hands. It's there to begin with, but then it slips through your fingers. Thus, perceptions of wholeness can be difficult, paradoxical, and elusive at times, but yet using the phenomenological approach to wholeness (which Henri Bortoft called the 'dynamical way of thinking', or 'being') gives us a chance to see aliveness and meaning in nature. We use the intellect in this process, but we don't get stuck in it. Instead we use reason as an avenue or conduit into the dynamical way of being.

Bortoft pointed out that there is a distinction between two approaches in science: what he called dynamical thinking on the one hand and systems thinking on the other. This distinction involves the perennial Western philosophical concern with the relationships between pairs of apparent opposites: the one and the many, being and appearing. Bortoft showed that using dynamical thinking to reconcile and integrate these opposites opens us up to a participatory, deeply experiential relationship with nature which fundamentally transforms our consciousness so that we can live more sustainably within the more-than-human world.

Thus, the dynamical way of thinking deals with wholeness very differently to systems thinking. Bortoft suggests that systems thinking is a modern form of Descartes' wish to create a unified science based only on mathematical reasoning and precise measurement. Systems thinking proposes that the behaviour of a given whole can be fully understood by paying careful attention to the behaviour of the parts of a system in isolation, be they parts of a machine, or the parts of a living body. In this way of thinking, the whole then appears as merely the sum of the parts. Bortoft disagrees, since, for him "*the whole cannot simply be the sum of the parts, because there are no parts that are independent of the whole*", suggesting that parts and wholes are inseparably folded into each other, so that the whole vanishes once you take a system apart, and remains absent when you put the system together again conceptually, as is the case in systems thinking. Bortoft again: "*…for the same reason we cannot perceive the whole by standing back to get and overview*", which is what systems thinking attempts to do by identifying all the parts of a system, followed by an elucidation of all the connections and quantitative relationships between them. By standing back in this way one is supposed to discover the whole. Yet for Bortoft this is a misconception "*… because the whole is in some way reflected in the parts, it is to be encountered by going further into the parts instead of standing back from them*." The upshot is that to experience what he calls the authentic whole we need to go deeply into the parts experientially rather than separating them conceptually in order to make a quantitative systems model of their interactions.

Going into the parts in this way, experientially, with one's sensory and intuitive faculties at the fore, gives wholeness a chance to give birth to itself within oneself as an event, as an experience, as a happening of insight and connection which enhances the richness of life. In contrast, systems models merely depict flows (often of matter and energy) in and out of conceptual 'bathtubs' – the reservoirs of a system. So systems models are dynamical (since numerical values in the model are constantly changing), but not in the way we are trying to get at here. They are numerically

dynamical, but not experientially dynamical. Thus, for Bortoft, systems thinking leads us into what he called the 'counterfeit whole', since by making an abstraction of a given phenomenon (such as a systems model on a computer) we remove ourselves even further from the actual lived experience of its wholeness. When we think in terms of systems, we are, in Bortoft's way of saying, 'downstream', far from the living presence of the phenomenon. In contrast, when we go 'upstream' we encounter the living wholeness of a phenomenon as it appears at the forefront of our experience. For example, we experience planet Earth as a great living being through deep contemplation of her parts - mountains, ecosystems, oceans, clouds.

Bortoft points out that the authentic whole is a "no-thing" but not nothing, and that *"the whole does not come together from putting parts together. If this were true, the whole would come after the parts. It is also not true that whole is primary, since this leaves the whole in a superior position, making the whole into a 'super part' which controls the parts. This is also a counterfeit whole."* Therefore systems thinking gives us counterfeit wholes, by proposing that the parts are primary and that the whole is secondary since it emerges from the parts. In authentic wholeness, writes Bortoft, "*a part is only a part inasmuch it serves to let meaning emerge*", and "*A part is a part according to the whole which it serves*." Furthermore, "*The whole cannot dominate – it cannot emerge without the parts*." So Bortoft's dynamical way of thinking solves the philosophical conundrum of the apparent separation between part and whole.

Does all this mean that systems thinking should be rejected? Clearly not. Systems thinking is useful, but we have to know when to use it, and when not. For example, it is very helpful in trying to help us understand what the climate might do in response to our disturbances to the planetary system. But we have to realise that systems thinking cannot on its own provide us with an experience of the authentic wholeness of the Earth.

So what might the authentic whole be like, and how does it compare to the kind of counterfeit wholeness often given to us by science?

Bortoft writes that the authentic whole is "… *an active absence, invisible to current modes of science, which tends to grasp the whole as an object for interrogation. This fragments the world.*" What can it mean to say that the whole is an active absence? One of Bortoft's favourite examples involves Ingrid Stefanovic (a philosopher who works with phenomenology) who visited a small village in Canada where she took many photographs of a variety of objects in the village – doors, windows, chimneys, views of streets, and many other such photographs of the life of the village that she loved so much. Then she went home and contemplated her collection of photographs so deeply that the wholeness of that place as an active absence was born in her through each of the parts – through each photograph. The more photographs she contemplated, the more fully the ungraspable wholeness of the village was born in her as an active absence. Thus, as Bortoft has written, "*the whole depends on the parts to be able to come forth, and the parts depend on the coming forth of the whole (through them) to be significant*."

Bortoft gives another example of authentic wholeness: reading a sentence of text. The sentence is composed of separate words, and yet a sense of the wholeness of the sentence – its meaning - appears through each word. Music also provides a good example. There is a certain quality and meaning that we can sense in a note played in isolation. But when the same note becomes part of a series of other notes in a melody then a richer, fuller meaning of the piece of music as a whole comes through that note, and of course through all the other notes. And so our particular note, isolated at the start, now contributes to the emergence of wholeness in the music, which is its meaning.

Bortoft cites Luke Howard and his work with clouds. At the time of Howard the science of the weather (meteorology) was being born, and it was important to develop a classification of cloud types and how they contribute weather patterns. From the Cartesian, downstream, point of view it is very difficult to classify clouds – they are too mobile, too ephemeral. People in Howard's time saw

clouds as finished, static products 'out there' in the sky, and it was simply too difficult to classify them from that perspective. Luke Howard made many drawings of clouds, and possibly without his knowing it, he was swept 'upstream' into the lived experience of the coming into being of the clouds. The wholeness of the clouds, the way that they change one into the other, was born into him by the clouds themselves. We could say that he was 'clouded' by the clouds due to the time he spent with the clouds, not as a detached observer anxious to classify them, but as a participant in the process of their transforming one into the other and therefore in the dynamical manner of their coming into being. If we allow ourselves a somewhat poetic metaphor here, we might say that the clouds gave Howard the secret of how they are born one from the other as a reward for his diligent upstream participation with them. He saw how the clouds morph one into the other – how they are dynamically related, how each newly revealed 'type' of cloud is part of one wholeness of meaning which is 'clouding' itself, namely the wholeness of the process of 'clouding' as an active absence. The realisation was born in him that there are in fact only three basic kinds of cloud, cirrus, stratus and cumulus clouds, and that they interact to give the ten or so basic clouds types. This is now standard meteorology. We look at these types now on a wall chart and think that someone must have simply observed the clouds as finished products for the classification to become totally and effortlessly self-evident. But this is not how it happened – the clouds had to birth themselves into a person's consciousness – they had to be born as a clouding before they could really come into being and be seen. Before Howard, it is as if the clouds weren't actually there. They were part of the background, but they stood out from that background and came into being when they birthed themselves into Luke Howard. This is why in phenomenology it is said that 'being is appearing'.

Iain McGilchrist, in his book The Master and his Emissary, describes this process very accurately when he writes that: "*We neither discover an objective reality nor invent a subjective reality, but there is a process of responsive evocation, the world calling forth something in me that in turn calls forth something in the world*." Or, as Bortoft has famously said: "*the world calling forth something in me that in turn calls forth something in the world that is calling forth something in me*". Thus human consciousness is of great importance, since nature comes into being through us - nature appears as a happening in us. As Bortoft says, appearance is a happening, and when this takes place, something in both nature and in us is palpably born. Thus, human subjectivity is a place where the world appears, and no doubt the world also appears, yet differently, in the awarenesses of whales, insects, birds and indeed of all living beings.

This means that things don't exist for us until they have revealed themselves to us. In this sense, we could say that human consciousness is at the centre of things, since it gives us our access to the world. Our consciousness is a place where nature is born, where it comes into being. When we go upstream so that a natural phenomenon happens into us, becomes alive in us, we notice that this moment of distinguishing both "*differences and relates*" as Bortoft would say. So Howard 'differenced' the clouds, but he also saw their relationships, namely, how one type turned into another.

One of the key people in the West to realise and practice this way of seeing was Wolfgang von Goethe *(1749-1832).* Goethe focussed on the sensory and intuitive aspects of awareness by entering into the lived experience of his direct, sensory perceptions of nature. This is shown very well in a leaf sequence *(see image).* If you become absorbed into the sequence with your sensing and intuition, Bortoft points out that the insight can dawn that a dynamic whole is engaged in a movement of 'self-differencing' itself into each leaf. The whole – the active absence - is being itself differently in each leaf. Bortoft pointed out that in conventional science we abstract unity from diversity – we try to see what all the leaves have in common, and forget about how they are different. This is the downstream approach, which is useful in certain circumstances if we know that we are

downstream. With Bortoft, Goethe and phenomenology we go upstream to experience the unity within the diversity, which gives us access to the being and meaning of the plant. Craig Holdrege says that we "*learn to think like the plant lives*". We sense how the plant brings multiplicity out of itself. Bortoft again: "*Unity is generated in the very act which differences*".

Descartes himself in some way might not have been so far away from this more dynamical and intuitive relationship with nature. He recounts that his vision of a mechanistic universe was given to him in a series of three dreams during the night of November 20th 1619 by the Angel of Truth. In gratitude for this vision, he undertook a pilgrimage to the black Madonna of Loreto in Italy. This shows us that everything we have conceived of has come from the upstream dimension, even the mechanistic, reductionist approach that came to Descartes in his three dreams. The insight becomes fixed when we go downstream, whereupon it is easy for us to forget where this deeper understanding has come from. This has happened in mainstream science, which, despite its brilliance and power, misses the authentic whole by fragmenting reality into separate pieces.

Descartes turned his back on the upstream origins of his inspiration and became an absolutist in the downstream dimension. He failed to regard the mechanistic approach as merely a useful tool for understanding nature. Instead, he took it to be an ontology (how things really are in the world) rather than as an epistemology (a way of knowing). The Angel of Truth must have torn her hair out when she saw how Descartes got so carried away by his detached mathematical reasoning that it led him to split the world into two irreconcilable substances: the inner world of the human soul and the outer world of dead matter which we could exploit and manage as we wished for our own benefit with moral impunity. There had been a possibility when Descartes was alive of developing a truly holistic science based on a union of his mechanistic mathematical approach with the dynamical way of being which in those days had manifested as Renaissance naturalism. But for various theological and sociological reasons Descartes, along with other influential thinkers hated Renaissance naturalism because of its assertion that nature was alive and full of soul. So they ruthlessly hounded it out of existence, or rather, they pushed it into the unconscious, for if the dynamical way of thinking is archetypal – if it is indeed part of the very fabric of what it is to be human - then it can be repressed, but never extinguished. After many long years of oblivion, it broke through into consciousness through the Romanic poets, through Goethe, phenomenology, through Bortoft, and now through all of us today who are trying to find a more wholesome approach to nature. The point is not to reject mechanistic thinking. Its elegant systems models embody a certain kind beauty which can give us a truly holistic understanding of nature when integrated with insights and experiences of living nature from the dynamical way of being. It is this integration of thinking with our intuitive knowing that is the hallmark of the radical pedagogy that we cultivate on the MSc in holistic science at Schumacher College.

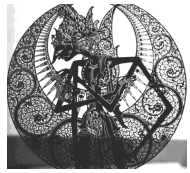
We are only just now becoming conscious of the fact that we have been in the grip of the four hundred year old mechanistic-reductionist world view. During four long centuries we've been mostly unaware of being under its powerful spell, to the extent that most of us live within an outdated world view more suited to the seventeenth century. It is as if our own hand has held us by the throat, which over the centuries has tightened its grip so much that today we feel that something we can't quite put our finger on, is strangling us. We are just beginning to realise that our own hand has been responsible, and we are beginning to appreciate the wondrous things this hand of ours might do if it would only let go of our throats and become a tool for creating truly sustainable human cultures on our planet, in partnership with the dynamical way of being.

Stephan Harding *leads the MSc in Holistic Science at Schumacher College. Since childhood Stephan has had a deep fascination with the natural world. He has a degree in Zoology from the University of Durham and a PhD from Oxford University. He is the author of* ***Animate Earth: Science, Intuition and Gaia.***

THE LIVING ROOTS OF CONSCIOUSNESS

GLENN APARICIO PARRY

"Wisdom is the oneness of mind that guides and permeates all things."
Heraclitus



The ancients not only knew the elements are alive; they also knew that there is a reciprocal relationship between the elements inside and outside our bodies—that the human is a microcosm of the macrocosm. Leonardo da Vinci wrote:

'Man has been called by the ancients a lesser [microcosm of a larger] world, and indeed the term is rightly applied, seeing that if man is compounded of earth, water, air and fire, this body of the earth is the same: and as man has within himself bones as a stay and framework for the flesh, so the world has the rocks which are the supports of the earth; as man has within him a pool of blood wherein the lungs as he breathes expands and contract, so the body of the earth has its ocean, which also rises and falls every six hours with the breathing of the world as from the said pool of blood proceed the veins which spread their branches through the human body, in just the same manner the ocean fills the body of the earth with an infinite number of veins of water'(da Vinci, 1941, 654).

We are Water

Of all the elements, we are most closely related to water, for we are seventy percent water, just as the oceans of the Earth cover roughly seventy percent of the planet's surface. Water has a profound effect on our consciousness. This is something many of us become aware of during the phases of the moon due to its effect on tides, particularly during new and full moons (the so-called spring tides) when water levels rise due to the juxtaposition of the sun and moon.

Our consciousness, whether we realize it or not, is also affected by the hydrological cycle that moves water from the sky to the earth through precipitation and back again to the sky through evaporation. We in the West may think that the hydrological cycle occurs on its own with no relationship to human beings, but Indigenous peoples have thought otherwise for millennia. In my opinion, the Indigenous perspective is compelling. Think about it. Is it really only a coincidence that we speak about the movement of thought in water metaphors?—stream of consciousness; mainstream thought; underground thought; thoughts bubbling up; memories being held in the Cloud; and so forth. Cartoonists even depict thoughts as clouds, and those that see auras claim this is not metaphor, but fact. The movement of water affects us and we affect the movement of water because we are water beings. We are also affected because human consciousness is nested in a larger consciousness. Our thoughts are connected with the larger human community and with all of Nature. The flashing of lightning in the atmosphere is related to the firing of neurons in our own brain. The lightning ignites the thunderstorms that permeate the soil of Earth, but also the soil of our own consciousness. Thoughts pool like water droplets, forming streams, rivers, lakes, and oceans of thought. What we call mainstream thought is more than popular thinking; it is thought that has become so widespread that we no longer see it at all. It is the invisible backdrop of our lives—the tacit consciousness that makes up the unquestioned assumptions of a given era. The belief that the elements are dead is one such assumption. We neither acknowledge it nor test for its validity. Most of our worldview is structured around tacit assumptions we blithely ignore.

Eventually, however, our soul becomes aware that something is amiss, and if we are paying attention, our thinking will begin to feel stale and unsatisfactory. And this creates a special opportunity. If we let go of the thoughts that no longer suit us, these old ideas, like water, evaporate back into the atmosphere. We can imagine these just released ideas rising to the sky in newfound freedom; hobnobbing with other idea clouds; remixing, recharging, and coming back down to Earth in a brainstorm of fresh, new thinking.

Something like this occurs on a collective scale whenever the tacit assumptions of an era are questioned and a new paradigm emerges. A new paradigm is not totally new, however. As Kuhn understood, the newer paradigm appears more elegant, beautiful, and uplifting—a higher truth—but it is not independent of the old; it is only an original recombination of previous thought. It is also a rebalancing, allowing what has been suppressed in one era to resurface in the next. Human thought processes are part of a grand recycling, like the hydrological cycle of water. Our thoughts move like water moves, in cycles appropriate for a given era.

We are Air

We are not only water beings; we are also Air beings, profoundly interconnected with all there is through air and Breath. We are as dependent upon breath for our very existence as we are for drinking water. The ancients would never have dreamed of considering air to be empty space—they understood it was a plenum—completely filled with life force (pneuma for the Greeks, ruach in Hebrew, pranain Sanskrit). The ancient view makes sense. Compare it with the modern view. Why would air, if devoid of life, keep us alive when we take "it" in? When exactly is the air outside our body transformed into life force? Does it suddenly become alive simply because we breathe it in?

Why, then, does mainstream science view the elements as inert? It is merely an extension of a piecemeal approach to all of life—a view that divides existence into separate and independent ingredients that are parts, not wholes within wholes (or "holons," coined by Koestler,1990) and therefore, cannot be alive in themselves. The entire origin of life is imagined as emergent from non-living chemicals. These ingredients (often called pre-cellular life) comprise a primordial soup, and out of this, molecules catalyze together and at some point, consciousness is created and life magically begins. The mainstream science view of how life originated is thus tantamount to the Frankenstein story. Out of death, comes life. At that moment, we might as well be shouting along with Dr. Frankenstein," It's alive! It's alive!"

Life Comes from Life

In reality, it is life that produces life; we couldn't be alive if we weren't inextricably connected with all of creation. Our very breath comes from the trees; humans and trees are engaged in a literal conspiracy (we breathe together). We breathe in what the trees breathe out—oxygen—as they breathe in—carbon dioxide—what humans and other animals breathe out. The plants and trees create oxygen as a by product of the miraculous act of photosynthesis, capturing living light energy and converting it into chemical energy through the air and water. Our entire existence is dependent upon the creative interplay between the living elements. And this was how we once experienced the world—as whole, complete, alive, and radically interconnected. It was not a theory; it was an ever present reality of sacred reciprocation. Our very thoughts were once an offering of appreciation for the wholeness and blessing of life. This is why thinking is etymologically related to the word thanking in many languages, including English, and also Old Saxon, Dutch, Frisian, Norse, German, French, and probably many other languages. We once universally understood that our thoughts came from Nature and that we can only achieve our full potential as human beings through giving over our personal will to the larger will of what wants to happen in Nature through us. We become more fully human when we do not restrict our consciousness to the personal.

Reclaiming the Full Continuum of Consciousness

To be clear, I am not saying that we need to go back to the way we used to think—at least not entirely. But we must utilize the full continuum of consciousness, new and old, personal and universal, if we are to survive and prosper into the future. There is gold (buried treasure) in our living roots of consciousness. If we can recover, wash off, and utilize these interconnected and immersive ways of being in the modern world, we may avert the seemingly

inevitable consequences of our current—overly abstract—worldview.

The core dilemma of modernity is that we have usurped much of the natural world, making the real into the abstract, extracting it for human use alone. The concept of economic growth is perhaps our most dangerous abstraction, because unlimited growth requires us to destroy what keeps us alive—trees, topsoil, water, and other natural capital. We should be preserving and protecting these precious resources, but instead we squander them to make money—doing what we call making a living —even if, in truth, it may net the opposite result.

The Fallacy of Progress

The concept of continuous economic growth is related to another core assumption of modernity: we believe that humanity is continually progressing, always getting better and smarter (in terms of accumulating superior knowledge, technology, and so forth). Never mind that we have no idea how the Egyptians built the great pyramids, or how any of the other monolithic structures were built in the ancient world—and that we simply do not possess the technology today to cut, transport, or perfectly position such large blocks of stone. The idea of linear human progress is taken for granted.

Why is it that we see humanity progressing but not the rest of creation? All that has happened is that we have slowly withdrawn from immersive involvement in the world, shifting our attention (and our thinking) from synchronizing our activities with the rhythms of nature to doing as we pleased when we pleased. In other words, we moved from aligning with nature to mastery over nature. And it was this withdrawal from integral participation with the natural world that led to different core conceptions of thought, time, and what it means to be human.

Our thoughts originally connected us with creation—but gradually, they came to separate us. This is why Aristotle spoke of humans as the rational animal. In a similar way, time, which we once understood as unfolding in the energy of a circle mirroring the cycles of nature, became an abstraction, something unique to humans. This change occurred so slowly and surreptitiously that we hardly noticed. Our first timepieces (astrolabes, sundials, and eventually, clocks) mirrored the way the sun and other heavenly bodies moved. It is only recently that we abandoned a connection between time and the movement of the sun—which is why we now say clockwise instead of sunwise (as if clocks were wise). When we discovered how to live apart from the movement of nature, we began to imagine that we could progress apart from nature, and that time itself was a line. The entire process culminated with the invention of linear perspective in art in the early 15th century during the European Renaissance.

Linear Perspective: Real or Abstract?

The advent of linear perspective reified a dramatic change in the Western worldview, and not just in art. Linear perspective foreshadowed the development of essentially every other field to come: not only in the hard sciences, but in humanities, psychology, philosophy, and so forth. In a moment, we shall discuss some of the consequences of a post-perspectival world. But, first, let's consider why linear perspective is considered to be realistic despite the fact that its view is from a single, stationary eye, when, in reality, we have two moving, watery eyes. Linear perspective was purposely invented to create an illusion of a 3D world on a 2D canvas; so, why did it come to be considered realistic—of the school of "realism"?

For one, linear perspective does mimic a 3 dimensional overview of the landscape. It also offers an advantage of separating objects from each other in time and space, a precursor of rational, analytical thinking and the advent of what Newton called absolute time, or the notion of time based on intervals between things. In linear perspective, an object in the foreground appears larger and more prominent and is presumed to happen sooner, with objects in the distance representing what happens in the distant future.

An equally valid way of participating in the world, however, is to be in and of the world—

to commune(icate) with a living world of vital energies—to touch, taste, and smell what we are immersed in: living, aware air; breathing, aware soil; vibrant, alive water; and all interconnected with an living, aware, fireball we call the Sun in the sky.

Linear perspective hides from view the things we intuitively sense when we engage with the world in a more intimate way; we can no longer see around corners or feel our involvement inside the landscape. On the other hand, perspective enables us to obtain a more abstract, objective distance from the world, and this has advantages too. Neither view provides the complete picture.

It is not simply a choice between the real and the abstract because it is not an either/or decision; it is a both/and worldview I am suggesting. Yes, we are embedded in a living universe composed of living elements and we must remember this or we will continue to destroy the Earth. At the same time, we can employ analytical, abstract thought for limited purposes, provided we remember it is not the whole truth.

The Living Roots of Rational Thought

To reclaim a wider spectrum of consciousness, we must remember the living roots of rational thought that we in the West inherited largely from ancient Greece. Significantly, the word rational originally came from "ratio," referring to harmony and proportion between things. (Bohm, 1980, 26).For the ancient Greeks, the flowering of rational thinking was seen as the zenith of thought—but it was also considered the most beautiful form of thinking yet to arise. This is why the Greeks placed such an emphasis on divine proportion and sacred ratios in their art and architecture.

The ancient sense of rational implied an active engagement with nature and a recreation of that relationship in our thinking. Rational thought was an unfolding of a new way of seeing, but it was still grounded in living Nature and remained connected with the emotional and intuitive aspects of perception. Today, unfortunately, rational thinking serves to separate us from living Nature in ways that are decreasingly useful and increasingly dangerous.

In short, the post-perspectival worldview has served to remove and elevate the role of the human above the rest of the natural world. This enabled us to develop new ways of thinking that have led to great scientific advantage, but it is has also disabled our prior way of seeing ourselves as immersed in a living world. Most significantly, perhaps, it has disabled our connection to the wisdom of the past and given us a distorted view of what is progress. Real progress is an unfolding of what wants to happen in nature, not merely the selfish agenda of humans.

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Glenn Aparicio Parry *is the author of ' Original Thinking: A Radical Revisioning of Time, Humanity, and Nature(North Atlantic Books). The founder and past president of the SEED Institute, Parry is currently the president of the think tank: The Circle for Original Thinking.*

www.originalthinking.us

SCIENCE AND MYSTERY

ROLF SATTLER

"*The advances of biology have revolutionized the view we have of ourselves and our significance in the world. Many myths have had to be abandoned. But mystery remains, more profound and more beautiful than ever before, a reality almost inaccessible to our feeble human means.*" *(Christian de Duve, 2000,p 13).*

"*The most beautiful and deepest experience a man can have is the sense of the mysterious. It is the underlying principle of religion as well as of all serious endeavour in art and in science ... He who never had this experience seems to me, if not dead, then at least blind. The sense that behind anything that can be experienced there is a something that our mind cannot grasp and whose beauty and sublimity reaches us only indirectly and as feeble reflection, this is religiousness. In this sense I am religious. To me it suffices to wonder at these secrets and to attempt humbly to grasp with my mind a mere image of the lofty structure of all that there is*" *(Albert Einstein, 1932).*

"*How sad it would be, I thought, if we humans ultimately were to lose all sense of mystery, all sense of awe, if our left brains were utterly to dominate the right so that logic and reason triumphed over intuition and alienated us absolutely from our innermost being, from our hearts, from our souls*" *(Jane Goodall, 2000, p. 177).*

"*[Therefore] let us regard this universe, all of life and its evolution, and the evolution of human culture and the human mind with awe and wonder*" *(Stuart Kauffman, 2008, p. 232).*

Note: all of the above quotes are by scientists.

To most scientists mystery seems to be the unknown. On this view, as our knowledge increases, mystery recedes or will be eliminated: the mystery will be taken out of things. However, at least some scientists realise that science has inherent limits. Mystery, as understood in this article, is beyond these limits, which means that it is beyond the reach of science. Science can only provide maps of the territory of reality, not a complete understanding of reality itself. Therefore, reality remains mysterious. Nonetheless, as maps point to the territory, science can be a pointer to the mystery of reality. If according to radical empiricism science also includes subjective inner experience, it may even provide a path toward mystery and enlightenment, which, however, cannot be completely conveyed through language. On the other hand, mystery may be a source for science. Mystery matters also because it is important for our health and sanity and a positive attitude towards our environment. Mystery generates or implies wonder, awe, and reverence including the sacred. The recognition and experience of mystery needs to be part of education from kindergarten to university and adulthood.

Limitations of Science

Scientists often talk about taking the mystery out of something. In this article I do not refer to this shallow mystery that can be taken out, that can be solved, that sooner or later can be rationally understood and thus will cease to be a mystery. The mystery (or the mysterious) I refer to in this article cannot be solved because it is beyond the scope of science. It is not the mystery of the unknown but the mystery of the unknowable *(Sattler, 2015a).*

I see at least the following two reasons why science cannot reach the mystery as I understand it as that which is unknowable:

1. Science uses language and mathematics, a form of language, and language cannot completely reach reality. As Korzybski has shown so convincingly through his Structural Differential, language abstracts (selects) from reality; it cannot describe reality as it is. Therefore, "whatever you say a thing is, it is not" *(Korzybski, 2010,VIII).* Reality remains beyond

the grasp of language, including mathematics. It remains mysterious.

2. As Ken Wilber *(2001)* and others have pointed out, science as it is usually practiced, restricts itself to objective experience. Subjective experience is usually excluded from the domain of science. As a consequence, our inner experience of the mysterious is also excluded. However, contrary to mainstream science, according to radical empiricism, inner experience can also provide data for scientific investigation. But as this investigation uses language, we lose again the mystery of reality.

I find it noteworthy that science itself has found its limitations. Because of these limitations it cannot reach mystery. However, it can be a pointer to mystery and may be even a path toward mystery and enlightenment.

Science as a pointer to mystery

Science depends on language and logic. If only the common Aristotelian either/or logic is used, the door to mystery seems closed. But if broader, more inclusive kinds of logic are used, the door to mystery may open. Buddhist logic, as explicated by Nagarjuna, has four values: either, or, both/and, neither/nor *(Sattler, 2010)*. Thus it includes the Aristotelian either/or, but transcends it though the inclusion of both/and and neither/nor. Both/and recognizes the principle of complementarity that has been well established in modern physics *(Plotnitsky, 2012)* and has been extended to practically all other domains *(Korzybski, 1958; Sattler, 2008, Chapter 6)*. Neither/nor points beyond logic and language. When we say that something is neither true, nor false, neither good, nor bad, neither desirable, nor undesirable, we transcend logic and language and in that sense we point to the indescribable, the mysterious.

Jain logic has seven values, which allows us to recognize seven perspectives of every situation. For example, with regard to the nature of an electron, this could mean: 1. In some ways (that is, from one perspective) it is a particle; 2. In some ways it is not a particle; 3. In some ways it is a particle and it is not; 4. In some ways it is a particle and it is indescribable; 5. In some ways it is not a particle and it is indescribable; 6. In some ways it is a particle, it is not a particle, and it is indescribable; 7. In some ways it is indescribable. The recognition that in some ways it is indescribable opens the door to mystery. Many examples could be given that illustrate the importance of Jain logic that emphasises the many-sidedness of everything and that has far-reaching consequences for science, politics, and the human condition *(Rankin, 2010).*

Although the wisdom of many-sidedness that includes the indescribable, the mysterious, has been forgotten or ignored to a great extent, more recent explorations in science and logic have reconfirmed it and put it on a more scientific basis. Thus, Korzybski's Structural Differential shows clearly that reality cannot be fully represented through language and logic and therefore remains unspeakable, unnameable, mysterious *(Korzybski, 1958, 2010)*. Why is this so? Our sensory experience or perception, description, and inferences represent different levels of abstraction. Abstraction means selection. Thus, due to the limitations of our sensory apparatus and our nervous system, our sensory experience or perception of an object represents only a selection of all the features of that object. For example, we do not perceive ultraviolet patterns in flowers, nor do we hear ultrasound. When we describe the object, we abstract further. For example, when we describe a flower, we select certain features from the welter of our experience. And when we draw inferences, we abstract even more. Therefore, from the real object through perception, description, and inferences, more and more information is lost due to the process of abstraction that selects only some features. Korzybski's Structural Differential illustrates that process as explained in the legend of Figure 1.

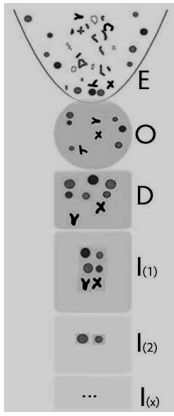

Fig.1 Korzybski's Structural Differential as presented by Steve Stockdale. The parabola on top represents an object or an event (E) that happens in reality. Each dot, figure, or line stands for an aspect or feature of that event. The circle below (O) represents our sensation or perception of that event. Note that our sensation or perception does not include all the features of the real event. The box below the circle represents our description (D) of our sensation or perception, which is abstracted from the latter and therefore does not include our complete sensation or perception. Usually it includes even fewer features than indicated in the box D. Finally, the boxes below the description box represent inferences (I) that are even more abstract than the description.
Steve Stockdale's presentation (originally in colour)is reproduced with his permission from http://www.thisisnotthat.com/structural-differential/

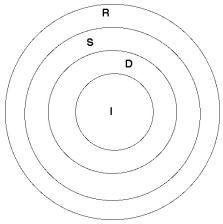

Fig.2 The outermost circle contains all of reality (R). The circle inside the outermost comprises our sensory experience (S) or perception of reality. Inside the circle of sensory experience is the circle that contains our linguistic description of sensory experience (D), and in the centre are inferences (I) that are even more abstract than linguistic description and sensory experience. This figure is reproduced from Sattler (2015c).

In Figure 2, I pictured the increasing abstraction from reality (R) to sensing or perceiving (S) to description (D) and finally to inferences through increasingly smaller circles: our sensory experience or perception is more limited than reality itself, our description of our sensory experience or perception is more limited than the latter, and finally inferences are more limited than our description. The advantage of representing the Structural Differential as in Fig. 2 is that it does not require breaking down reality into discrete features that are represented by dots, figures, or lines. The advantage of Korzybski's and Stockdale's presentations is that they illustrate well the process of abstraction. The different presentations complement each other.
Since science involves perception, description, and inferences, it is more limited than reality. Although science can come closer and closer to an understanding of reality, due to its use of language and mathematics, it cannot reach reality and therefore reality remains mysterious. Through this recognition of the mystery beyond science, science can be a pointer to the beyond, the mystery.
There is a saying: Don't confuse the finger (that points to the moon) with the moon. Thus, don't confuse science with the mystery of reality. Science provides maps of the territory of reality, but, as Korzybski emphasised, "a map is not the territory it represents, but, if correct, it has a similar structure to the territory, which accounts for its usefulness (*Korzybski, 1958, p. 58*). As a map points to the territory it represents, science can be a pointer to the mysterious territory of reality, if one is aware of the process of abstraction that is so often ignored or forgotten and then leads to various forms of scientism that confuse science with the mystery of reality.

Science as a path toward mystery and enlightenment

Besides pointing to the mystery, we also want to become the mystery. Some scientists and laypersons appear to be able to partake of the mystery. They feel a sense of awe and wonder, and "their experience of wonder does not vanish when the questions have been answered. To the real scientist, a question that has been answered becomes not less wonderful, but more so. Increased understanding increases scientific awe" *(Midgeley 2000, pp. 186-187).* For example, Carl

Sagan, the astrophysicist, wrote: "The size and age of the cosmos are beyond ordinary human understanding, lost somewhere between immensity and eternity," and he added: "Our contemplations of the cosmos stir us. There's a tingling in the spine, a catch in the voice…We know we are approaching the grandest of mysteries" *(Sagan, quoted by Wolfe, 2015, p. 16)*. Such an experience may happen spontaneously but usually it does not last. It may last only for an enlightened person who lives out of the mysterious source of existence so that mystery remains an undercurrent of everyday life. Can science help us in any way to move toward a life that remains suffused by mystery and enlightenment?

To function as a path toward mystery and enlightenment science has to be understood more holistically as Broad Science *(Wilber 2001)*. Contrary to mainstream science that recognises only external objective experience, broad science includes also inner subjective experience. It is based on what has been referred to as radical empiricism *(Sattler 2015a)*.

According to Wilber *(2001, pp. 73-76)* both broad and narrow mainstream science, proceed in three steps:

1. An injunction that says that if you want to know something, then you must do something: make an observation, perform an experiment, etc. For example, if you want to know whether a plant is composed of cells, you must look through a microscope. And if you want to know the effects of meditation, you must practice meditation. Only talking about it is not enough.

2. Experience that is brought forth as a result of the injunction. It may include physical, mental or spiritual experiences. Thus, practicing meditation may bring forth the experience of mystery.

3. Communal checking can confirm or discount our conclusions.

In his recordings "The Science of Enlightenment," Shinzen Young *(1997, Session 9)* proposed a scientific model or theory that explicates the mindfulness path to enlightenment: infusing our experience with mindfulness and equanimity will catalyse insight and purification, which eventually may lead to enlightenment. Like many other scientific theories, this is a probabilistic theory that makes only probabilistic predictions. Mystery may be experienced on this path. Eventually, the dualism of the experiencer and the experienced may be transcended. Thus, the experiencer may not just experience mystery but may become it.

Science may be able to speed up spiritual development through the investigation of correlations between inner experience and external objective data such as, for example, correlations between meditative experiences and neurological events such as brain waves. As this research advances, we may be able to develop technologies that influence our inner experiences in ways that bring us closer to the mysterious and enlightenment *(Shinzen Young, 1997, Sessions 23/24)*.

For the less technologically minded, there are, of course, other ways toward the mysterious. One important way is through great art such as music and visual arts. Even poetry that uses language can lead us toward mystery because "the poet is using words to evoke feelings that cannot be expressed in words" *(Wolfe, 2015, p. 21)*. Furthermore, mystery can be experienced in nature, through beauty, love, paradox, and in various other circumstances *(eg, Wolfe, 2015)*. However, since science has become increasingly dominant in our society and since so many scientists talk in a shallow way about taking the mystery out of things, I consider it important to realise that the profound mystery I refer to in this article cannot be taken out; it remains. We just have to be open and receptive to experience it and to be it.

Mystery as a source for science

So far I have tried to explain how science can point to and lead toward mystery. I should not neglect to emphasise that it works also in the opposite direction: the experience of mystery can be helpful for science; through intuition it can be a source for scientific inspiration and discovery. As is well known, in addition to logical reasoning and empirical testing,

intuition plays an important role in the scientific process, especially with regard to fundamental innovations that challenge habitual thinking and require major shifts in outlook. The experience of mystery can open up our mind in such a way that novel intuitions emerge that then form the basis for rigorous empirical testing. Many examples could be given *(eg, Wolfe, 2015, pp. 50-52).* I think that the experience of mystery may have led at least some scientists to develop a "science of oneness" *(Hollick, 2006)*. Others may have found interconnections through more direct empirical observation and experiment. Albert Einstein thought that the experience of the mysterious "is the source of all true art and science" *(Einstein, quoted by Ravindra, 1991, p. 322)*.

Why mystery matters

Mystery, as it transcends words and language, can be experienced in sound or music and in silence. Thus the contradiction, antagonism, conflict, and war that may arise through the use of language, especially if it is not recognized as a map, can be overcome. In sound or music and in silence we are united, we can be in peace. Thus, the experience of mystery can beneficially transform our individual lives and society. It can lead to better health and more sanity *(Sattler, 2015b)*.

The recognition and experience of mystery can generate or imply wonder, awe and reverence, including the sacred. "The word sacred is, for many, tied inextricably with the concept of the divine, but in many instances it is used to express an immense respect or reverence"*(Kauffman, 2008, p. 286).*Such reverence can prevent ruthless exploitation of the environment and other people. Wonder can lead to openness and creativity. Awe can transcend egocentricity.

Mystery may also be related to spirituality depending on how the latter is defined and understood. Wilber distinguished the following four phases of spiritual unfolding: belief, faith, direct experience, and adaptation *(Wilber 1999, p. 312)*. Belief involves language because a belief is normally expressed through words, and for this reason belief cannot fully embrace mystery. Faith may come closer to mystery, but to the extent that it is articulated linguistically it also might miss mystery. However, direct experience may open the door to mystery. And adaptation, which implies the unity of the experiencer and the experienced beyond words, means being mystery.

Why mystery is important in education

When a child or a student is told, "This is a rose," the child or student may conclude that he or she now knows what this thing is. The mystery is taken out of it. In other cases where we do not yet know what something is, the child or student is often told that at present we do not yet know what it is, but future research will reveal its nature so that again the mystery will be taken out of it. The result is a deprivation of the mysterious with all the negative consequences I mentioned in the preceding section. This deprivation appears to be based on a profound misunderstanding of the nature of language, which leads to an unrealistic orientation in the world and an insanity with potentially devastating consequences some of which I mentioned above *(see also Sattler 2015b).* The remedy to this situation appears rather simple. Instead of telling a child or student again and again, "This is a rose," "This is a bad person," "This is an evil nation," etc., we tell them "We call this a rose." What it is, we don't know because it remains mysterious. Nature remains mysterious. And we say: "This person did something that I consider bad," but who and what this person is, remains mysterious. And we say: "This nation engaged in an action I consider evil," but what this nation is remains mysterious as it remains mysterious what my nation is, and thus these two nations are embraced by the mysterious. What a difference this realization could make for cooperation between nations and world peace! But most education from kindergarten to university works against this recognition and therefore works against more realistic understanding, cooperation, and peace.

Nonetheless, where mystery has been obscured it can be rediscovered.

I dedicate this article to Gerald Walton Paul with whom I have had many wonder-ful conversations about the importance of mystery.

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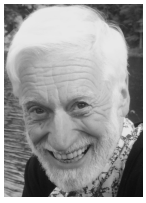

Rolf Sattler, PhD, DSc (h.c.), FLS, FRSC, is an Emeritus Professor of McGill University in Montreal. His research has focused on the continuum, process, wholeness, integral science/philosophy and its relation to spirituality. His present interests include a verb-based process language, health and healing.

ALIGNED IN THE JOURNEY

The dynamic dance of life: the appearing of a new ground of being

JÖRN RAU

The need to surrender, once again…

'Go out on the land, recall the most sacred dimension of your intention for this year at Schumacher and find your threshold. And then cross it and come back.' These were the words that Bill Plotkin gave us for the final exercise on our first weekend. It evoked a more mysterious and archetypal dimension in the group and especially in me. Trained as a vision quest guide, I am familiar with this dimension related to the hero's journey by Joseph Campbell in which the crossing of the threshold means fully entering into the adventure *(Campbell 2008).*

And yet, this time it should have a special taste. On my own journey towards wholeness and meaning in my life, I was led to doing a vision quest in which I tasted mysteriousness and the depth of nature. Now, I heard the calling to start the Holistic Science MSc and find scientific ways of exploring the experiences of wholeness I have had and it should mean the entrance into yet another chapter. In the weeks leading up to this, it already felt as if the next big adventure was coming but in the moment with Bill Plotkin I knew it: the moment to leave my ordinary world behind once again had come and all I could do was surrender to the unknown journey ahead. The only thing I could trust was that change would come and something new wanted to enter my life. I needed to allow it to happen.

This new adventure was to send me into a new knowing about the world, where my inner journey and a new way of seeing the world were connected in a particular meaningful symbol. This essay shall therefore bring together this symbol and the way it came into being, on which I will focus first with phenomenology as applied by Goethe and Henri Bortoft, a language for seeing the world differently, that helps to approach the deeper meaning of the symbol.

The coming into being of the symbol

When I now look back at this moment of surrender to the journey, I can see this moment and the process of the coming into being of the symbol in a new light. Therefore I want to attempt to bring alive again the process of how the central meaningful symbol entered my life. You will see, that it has, framed in the language of phenomenology, the capacity to be the link through which I can bring into expression the mystery I glimpsed in my quest whose flavour has accompanied me ever since. In order to do that, three key moments of this month shall be pointed out.

The first step on this new adventure was a session on expressive arts in which the key experience included the task to go out into the natural world, be called by an other-than-human being, in my case a bush with purple red flowers, and imitate its movement with the full body so that we opened up to being taught something about the nature of this being. Afterwards, remembering this movement in our bodies, we were asked to give it a form through drawing, choosing intuitively the right colours. The main impression of the quality of that being was one of fluidity, a constant back and forth in the wind, radiating flashes of light and beauty outward from the centre, where the green of the bush and the deep red of the flower meet.

Remembering the moment of the coming into being of this drawing, I cannot really say that it was a unilateral act of creation. Rather than that, it was more as if this pattern wanted to come into being through me by revealing itself to me in different nuances, in sensory experience, deep feeling and my imagination. I could also say that I was created by the pattern so that it could come into a form instead of me creating it from a pre-existing, fixed form in my mind. When I dive deeper into the moment, I

wouldn't even say that there was a 'me' and 'the drawing' but that it was one deep flowing movement.

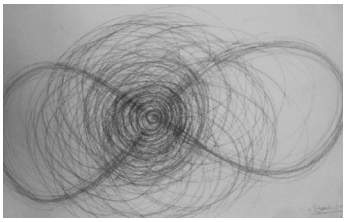

Fig. 1: Image of the expressive arts session

The next key moment along the journey of this first module was a moment of teaching with Patricia Shaw in class, where the same symbol or pattern appeared, but in a different context. We were speaking about the act of communication and how one could regard it in a different light than just saying that there is a clear sender with a fixed message in his or her mind that is then communicated in a unilateral way to the receiver who just needs to decode it. The reason why this standard model seemed insufficient to us was that we, and presumably all human beings, have experienced moments in conversation where both sides know without any doubt that they understand each other – that 'something rings true' *(Shaw 2015).*

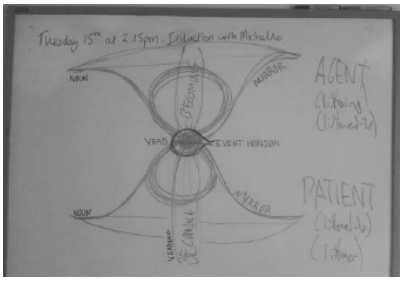

Fig.2: Alex Blanes' drawing in the teaching session

What followed on this statement was an outburst of creativity and insight where multiple students in the class understood a different pattern of conversation. This understanding of meaning suddenly manifested in the room through different people drawing (see fig. 2), describing or, in my case, 'getting' the connection to the same pattern that previously had already appeared to me in the expressive arts session. It was also expressed in a picture by Jamie Perrelet.

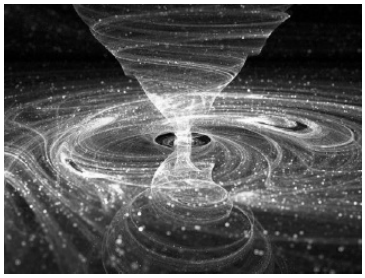

Fig.3: The Space Between : Jamie Perrelet (on the wall of the MSc room)

It was then clear that it is actually 'the space between' (like the title of Jamie Perrelet's picture suggests) in which the understanding of meaning happens which connects the two sides participating in the conversation. This understanding landed in the room with such immensity that it could be felt in the whole body which clearly showed that it was not just an insight restricted to the head.
The last striking moment happened whilst I was starting to work on this assignment, looking at the drawn pattern on my wall, and again there suddenly, out of nothing, came a revelatory insight and connection that made me burst into laughter and excitement, puzzled why this obvious connection had not arisen before in this way.

The connection that I suddenly realized is one to the experiences of my vision quest where two main patterns or symbols were mirrored back to me by the natural world or came in dreams or visionary states that, since then, have built the foundation of a sense of identity, my worldview and purpose for my life journey.

Fig. 4 shows the first symbol which is the celtic tree of life

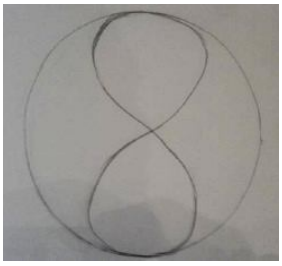

Fig. 5 shows the place where I was fasting, looked upon from a bird's eye perspective.

Here again, there is a stunning similarity to the previous patterns. But more than that, it did not only just appear in this moment but I understood that I had been seeing and exploring this same pattern of the connection and the creative dance between polarities ever since my quest where I have also found it in areas like alchemy, Jungian psychology, myths and spiritual traditions of the east and west.

What do these astonishingly similar patterns mean and how do they fit into the context of Holistic Science and my journey? And how can the feelings, sensory experiences, sudden thought connections, imaginative qualities and intuitive insights that accompanied the coming-into-being of these similar patterns be understood in a new light?
Standard, quantitative science would just regard these experiences as separate events where, just by chance, similar patterns were involved. What is needed is another language for wholeness, another way of seeing.

Learning a new language: Taking on the adventure of phenomenology

Taking on the task of such a new language, I now want to turn to phenomenology to express the fullness of the symbol, in which my inner transformation is reflected equally as a new way of seeing the world. Entering into the adventure of learning a new language for wholeness meant setting the stage for it by having a look at what we are not looking for. This was contrasted right at the beginning of our classes by the comparison of 'systems thinking' and 'dynamic thinking' where the former is mainly concerned with getting an overview of the whole through examining the interconnectedness of the parts and the latter, in contrast to that, with what Henri Bortoft, as a follower of phenomenology, would call 'authentic wholeness' *(Bortoft 2012: 17).* This second approach is also concerned with the relationship between the whole and the parts, the fundamental tension that can be found at the ground of reality. What makes the difference is the kind of relationship that is seen between the whole and the parts. Speaking about dynamic wholeness points to a different relationship between the whole and the parts than it is represented in the systems approach. The relationship that is meant here is an equal relationship where they are both dependent on the other to come into being which means that they are circularly defined as the 'whole [appearing] through the parts [and] the parts [being] identified in the whole' *(Franses 2015: 1).* Only through this move, which is also called 'the hermeneutic circle' *(Bortoft 2012: 14)* and at first seems to be paradoxical, can one avoid the predominance and therefore fragmentation of the relationship between them. If, based on this new perspective, the whole wants to be experienced, it is not through trying to get an overview but through diving more deeply into the parts and there discover the whole that is 'presencing' (coming into presence) in them *(Bortoft 2012: 14f).*
To actually discover the whole in the parts, it needs another important move, one of attention. What I mean by this is that we experience something, have a feeling or sensory impression and then try to make sense of what just happened by thinking about it. Our attention is focused on what happened, an experience in the past and therefore it is gone and stays there as a fixed event and the only thing we can actually do is think about it. Approaching it this way, it can only be either the whole or the part that we pay attention to and every attempt of circular understanding appears to be paradoxical. Phenomenology, in contrast to this, tries to shift the attention right into the experiencing of what is experienced, into the coming-into-being of meaning, into the present moment where the 'sensory-intuitive mind', and not the 'verbal-intellectual', is the ground on which any

phenomenon comes into being and where its meaning is understood *(Bortoft 2012: 57).* Henri Bortoft has illustrated this shift by using the term 'upstream', where life or the experience flows towards you and you can be right in the appearing of meaning, in contrast to 'downstream' where you can only think about past and "dead" experiences or analyse a system as a detached observer *(Bortoft 2012: 18)*. Another very helpful expression for this different attitude towards life that phenomenology as the dynamic relation between whole and part requires, is mentioned by Philip Franses *(Franses, 2015: 2)* as 'that which is not yet set'. It means that we do not focus on fixing a phenomenon because it will always be separated into whole or part, subject or object. Instead, the attention lies in the fluid happening of meaning where whole and part can be seen as one connected movement that is full of possibility.

In going through this shift in the way we see, the seemingly paradoxical happening of two movements at the same time can actually be recognized as just one 'unitary event' *(Bortoft 2012: 97f.)*, in which both, the whole and the part are actualised. This dynamic unity eventually leads to a way of thinking about the relationship between the whole and the parts 'that does not separate [them] into two but at the same time doesn't [let them] collapse into one' *(Bortoft 2012: 131).* Fully entering into this unitary event means therefore experiencing the 'dynamic depth', as Bortoft *(2012: 26)* puts it, that each event, each phenomenon, each experiencing of meaning entails.
This new foundation for our experiencing of everyday reality now gives us the possibility to explain the multiplicity of life, the multiplicity of forms and beings in the world. Following the fundamental interdependence of whole and parts, it can now be understood that every form contains the reflection of the whole in it and is therefore an expression for the whole becoming itself differently. The example of a tree can illustrate this. All the parts like leaves, branches, stem and roots are necessary to form the wholeness of the being of the tree but at the same time it is also just the whole being of the tree that becomes itself differently in all the parts. This concept of 'self-differencing' *(Bortoft 2012: 71)* now leads to a dynamic understanding of multiplicity in which it is not the fragmentation of one whole into multiple separate parts. It is rather the opposite as the discovery of 'multiplicity in unity' *(Bortoft 2012: 80),* of sameness in the midst of difference, of diving deeply into the unique parts and discovering the unifying whole. Referring to Goethe's study of plants and his understanding of '*Urpflanze*' as the underlying principle of each plant based on a dynamic wholeness of whole and parts, Bortoft refers to it not as being a fixed entity but an 'archetypal movement [that] is the intensive movement of self-differencing [,] ''a movement in which it is one and yet becomes different at the same time''.'*(Klocek cited in Bortoft 2012: 83)*

As a last important step, one has to consider that the dynamic unity of wholeness, as movement, always involves the time dimension. If we were to think about the meaning that appears in the experience as something complete and finished, there would not be the necessity for an ongoing process where ever new meaning happens. On a dynamic ground of being, against the background of the time dimension, it is thus more appropriate to comprehend the meaning that comes into being in any event as unfinished, bearing in it the possibility for the coming-into-being of the whole in the parts in a different way in the future. In this sense, every event of coming-into-being of meaning requires equally an act of understanding so that it is the unitary event of '{meaning/understanding}' *(Bortoft 2012: 100).* And yet, with every unitary event of {meaning/understanding} over time, the meaning of the whole comes more fully into being whilst the parts are more fully moving towards the whole, which Bortoft refers to as 'enhancement in being' *(Bortoft 2012: 121ff).*

The unitary dance of the journey
To end this exploration I want to use the language of phenomenology to relate the pattern that appeared and keeps appearing to

me, back to the theme of the journey of human beings in relationship with the world. If the dynamic understanding of the relationship between whole and part is taken into consideration, one can begin to view our human life journeys in a completely different light.

Against this new background, the symbol can make visible the deep interconnection between the inner transformation and a dynamic way of seeing the world and ourselves in it. Given that the whole presences in the parts and the parts are on their journey to forming the whole, then there is also a fundamental relationship between our human lives and all of life, between our individual journeys and the journey of humanity, of the earth, of the universe. Because we are from this world and therefore linked to the coming into being of the universe, the earth, the plants and the animals, we share a common ancestry and common journey that led to the world as it is today. In fact, seeing our lives through the lens of phenomenology enables us to redeem the inherent meaning of our lives by linking them to the dynamic view of the dance of whole and parts. To take it even a step further, I want to suggest that the journey to meaning and wholeness itself is the unitary event that includes the time dimension and enables the whole and the parts to self-actualize themselves. In this unitary dance, the two movements happen at the same time: the whole that is coming more fully into being through its self-differencing in the parts and the parts that are moving towards the whole. What this implies is a new dynamic view on the role of human beings in the world and the way that we participate in it. Overcoming the Cartesian separation between subject and object it can now be said that 'our role in this is not that of a subject in front of an object, but that of a participant in an event of appearance.' *(Bortoft 2012: 171).* By going upstream we can realize now that the journey is one directed towards life so the events on the journey come towards us if we are fully present to when they come into being whilst they are still unfixed and fluid and part of our conversation with the world. Thus one could also say that the journey, the life story, is the actual result of a constant conversation. Iain Mc Gilchrist emphasizes this by saying that 'we neither discover an objective reality nor invent a subjective reality, but that there is a process of responsive evocation, the world ''calling forth'' something in me that in turn ''calls forth'' something in the world.' *(McGilchrist 2012 cited in Bortoft 2012: 25)*

Now, the whole journey of the first module and the pattern coming into being in various different contexts can be understood against this background. The symbol shows in a visualized way what Mc Gilchrist is talking about, that we as human beings are actually participants in a constant conversation with life. But furthermore, the very way that this symbol came into being – the flashes of insight and sudden connections, the shocks of excitement – are all expressions for the unitary event of {meaning/understanding} happening on this journey that connects the whole and the parts. These events do not follow pure rational logic but rather involve our whole being drawing on the sensory-intuitive mode. Philip Franses expresses it in a beautiful way by saying that in such an event, '*the conundrum, of the whole that appears through the parts and the part that is identified in the whole, is miraculously resolved. And when we see it we feel the miracle. Suddenly everything is fitting together. […] When we allow the dance between the two, the whole is the origin of the parts in its differencing and the journey through the differences is the ground of the whole. […] That moment in which all possibilities connect is in the dimension of the identity of being, becoming itself. The dimensions of whole and part fall together into the fulfilled unity of being.*' *(Franses 2015: 3)*

Through the happening of meaning in these different contexts, the whole has enhanced in being. And, to take the concluding step, I can now see that the whole that has come into being in the pattern is the new dynamic ground of being itself, the basic creative principle of life as the dance between whole and part.
I realize now that in order to express the experiences of wholeness that have shaped my life journey, I needed to shift the very ground

on which I was standing, overcoming the illusion of something fixed and moving into a realm of dynamic relationship and balance. It wasn't the case that I simply was not aware of this basic pattern of the dance between the polarities because ever since it appeared to me, it signified my doorway to understanding the world and the human being. But it wasn't until I went through the journey of this first module that I realized that it was the very dynamic ground of life that I had been given by the land. In this process, my understanding of what the word "soul" could mean and the relation to the whole have changed through this symbol coming more fully into being, because, as participants in a conversation with life, soul is, ''*the largest conversation a person is capable of having with the world*'' *(Whyte cited in Plotkin 2008: 36f)*.

Entering into this conversation requires our own opening, our own transformation. It means that every human being has to go on a journey of individuation, of cultivating the uniqueness of our whole being. This includes our four functions of thinking, sensing, feeling, intuition/ imagination and the journey to the Self in the language of Carl Jung (Jung 1971 CW 6,7; Harding 2013) or our four facets of self and the journey of soul initiation in the language of Bill Plotkin *(Plotkin 2008).* At the same time the world enhances in being – weaving more of its soul into existence or '[imagining] its own future through us' *(Plotkin 2008: 17)* – and by that coming more fully alive in our participation and imagination with every unitary event of {meaning/understanding}, with every step we take on our journeys towards our own wholeness and uniqueness as human beings. With every back and forth between us and the world, the reciprocal conversation is deepened and meaning is invited more fully into our lives. The only way to find the whole is by going deeper into the parts, deeper into our innate wholeness and quality as 'homo imaginens' *(Plotkin 2008: 17)* and our ability of meaningful conversation with the world around us in its particularity. Goethe has also been trying to emphasize this through his way of science *(Bortoft 2012; Holdredge 2013).* The calling to shift our way of perceiving and relating to the world can be heard all around us and the adventure of cultivating our own wholeness and discovering our largest, unique conversations with the world is awaiting us.

All we need to do is surrender to the journey.

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Images

Fig. 4: The Celtic Tree of Life: http://dutchie.org/files/2011/06/SSC-Tree-of-Life.jpg, 29/10/15.

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Jörn Rau *is a student on the MSc Holistic Science at Schumacher College, a scholar of and listener to the deep movements of soul in the world and in our lives, trying to embody authentic wholeness and hold spaces in which the soul journey can find expression, exploring what it could mean to become fully human.*

THE PEDAGOGY OF WONDER

SHANTENA SABBADINI

Mystics and Scientists

The world is more mysterious than we are wont to admit. The way we ordinarily represent it to ourselves is useful for our survival thanks to a long evolutionary story, and it is well adapted, to the management of the reality we are daily confronted with. So well adapted in fact, that we do not experience it as problematic in any way. This unquestioning acceptance itself probably has survival value: we could speculate that had we been a species of philosophers from the very beginning, we would have become extinct long ago and would not be here to speculate about it...

But reality is infinitely more mysterious, complex and vast than useful practical representations. Mystics have always been aware of this larger dimension and again and again they have tried to remind us of the vastness of the universe, of the immensity of our essential nature. However practically effective our ordinary representations of the world may be, they leave us naked and defenceless, facing the mystery of death, leaving us blind to the wonder of existence.

Science sits on the divide of these two dimensions: the practical and the investigation into the ultimate nature of things.

Understanding cause and effect relationships has a clear survival value and is at the base of all our technologies. But it is only one aspect of scientific investigation. The deeper sense of purpose in the work of all great scientists has always had to do with the mystery of our existence. The separation of science from philosophy and religion is fairly recent, going back at the most three or four hundred years. Newton was also an alchemist, Kepler was also an astrologer. Even in the Twentieth Century, when that separation was already solidly established, the founders of quantum physics (Einstein, Bohr, Heisenberg, Schrödinger, Pauli, etc.) all had a mystical *penchant* in their writings.

Scientific materialism is still the dominant ideology of our time. That in itself is a paradox, because on the frontier of science the notion of matter itself seems to evaporate and there is no longer a clear separation between consciousness and world. The awareness of these fundamental issues is confined to a relatively small circle of scientists and philosophers and has hardly had an impact on our day to day dealings with the world. The Cartesian separation of mind and matter is still the dominant paradigm of our culture.

Abstraction

The trouble, as Husserl would say, is that we have forgotten the foundational operation of our science, and with that we have lost the larger vision. At the base of science is a process of abstraction, *abstrahere*, "pulling out", separating from the unmanageable complexity of existence, a solid skeleton of communicable and reproducible operations. The essence of the scientific method consists of the notion of *reproducible experiment* and that of *measurement*, i.e. mathematical description. This allows a measure of control over reality, which ultimately means power – and human beings are fascinated by power.

Abstraction of course is not a problem when we are aware of it and manage it wisely. But when we forget that abstraction is *our* doing, *our* specific choice oriented to a goal, then we mistake our abstract representations for the whole, and we think that is all there is. Then we lose touch with all that *cannot* be "pulled out", all that cannot be abstracted, the irreducible complexity of the real. Awareness of this other side, of this other face of the moon is vitally important – because there lie our bonds with life, with all living beings and with meaning.

As a culture we are collectively identified with our rational mind and are removed from emotional intelligence. But reason separates: it

separates the world into parts and separates us from the world. Out of the infinite complexity of the real, we forge a world of objects that the ego wants to dominate and possess. At that point, the abstract models of science stand in front of us as matter and paradoxically proclaim themselves to be the only concrete reality. At that point we may think we are masters of the world, but in reality we are possessed by our own creations.

The Pedagogy of Magic

An awareness of the reductive and impoverishing quality of our common sense representations of the world was quite vividly present to Daoist masters in China twenty-five centuries ago. They were acutely aware of the trap of language, of the danger of *reification*, mistaking our mental creations for objective realities "out there". And especially, they were aware that the practical mind tends to blind us to the vastness and the mystery we are part of, to the vastness and the mystery *we are*. In challenging that reductive knowledge and calling us back to experience the wonder of existence, the Daoist masters' favourite devices were hyperbole, paradox, provocation, humour, irony. This little fairy-tale of *Zhuangz*i is an example of it. Zhuangzi probably lived in the IV Century BCE and is generally considered the author of a large portion (including, according to most Chinese scholars, the first seven chapters) of the book that bears his name. His critique of language anticipates some intuition of postmodern thinking. Ironic, irriverent, *grand provocateur*, he loves to reverse exemplary situations: in his book lunatics, bandits and criminals teach life lessons to kings and sages.

In the northern darkness there is a fish and his name is Kun. The Kun is so huge I don't know how many thousand li (Chinese mile, equivalent to about half a kilometer) he measures. He changes and becomes a bird whose name is Peng. The back of Peng measures I don't know how many thousand li across and, when he rises up and flies off, his wings are like clouds all over the sky. When the sea begins to move, this bird sets off for the southern darkness, which is the Lake of Heaven.
The Universal Harmony records various wonders, and it says: "When the Peng journeys to the southern darkness, the waters are roiled for three thousand li. He beats the whirlwind and rises ninety thousand li, setting off on the sixth month gale." Wavering heat, bits of dust, living things blowing each other about, the sky looks very blue. Is that its real colour, or is it because it is so far away and has no end? When the bird looks down, all he sees is blue too.
The cicada and the little dove laugh at this, saying, "When we make an effort and fly up, we can get as far as the elm or the sapan wood tree, but sometimes we don't make it and just fall down on the ground. Now, how is anyone going to go ninety thousand li to the south!"

Of course we do not have to take Zhuangzi literally (literal-mindedness is after all what he keeps warning us about!). What he is saying is just that the world has magic if you open your eyes to it. The cicada and the little dove cannot see it because their horizon is limited to the elm and the sapan wood tree. Zhuangzi's fairytale is an invitation to go beyond that narrow world, it is an invitation to experience the world's magic. Which is not supernatural and esoteric: it is right there in front of us all the time.

This article is from Shantena's book Pellegrinaggi verso il vuoto *(Pilgrimages to Emptiness) which has just been published in Italian (Lindau, Turin, 2015). An English version will be published soon.*

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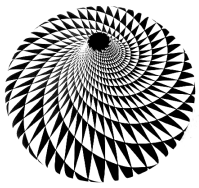
Shantena Sabbadini *worked as a theoretical physicist at the University of Milan, Italy, where he helped lay the foundations for what is now called the "decoherence approach" to describing quantum observations, presently the most widely accepted understanding of this controversial subject. He has also translated the Tao Te Ching into Italian.* **http://www.shantena.com**

THE MATTER OF MEANING: AN UNFOLDING

PHILIP FRANSES & MIKE WRIDE



Setting the Scene

The MSc class room at Schumacher College is a small room, fitted under the hundreds of years old beams of the sloping roof of the Old Postern. For almost twenty years, it has been the home of the inquiry into Holistic Science. Every year, 15 or 16 students (for no more will fit) take their place in this space to take up the inquiry *(Franses and Wride, 2015).* This year, 2015, is no different – there are 15 students and two teachers. Time seems to slow down into a process that has taken on the rhythm of years of study here. The space seems to empty out into a 'cloud of un-knowing' to use the term of an unknown 14th century English mystic *(Underhill).*

The silence that precedes the teaching sessions enables a receptivity to new ideas and facilitates the expression of new possibilities. Even how physics and biology might come together in a more whole meaning. It is a cloud in which those possibilities that precipitate out, are like raindrops which satisfy a thirst for learning. The end is drawing the beginning towards itself in an entangled loop of fulfilment.

There is something beyond instrumental educational experiences of cause and effect here. The whole meaning that will emerge during this week somehow already exists as pure potential in this space, and is somehow already palpable within the room.

"*Wholeness, it is said, contains everything about itself, within itself.*" (*Franses, p 7*).

This year, specifically, we are exploring how physics and biology might come together in a more whole meaning. This is a truly transdisciplinary approach to education (*Mantouri)* where the space from within which the new meaning emerges, transcends the isolated monoliths of the two subjects seen separately.

We were enabling a direct experience of the creative space that transcends both disciplines and all the individuals involved – teachers and students. We were experiencing the dynamics of a complex system (the class) of which we were integral parts and to which we all contributed. We allow that the parts necessary for this unfolding of the learning suggest themselves. The parts we speak about, whether in the Universe as a whole, in quantum biology or in the developing embryo, are suggested as the requirement for developing a meaning between us as true participants in this learning. There are no passive observers. "*We are shapers and creators living in a participatory universe*" (*Folger*).

So, there is a completely different educational process unfolding here. We are not beginning with parts of knowledge whose outcome is already foreseen. We are not didactically conveying 'fixed facts' from text books. The parts of the teaching come up, as suggested by the whole meaning that wants to be born in the active space we are creating in the process. In this way, physics and biology are not isolated mountains to climb. They are natural ways and means through which the collective goal of the class, to experience new meaning, is enabled.

Searching the Meaning

As an experiment, Mike Wride and Philip Franses decided to teach the second and third weeks of the MSc in Holistic Science, complexity module, together.

It was easy to say we would teach together, but how would this work in practice?

Philip's first step was to visit a bookshop on the Sunday before the teaching started and find a book called "Life on the Edge, The Coming of Age of Quantum Biology" by Jim Al-Khalili and John Jo McFadden *(Al-Khalili and McFadden).* Although a fine read, the authors seem to feel

the need to go out of their way to disassociate the science they are describing, from any connection to meaning or spiritual connotation.
The book gives detailed oversight of the new bridge that is being uncovered between the essence of physics, quantum theory, and the basis of biology, the molecular genetic basis of life. However, though broad in its universal scope, it stumbles in trying to proceed by taking the specialism of quantum theory and applying it to the understanding of biology in a rigid way. It felt to Philip, there was no leeway for a comprehension that truly transforms our understanding of life.
The experience of the world continuously shows us how disparate possibilities concentrate into the distinction of a whole identity. Whole natures (macro-state of tree, or human or even God) persist in holding the freedom of many micro-states, without reducing to the level of these sub-actors. Thus meaning, even in its mathematical understanding of order, is innate to life. Yet for a modern science book to claim legitimacy, it has to give the impression that meaning is simply the understanding that our intellectual insight places upon an otherwise inert, material universe.

In the same book, the quantum effects all refer to the aligning of possibilities around a unity of whole function; for example, photosynthesis or respiration, as distinguishing features of life. To remove meaning and its relation to matter from such a discussion felt like it was being dogmatic about science. Meaning had been erased from the story of biology for the benefit of scientific expediency.
Together, Mike and Philip had two weeks to probe slowly, how these two aspects of matter and meaning around biology, physics and the new insights of quantum biology might more naturally and productively come together.
Heading to the train station from the bookshop, a text message from Mike surprisingly said that he was also passing through Exeter on the same train Philip was on. We started fittingly, in the synchrony of sharing a journey from Exeter to Totnes, falling into our exploration of the 'matter of meaning' and what we were going to do in the two weeks of teaching together.

Into the Cloud of Unknowing
It was simple enough just to talk about teaching together during the two weeks. We had already developed a scaffolding, a plan outlining the topics we had in mind to cover each day. We each had our own material to cover, and our own experience and expertise that we wanted to bring to the sessions.
How was this going to work, putting two separate disciplines as physics and biology together, without it seeming artificial and contrived?
On the first day it was very much that we each stated our ground. Philip talked about the unnatural separation of meaning and matter in the history of science. Mike followed with an introduction to developmental biology, bringing the story of the journey of the embryo and the recognition, through some collective moments of insight, that the fertilized egg is like a class at the beginning of a learning journey – open to the possibilities for differentiation, not 'nothing', but 'no-thing' or even a 'know-thing'.

We had introduced a ground of matter and meaning, but it was unclear how we should enter it. For instance, how would a talk on physics have any connection to biology? It all seemed to be just oscillating between physics and biology at that point. What would be the point of that? Who would follow it? Everything had now reached a point of balance.
At a given moment on Tuesday morning, Philip made the first step, thinking: "You know what? I really have to trust Mike, and Mike has to trust me and we have to leap together into the unknown and see where we can take this.."
The teaching would not work if we were each kings of two isolated islands defending our own ground, passively watching the waves of meaning on a dead sea between us. If we stayed in our own sphere of authority, nothing would develop beyond that. Somehow, we had to trust each other into uncharted territory for it to work.

As soon as we made that commitment, things began to get clear. We realised that instead of embarking on physics and biology as completely separate disciplines, we could start with the common meaning that links the two. Trust changed the dynamic.

On Tuesday, Philip explored the mathematical concepts of electric and magnetic fields, which on their own are just abstract symbols. They become real only through the equations of Maxwell, that defines their play as the basis of light and electromagnetic waves, for instance in mobile phones. Then, instead of immediately going into the biology, Mike spontaneously introduced a card game (*Eller*) epitomising parts and wholes, and the unfolding of and relative interpretations of meaning. Mike had brought the cards with him, but till then had not made a decision about where they would fit in the sessions. Now it seemed intuitively obvious to him that this was the time to bring them out. The students were each given a single card and could only describe to each other (not show) the picture on the card. Each picture was a part of a story. The students had to work out the place of their card in the sequence of the story, by understanding the relation of their card to the whole meaning. The meaning of the whole story gradually, dramatically unfolded from the relationship between the pictures depicted on each card. In a brilliant show of patience and collective group work, the different pictures were finally illuminated as a whole story through the imagination of the group. Only at the end were all the cards laid out in order and turned over to reveal the whole narrative that matched the story built up in the imagination of the group, when communicating their individual cards.
We had both seemingly gone off the track of what our individual content was going to be, and had entered a whole new terrain and pattern of letting this process develop, seemingly of its own accord. It started feeling, very clearly, there was some new meaning that wanted to reveal itself through us which had unfolded from within itself in the card game. This now acted as a crystallisation point for what would happen next.

Living the Story
On the Wednesday, we started by Mike laying out a set of new cards, this time depicting different stages of zebra fish embryo development. Because we had already seen the cards of the story the day before, and we had worked out the story's meaning, the cards of the embryo immediately took on a particular significance so that we were not just looking at things and labels, even though we had gone through all the labels of the different processes and parts of the embryo. We were, in fact, looking at a process of unfolding meaning. This was very startling, for in mechanistic approaches to biology we are trained to only see steps or separate parts without any underlying message emerging from the inter-relationships of the parts. We were now looking at the embryo's journey as the unfolding of meaning, because we had all experienced that with the card game. The transformation was already beginning to happen within us - biology was not just about abstract knowledge as the only way to understand life. Life was something about us, not distant or distinct from us. Just like we understood the story through the generation of new meaning in the story of the card game, we now saw something similar unfolding in the embryo cards. Biology was beginning to come alive, we were seeing the development of the fertilized egg cell as something to do with the experience of meaning in our lives.
At this point, Philip introduced Einstein and Relativity. This might have seemed a big leap to make from one specialist subject to another, but in talking about space, time and Einstein's understanding of the universe through light, it became very clear that the embryo illustrated this view of space and time. We did not need space and time as abstract principles to understand the journey of meaning and its unfolding. In fact, the rhythm of that journey of meaning through the embryo enabled us to talk about space and time and see them both in a new way. The rhythm of embryo development identified points in the cycle that

distinguished periods of time. The growing of the embryo created its own relative boundary in space. We did not need to measure space and we could directly experience the relativity of time through the unfolding of new meaning as the embryo developed.
There was a dramatic realisation that Einstein was not talking just about the universe, but also about the embryo, and its journey of meaning; 'As above, so below'. The card game had started with the Universe, with a view of planet Earth as if viewed from a space ship and it had ended with the rooster's comb. But at the beginning of the card game, the students had no idea 'where' they were – all we had were fragmented snap shots of the isolated meaning on the individual cards. Entering the cloud of un-knowing/not-knowing was the only way forward. It was only through the relative inter-relationships that the new meaning emerged. And going even further down into the genetics of the rooster and its embryonic development more and more things aligned, the micro, the macro with the human in between.
We were not focused only on some 'thing' - either the cell and how it develops into the embryo, or the universe and how we now understand it. But we were talking about an underlying unifying process that had many forms, which gave a feeling of a common journey into meaning. Instead of life being put into a compartment called biology, with a specific text book of dissection into separate properties, life had become the underlying ground that was true about everything - of embryo development, of human development, of the development of the universe.
We needed our relation to the living journey of the organism in order to put into perspective our own journeys, and our own relation to the universe. There was a feeling of a profound truth here in the classroom that the universe is a developing organism too. Life had popped out of this dull biology book, and was becoming a pointer to us, something real. We recognised it. We recognised something that was true of every embryo, of the universe, of ourselves on our own journeys, our own differentiation. By going into the relationship of physics and biology, in a relationship of trust to each other, we revealed a fractal pattern, true at many levels of scale: the cell, the organism, ourselves, the universe. We recognised the pattern and how we fitted into it. We were not talking about something abstract, distant, disconnected from us, we were talking about life itself. There was no division of science and spirit, biology and physics, meaning and matter. This was living in the learning and learning in the living at an elemental level.
The question 'What is life?' was now connected clearly to meaning.
In that moment of illumination that occurred as the embryo cards lay on the floor and Philip was speaking about relativity, we went through the doorway of trust. Life appears as a quality, with a specific direction towards meaning as the means, to completion. The story completes itself by putting all the cards of separate stages of the embryo into the order of new life. We had realised that learning is about the unfolding of meaning from within ourselves and between each other as well as in dynamic relationship with the material we were covering – meaning matters. We had gained the insight that perhaps life is the means by which matter explores meaning and, conversely, matter is the means by which life explores meaning.

Quantum biology

On Thursday we went full circle, spiralling back to quantum theory, which is how wholeness comes into being at that elementary shore of the particle and showing how that is also true of quantum biology. At this shore, we are at a point of choice. We can stay with matter alone. Or we can see emptiness and possibility as a challenge to travel the sea of uncertainty where the everyday reveals itself with inherent meaning. Classically, the possibilities of quantum theory describe themselves with respect to a nothingness giving only formal meaning to any observation. But in terms of quantum biology, the possibilities align together as the living character of being. The possibilities recognise themselves in the single identity that gives coherent meaning. The unity

of life is the story that takes up all the separate pictures of the cards, or stages of development and tells them as a whole realisation.
Everything comes into the present, at its rightful place. Mike found an inscription by Tagore at the Dartington Hall Gardens. "*Here rolls the sea, and even here lies the other shore waiting to be reached, yes here is the everlasting present, not distant not anywhere else*."

Transformative Learning

On Friday morning, we reflected on the week.
Alex:"*I would describe this week as a clearing of the mind. Rare! This feeling just after not knowing, when you come out of a profound experience that is so vast and so evolutionary that all the questions you have, create a symphony and that symphony forms a silence that is just waiting. So I feel [I'm] in that precious stage of what's next?"*
A butterfly appears in the teaching room - seemingly out of nowhere – perhaps epitomising the transformation that has occurred during this special week of teaching and learning. In that moment, it seemed that the butterfly was the physical manifestation of everything we were teaching and learning. It fluttered towards the window perhaps telling us that we should stop and go outside.

Silent pilgrimage

We gathered in a circle outside to embark on a short pilgrimage to a nearby church. Only one rule from now on – silence. Could we find freedom and coherence in the silence? Is 'science' to be found within this 'silence'? Could the potential of the silence as a study of self-metamorphosis, like the butterfly, and the emergence from the chrysalis take us into the light of new meaning at the end? We would see.
We led the way through the woods, each walking in their own time, some barefoot, but all silent, each a cell in the organism of this group. We moved mindfully, listening to the wind rustling the trees. There is a freedom now coming to us within the silence, but also silent communication and intrinsic coherence. We arrived at St Mary's church. Mike circles the church three times, some students follow, others climb trees, but we eventually all enter the silence of this sacred space epitomising meaning in matter. Wholeness, health, holiness – everything is encapsulated in this place, linking to the meaning of the teaching and the vast ultimate meaning of the universe. There is silence here, but also a palpable depth to the experience. We are all silently reflecting on what has happened during this week. How we had all differentiated from 'nothing' to 'no-thing' to 'know things' along the way!
We found trust in the freedom of the parts and the coherence of the whole, and each of us had emerged transformed by the experience. A new meaning was revealed, ordering our separate individual selves into a whole illumination of our place in life.
We knew that we were the same, but we had caught a glimpse of a unity where something else could be made of experience.

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Philip Franses (right) *is the senior lecturer on the MSc in Holistic Science at Schumacher College. Philip is Editor in Chief of the Holistic Science Journal and author of Time, Light and the Dice of Creation.* ***www.journeyschool.org***

Mike Wride (left) *is Adjunct Associate Professor in the School of Natural Sciences and an Academic Developer in the Centre for Academic Practice and eLearning (CAPSL) at Trinity College Dublin (TCD), Ireland. He has a PhD (1996) in Developmental Biology and a MEd (2015) in Higher Education Teaching & learning from TCD. Mike is also engaged in international educational development work at Patiala University Punjab, India.*

THE FORMATIVE ROLE OF ANCIENT TEXTS

RICHARD DRYDEN & HANS ARKEVELD

Imagine an ancient text, a special text, handed down from generation to generation. The origins of the text are unknown, obscured by the mists of time. The text is a source of vital information and wisdom to all those who read it and helps to shape their society - their moment by moment interactions with each other, the decisions they make, and the social institutions they create. Everyone in this society has a copy of the text and looks after it with care. Some sections of the text are detailed and prescriptive, while others may appear ambiguous or conflicting. There are duplications within the text, each time with differences, so choices have to be made with regard to which passages are read and how they should be interpreted - most individuals will not have the time or motivation to read the whole text. All those who share the text live together in meaningful collaboration, moderating their personal wants so that they can contribute to the common good. Their commitment to others is so great that they are prepared, if required, to sacrifice their lives for them; such is the power of the text. No one is allowed to change the text, not even a single letter, but individuals are allowed to add annotations to it in the light of their experience. These annotations are then passed on to their offspring with an exact copy of the text, and the annotations will influence which passages of the text the offspring access. In this way, the traditions associated with particular ways of life are passed on and reinforced through the generations. So even though everyone in this society shares the same text, there can, at the personal level, be many different outcomes. All those who have this text, and live by it, belong. All those without this text - even if they have another by which they live - do not belong, and are outsiders.

Formative texts

The foregoing passage appears to be generalising about the role of an ancient text in shaping human society. Hard-won social wisdom has been passed down to us in these texts and we interpret them and re-interpret them according to our current context and needs. However, when we wrote this passage we were actually thinking about what it might be like to be a cell and the relationship that cells might have with their DNA. If you read the passage again, substituting 'DNA' or 'genome' for the word 'text' and 'cell' for 'individual' then this becomes clearer. The 'annotations' mentioned above refer to epigenetic modifications made to the DNA and associated histones as cells differentiate. Self-sacrifice is included because some cells take their own lives to enable normal tissue functioning and normal embryonic development.

Expressed in this way, there seem to be parallels between the formative role of the genome within a cellular society and the role of an ancient text or a sacred text within a human society. This idea emerged while we were working on a book about development before birth *(Dryden and Arkeveld, 2015).* We were trying to imagine what it would be like to be a cell within a developing embryo or foetus and the social interactions that the cell would experience. Most embryology books and papers are written from the vantage point of an observer looking in from the outside, whereas we were attempting to portray the view from the inside looking out. To make it easier for the reader to take that imaginary leap we decided to represent embryonic cells as people. Our reason for this was to free ourselves from the prevailing scientific idea that the embryo is simply a molecular machine playing out a precise developmental program stored in the genome, and try to imagine instead how embryonic cells decide what to do next within their social context.

We do not believe that the prevailing gene-centric and mechanistic view of the embryo is adequate as an explanation of development. The short-coming becomes particularly evident when considering the behaviour of embryonic cells that are coping with developmental errors - they appear to react in adaptive ways. This suggests to us that prenatal development can be better understood as an unfolding social strategy rather than the running of a predetermined program. Furthermore, it is our belief that prenatal development makes more sense if we envisage that the individual cells have some sort of 'inner life' and make decisions and choices moment-by-moment, influenced by their personal histories up to that time and their on-going interactions with surrounding cells in addition to direct genetic input.

Adaptable cells

To give just one example, in the early embryo there is a thickened layer of cells called the neural plate which will go on to form the brain and most of the spinal cord. The neural plate is initially quite flat, and then it begins to buckle, forming a groove along the midline of the embryo. The groove deepens, and the ridge on each side of the groove rises up. These two neural folds approach each other, and eventually the cells forming the tips of the folds - the neural crest cells - come together and close the roof of what is now the neural tube. This process of closure begins near the middle of the neural plate and then extends forwards and backwards from this region. As closure is attained, some of the neural crest cells disengage from the tube and migrate away into the embryo where they will take on a wide variety of new tasks. However, sometimes this process of closure of the neural tube goes wrong, and the neural folds fail to meet in some portion of the developing tube *(Figure 1).* In the affected region, the neural crest cells may respond by dividing to form tumour-like masses that in some cases become large enough to bridge the gap and achieve closure by this different process, albeit in what looks like a rather disorganised way.

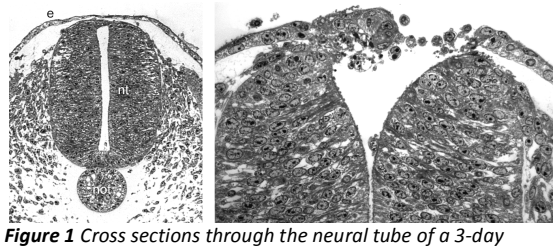

Figure 1 *Cross sections through the neural tube of a 3-day chick embryo in which most of the neural tube has formed normally but in which there is localised non-closure in the mid-somite region.*
left: In this section, the neural tube (nt) is closed and the ectoderm (e) forms a continuous epithelium across the top. The notochord (not) is a rod-like aggregation of cells below the neural tube.
right: section through a more caudal region of the same embryo where the neural folds have not met correctly. Cells mainly from the crest of the neural fold on the left are forming a disorganised mass that is partially closing the deficit in the roof of the neural tube.

The neural crest cells have behaved in quite a different way from usual, and appear to be making the best of an unusual situation. If we accept the premise that development is controlled by a strict genetic program, then we would have to explain an adaptive response like this by proposing that there is a subroutine present in the genome that is there just in case this part of development goes wrong. This would place a significant additional burden on the genome as a repository of developmental information because many things can go wrong during development and embryonic cells show a wide range of adaptive behaviours.

On the other hand, if we go along with the suggestion that is being made here that a key role of DNA is to provide embryonic cells with relevant social skills in addition to prescriptive information, then adaptive behaviours become easier to interpret. We are familiar with the human capacity to react in extraordinary circumstances such as an accident or an emergency - the exact response is not preformulated and predetermined, but can arise from a set of social skills that is robust enough to result in a useful outcome.

Of course, a vague set of social guidelines provided at the outset of development would not be able to achieve the incredible fidelity of

the process of biological development in which offspring not only conform to species specifications but also show family resemblances at a very fine level of detail. However, we are suggesting that we move away from the narrow current conception of molecular mechanisms set up and controlled by genes towards a more realistic account in which individual cells have a greater role in deciding what they do next on the basis of their total experience. Therefore we envisage the embryonic cells living together within networks of social interaction and forming communities which became increasingly adapted and specialised for particular roles. The genome would still have a central role but it would be as much a socially-enabling one as a prescriptive one.

Much of the information in the genome is of ancient canonical origin. For example, long ago in evolutionary time, free-living microorganisms combined symbiotically to form eukaryotic cells and shared their genetic stores *(see for example Margulis and Sagan, 1995).* The information is carefully preserved and copied and passed on from generation to generation of organisms, with a degree of meiotic reshuffling occurring during gamete preparation and the combination of genetic material from different individuals during sexual reproduction. Mutations, copying errors, viral insertions, and natural selection have all changed and channelled the information in genomes over time, but we can still identify a remarkable underlying stability. Some of our own genes can be traced back to those present in the earliest forms of life on this planet. Within each organism, the genome established at the time of fertilisation is carefully copied and passed on to new generations of cells. Different annotations may be added to the DNA by each cell lineage as they differentiate, but all the cells that share the same genome live together cooperatively. These features of DNA - ancient origin, careful maintenance, faithful copying, and unification of the group who shares it - reminded us of the role of certain ancient texts, particularly sacred texts, in the human context.

Ancient and sacred texts

For a society to work, the individuals need to be able to recognise and accept the other members and be prepared to conform to society's expectations and rules. A complex society cannot be fully understood by any single member, so there have to be mechanisms in place to sustain coherence between all the specialised activities taking place. One way of ensuring this, and maintaining continuity through the generations, is to have a written record of what works to provide a thread of stability and continuity that can be played out against the ever-changing environment. This is achieved in living organisms by way of stores of genetic information, and in human societies by way of ancient texts and laws and statutes.

In the human context, ancient texts contain creation stories, mythologies, anecdotes, rules by which to live, history, proverbs, and love poems - in short, they bring together cultural wisdom gained over many previous generations. Often we cannot be sure how the texts first came into being, but some appear to be distillations of earlier oral traditions. Some texts are believed by some to have a divine origin, in which case they believe that the wisdom is revealed or inspired by a supernatural deity. These sacred texts provide the foundations for the world's religions *(for an excellent overview see Smith, 2009)*.Sacred texts can be copied, interpreted, translated, and annotated, but not otherwise changed, rather like the information in DNA. A religion shared by most members of a society can have a significant role in shaping that society, and will influence moral, ethical, legal, economic, political, artistic, philosophical, and educational systems. Belief in an overseeing and judgemental god adds authority to any commands the text might contain about behaving in more socially acceptable ways, with the natural human drives for pleasure and success being played down and replaced with a sense of duty towards one's group. This sense of commitment may even extend to self-sacrifice. In return, a shared religion gives a sense of belonging and cooperation and

security. However, others who do not share the same beliefs are seen as outsiders.
Just as members of a religion have a sense of belonging, a shared genome can give the cells of an organism a sense of self and non-self. Each organism invests heavily in maintaining this distinction, with specialised cells forming an immune system on the lookout for cells or other materials that do not belong.
To have a lasting worth and influence, an ancient or sacred text needs to be relevant to a very wide range of contemporary human situations. It may offer a vision of our place in the greater whole and answers to universal but rationally unanswerable questions such as why we are here and what happens to us after death. It does not need to be a utopian plan for a perfect society but benefits from the inclusion of effective social rules for living together. Although each text has a different origin and differences in content, there are some elements that are widely shared. The so-called 'golden rule' for living in a society that can be paraphrased as "do unto others as you would have them do unto you" occurs in many ancient texts.

The reader

An ancient text or sacred text needs competent human readers if it is to have any social consequences. Each reader must have an inner life sufficient to search for meaning in the text and then make choices on the basis of that meaning and carry out actions. This requires a belief system that ties together memories of previous events, on-going interactions with others, and imagined futures in a meaningful narrative.
There are different ways of reading a text. For example, it can be read literally by interpreting the words at face value. Alternatively, the reader may look for symbolic meanings hidden within the text. Sometimes, a mystical interpretation may be sought, particularly within sections that are ambiguous or conflicting. There can be no definitive interpretation of an ancient or sacred text because it is interpreted through the cultural filters of the time, and for each generation these are likely to be different from those existing in the time and place of the text's origin. A capable text is re-vitalised by this process of re-interpretation and can continue to be a source of wisdom and innovation through the generations. Many readers will not have time to read the text in full, and will sample those parts that are most relevant to them at a given time, perhaps guided by others who have a deeper knowledge of it.
With regard to cells, we do not know whether they also have some sort of inner life, appropriate to cells, but our observations of embryos suggests that they might. Also, we do not know whether the genome can be interpreted in anything other than a literal way by the cell. At the very least, each cell as a whole has to be a competent reader of its genome. In the same way that we have no objective test for consciousness in other people or life-forms, we cannot be sure whether or not a cell has some level of consciousness. However, rather than dismissing the possibility because there is a lack of direct evidence, it seems to us better to assume some level of cellular consciousness until evidence to the contrary is obtained. We know from research that embryonic cells have a sense of their position within the whole embryo *(see for example Kerszberg and Wolpert, 2007)*, and their behaviour also strongly suggests to us that they are capable of decision-making, and are not simply following a deterministic program provided by the genome. We are not suggesting that cells are conscious in the way we are, or that they have a belief system like ours or a belief in the supernatural, rather that they have at least some experience of being part of a social network, a sense of place and belonging, and the ability to model and decide what to do next according to circumstances and genetic guidance.

Cellular societies and human societies

We are familiar with living in communities and nations, and we have direct experience of having to balance our personal wishes and ambitions against society's expectations of us. We experience change within our community

over time as new structures and institutions emerge in response to social needs and innovation, all without the need for a master plan at the beginning. Change can be driven by imaginative problem-solving in the absence of preceding solutions. As we grow and develop after birth, our belief system takes the form of a working hypothesis about the world and our place within it. We search for patterns and meaning in the deluge of information we receive, and look for cause and effect relationships. These conjectures are then put to the test by future events, and if the consequences of our actions turn out to be different from what we expected then we have to re-examine our beliefs and perhaps change them. Our ability to model possibilities on the basis of memory and incoming information means that our actions can be innovative. We propose that this experience of living in a complex, changing society can give us a useful insight into how cells live together and build embryos.

Figure 2 *Embryonic cells imagined as people - here they are working together during morphogenesis of the neural tube.*

Detail from a drawing by Hans Arkeveld (Dryden and Arkeveld, 2015).

So the suggestion is being made here that there are parallels between the role of DNA in developing organisms and the role of ancient and sacred texts in human societies. We envisage that each provides a strategy that guides individuals, either cells or people, and enables them to live together cooperatively and create complex societies. Genomes and texts are agents of formative change. At this stage, the hypothesis is not a scientific one and has not been put to the test, but it may help us in two ways. Firstly, it may move us away from an overly-simplistic view of embryos as molecular entities blindly following a detailed and deterministic genetic program, and secondly it may allow us to see that ancient and sacred texts, and the religions based on them, have not simply "come out of nowhere" as a uniquely human creation. Genomes and sacred texts are repositories of ancient and practical knowledge that can accelerate social development, each time being interpreted anew within their changed settings. This is an effective way of enabling societies to form and develop.

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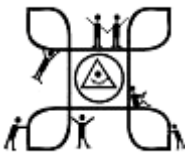
Richard Dryden *(left) has retired from teaching medical, dental, nursing and midwifery students in several countries. His research has centred on development before birth and birth defects. Other interests include consciousness and sail design.*

Hans Arkeveld *(right) was born in Holland and moved to Australia with his family as a child. His sculptures and drawings have earned him recognition in Australia and internationally. He was awarded the Chancellor's Medal in 2000 for his contributions to the University of Western Australia.*

MICRO CULTURE AND PROCESSES IN EDUCATION

SEETHA ANANTHASIVAN

"Culture hides more than it reveals, and strangely enough what it hides, it hides most effectively from its own participants." Edward T. Hall



In this article I will share our experiences at Prakriya Green Wisdom School at Bangalore, India, where for the last seventeen years my colleagues and I have co-evolved (and continue to co-evolve) curriculum and processes for what we believe is holistic education. The belief that what affects us unconsciously is at least as important as what is learnt consciously for education to be holistic, has led us to focus also on building a micro-culture that coheres with our vision.

To start with, the name, 'Prakriya' means process in Sanskrit; Prakriya also means prakruti + kriya, (Nature + action) which can be interpreted as acting according to Nature's wisdom. The name also articulates our basic conviction that working with processes is much more important than working with content in a school setting (or elsewhere). Prakriya could also mean unfolding – a word that we believed was more apt for the school than development.
Today Prakriya is a small school by Indian standards, with 550 students and more than 80 facilitators and coordinators. We work largely in four different and fairly independent sections, in order to work in a community size that allows us to work with more flexibility and ease.

Owning up Roots, Looking at the Future
The legacy of Macaulay and of British rule in general, has made India a blind consumer of western ideas and frameworks. Hence we have to contend with the realities of an English speaking urban population who often have mixed feelings about Indian knowledge systems. The compulsions of modern development is what drives the education system and they have led to the non-negotiability of educational aspirations of people when it comes to the exam system and degrees.
However at Prakriya we have persisted with our belief in the immense value of many aspects of Indian culture, transformed essential concepts and ideas by synthesizing them with current day needs and now many of our practices have become acceptable to the parents of our students.

School text books today focus much more on the past, than the present or the future. We believe that a greater focus needs to be given to children learning about the future, with what will become ecological imperatives in their lifetime – from conserving water to connecting to the land, from reviewing food habits and consumerism to understanding climate change and the consequences of runaway corporate power.

Education Today
When thinking of education, we generally shut out of our minds the culture in which we are embedded; and we shut out our connections with Nature even more. We seem to be largely preoccupied with curriculum and pedagogy, and the macro-culture is accepted unconsciously in whatever way it enters the school space. Similarly micro-culture, if it is noticed, may be what 'happens' and nothing more. If we focus on school level education, we are mostly stuck with only these as basic questions - what should children learn and how do we teach them?
There is a huge body of work on pedagogy – but most of it seems to be based on a Newtonian view of the world. We study and 'teach' various parts of pre-digested knowledge and certain skills and we expect that these will somehow be put together by the student to make sense of the world or to

plan their future life. A holistic pedagogy, at least in India, is often interpreted as using a variety of methods of learning – using games, theatre, the Montessori and other methods. Pedagogy usually focuses almost exclusively on the methods used by the teacher. For us it is like teaching tricks to the fish without bothering about the water it swims in. Basically, it appears that in our modern civilization, we seem to collectively disregard our context, not only in education but in all human endeavours at a societal and global level. Many of the crises facing the world, including climate change, seem to have been created by a habitual disregard of contexts – both of nature and of culture.

Most of the work on culture and pedagogy seems to have been done to understand how to use certain pedagogies across cultures. Paulo Friere's '*Pedagogy of the Oppressed'* and ideas of critical pedagogy are the works that stand out. There is hardly any work on the need to build the micro culture of the educational space. Perhaps it is because, as Edward Hall says, we are simply not conscious about the power of the culture that we live in.

A significant aspect of holistic education is that it needs to be aligned to its bio-region and culture. So I present this story of Prakriya not as a model but merely as our journey of exploration in education; I must say that many aspects of process based learning that we have worked with, have been practiced by many others as well – I include them here to attempt to present the whole picture about our journey.

The Unfolding Processes

The processes which helped in the unfolding of the culture, the work and learning in the school have included a mix of trusting our intuitions, deep sharing between the core anchor people, expanding the group of anchors, inclusive processes with children, parents and other members of the school, engaging in research and connecting with nature through our organic garden, nature walks and trips to wilderness areas. We deliberately did not have a very clear 'road map' but we gradually defined our direction and learning processes as we went along. This was part of our belief in organic unfolding and learning. Conventional ideas of curriculum and pedagogy did come in but we often transformed them to what made sense to us.

Critiques of the prevailing education system threw up a few streams to work on – de-Macaulisation, and owning up Indian roots; engaging in conscious micro-culture building and not focusing on pedagogy alone; addressing the split between theory and practice, teacher and taught etc., through a more holistic approach. Two national conferences – on Holistic Education (1997) and Indian Knowledge Systems in Education (1998) helped to link up and learn from many others in India.

We began the school with about ten children, 6 to 9 years of age and five of us facilitators, who were supported by a group of very brave parents. We tried to live and act from a belief in focusing on our relationships to our selves, others, Nature and the man-made world. As we went along we articulated concepts and ideas meaningful to our journey – some which seemed intuitively obvious, some which were part of our ancient heritage and some of which were frameworks by other educational thinkers. Our struggle was to share our journey with others who joined us. As we explored, our community gradually grew.

By the end of the first year, it seemed that we needed to articulate better to ourselves what our guiding principle would be. The theme that was intuitively right was "Aham Brahmasmi", and we put it down in the second year's brochure of the school…

Aham Brahmasmi – The Guiding Principle

What is the direction in which Prakriya wishes to unfold?

We would like to hold "Aham Brahmasmi", one of the 'mahavakyas' or great sayings of the Vedas as a guiding principle for our journey. It means-the microcosm is as the macrocosm.

But Aham Brahmasmi also opened up a world of meanings for us:

Of spiritual search and the immense potential in every being
Of the interconnectedness in life and ecological wisdom
Of the plurality and multiplicity of life and a deep respect for all creation
Of the eternal process of evolution – ever synthesizing the new from the old.
Of a way of life that is holistic and gives significance to the whole and every part that makes the whole.

Intuition plays a big part in the unfolding of the school space. Most parents found it difficult to have faith in our ways which were not 'tried and tested' like those of other schools. Those parents who liked what we talked about intuitively seemed to join in.

Many of the processes used in the school were again accepted intuitively by many of the facilitators. Perhaps the fact that all of them were women in the early years made our path workable - although many issues were threshed out and fought over, when practicality and rationality ruled. The visioning workshops we had were mostly about processes, our beliefs and living them out and never about where we wanted to reach.

In 2012, persuaded by Satish Kumar, I attended a course at Schumacher College where I participated in Philip Franses' classes on Complexity. I was fascinated with what I heard and read about holistic science – because there were so many parallels and similarities in the underpinnings of our work back home. Later Philip visited us at Bhoomi College, a sister institution of Prakriya, which offers courses on holistic education and sustainable living. He echoed this thought - that we had taken an experiential route to live out our holistic enquiry, explore a 'holistic pedagogy'. The whole and the parts find their identity by being left in a free space of association. His statement has only strengthened our belief in a holistic pedagogy.

How we work with the part and the whole
Some of the ways in which we work with the part and the whole are outlined below:

Intensive self exploration as well as ongoing conversations are a part of our practice to invite and support personal unfolding and growth of all facilitators. Within these programmes, the sharing and exploration of feelings is essential. We did not talk of 'oneness' as an intellectual idea much, but experientially the connecting through feelings and personal stories invariably creates a sense of oneness. We don't attempt to idealise it or hold on to it, but it does form a backdrop to our working together and our creative expressions. We also find that these processes make it easier for people to collaborate closely with each other.

Building Institutions of Wellbeing
By this we mean building institutions of wellbeing 'in our minds', which to us is another pillar of creating a holistic learning space. Some of these are institutions of togetherness and rejoicing, which are common in many if not all human organisations. A sense of togetherness is fostered through our retreats for self-exploration and our festivals; but most significantly through avoiding a strict bifurcation of the personal and the professional in conversations across the school. *Simultaneity* rather than '*Either-or'* has become a template we use to avoid the many polar opposites modern life has imposed on us.

What we normally do not find in modern schools and organisations are *institutions of catharsis* – ways in which we view and respond to conflicts and emotional intensities within and between individuals in the space. Rather than labelling them as problems, we look at events that sometimes happen that can shock or trouble the community as 'emerging reality' that we need to embrace, address with as much wholesomeness as we can muster and learn from. Sometimes if we feel that there is something simmering beneath the surface we deliberately hold meetings to bring the catharsis to the surface.

We also work on institutions of regeneration through our retreats and 'Institutional meets' which become spaces of reviewing and renewal; we also do this through encouraging and taking up fresh ideas for implementation.

Some of the processes and frameworks we use both for the personal growth workshops as well as for culture building were derived from the work of Prof. Pulin Garg, who was an amazing holistic thinker. He was a professor of Organizational Behaviour at Indian Institute of Management, Ahmedabad, India from 1973 to 1992. Innumerable students took his extremely non-traditional courses and found them inspirational and transformative; many developed the "identity-based process work" further, which was co-evolved under that banner of Indian Society for Individual and Social Change (ISISD) that Pulin Garg founded. We added more frameworks and practices of learning from Nature during the years before and after Prakriya was started.

Connecting with Nature

We hoped to make connecting with Nature a way of life – through planting trees, organic gardening, nature walks, visiting wilderness areas and making voluntary simplicity a way of life. Mind-mapping, the Multiple intelligences approach, engaging in crafts that need the use of both hands and learning from mythological stories address the inner nature of the child. However we felt the need to integrate the ability to connect with and follow principles of nature through what is learnt formally in classes as well.

In many Indian knowledge traditions such as Yoga, Ayurveda, Tantra, Sankhya and Buddhist philosophy, the constituents of the universe, both material and non-material are supposed to be five elements – Ether, Air, Fire, Water and Earth. These can be interpreted in simple ways that little children can understand, but they also have deeper layers of meaning. It made sense for us to design the curriculum for the primary school children based on these five elements. The Earth was obviously made of these elements and our bodies too were made of them.

The Earth in Sanskrit is 'Prithvi', a composite of the landscape, the flora and fauna. For us the psychological counterpart of Prithvi was diversity and interdependence, a fundamental principle of Nature. Similarly Air stood for interconnectedness, Water for flow of energy and resources, self-regulation and cyclicity, Fire for energy and Aakash (Ether) for infiniteness.

The principles of Nature are not learnt in a merely theoretical way. Many activities are connected with these elements and we have trees symbolizing these elements too. Much of the content learning is arranged in themes of these elements, in music, art and physical activity, giving a strong sense of integration for children; these themes also lend themselves to improvisation of the curriculum and pedagogy by the facilitators. Facilitators are active co-creators of the teaching-learning process, which too we consider as essential for holistic education.

Chants (or *Shlokas*) intoned in a rhythmic way evoke a sense of wholeness – and to this day this practice is common in India. The school *Shloka* was composed on the theme of the five elements – and is chanted on many occasions. These spell out the psychological counterparts of the elements which turned out to be principles of Nature in ways that everyone could understand. An example of the first verse is given below:

Aham Brahmasmi - The Prakriya Shloka (Chant) – the first verse on Aakaash

The Universe is infinite, Aakash is infinite
May I experience this infiniteness
again and again – to fill my soul,
to feel the magic of the whole and the parts.
May I experience this infiniteness of my self
to let my being unfold in its wholeness
and its parts, touching humanness in myself
and the world.

Redefining what is heroic

Joseph Campbell has explored the journey of the archetypal hero magnificently. Being heroic, ambitious, aspiring for 'more' seems to be natural for human beings, yet it is one of the strands of self-destructiveness of our civilization. In Indian culture, the greatest hero in earlier times was the rishi, the sage, or the king who *renounced worldly goals the most*! Conversely today, the high achievers in the corporate sector and those who *possess the most* are considered heroes! It did not make sense to us to celebrate high achievement in studies, games etc. and create heroes who do not question. What are they being heroic for? Such a relentless celebration of what is considered 'big achievement' brought unconsciously into schools from the macro-culture certainly needs to be reviewed, particularly the divisiveness it creates through overvaluing certain abilities and undervaluing others.

We attempt to point towards various avenues for fulfillment rather than worldly success through encouraging creative work and the very processes of learning and living; particularly through conversations during circle time and our classes on 'Ecology, reflection and communication'.

Valuing the Sacred

What is considered sacred in most cultures has been embedded in religion. Modern civilization and its focus on rationality has thrown out the baby with the bathwater. In India religion is still very much alive but in the name of secularism, schools do not think it is their business to foster a sense of the sacred in children, except in a limited ritualistic way.

In a school setting, the passion we hold for our work or subject, being in the wilderness and connecting with Nature, sacred chants, music and dance or the way we respond to others' concerns and vulnerabilities – all these may help children experience the sacred. Perhaps the only way we as educators can integrate the sacred with the school culture is to keep the need of it alive in ourselves.

I have tried to present some major aspects of our journey at Prakriya and our attempts at making education holistic in these times when there are so many fragmenting forces at work. It seems that much of our micro culture building work is about fighting for a holistic way of living and trying to work against the linear logic that is prevalent in the macro-culture. The power exerted by the macro culture consciously and unconsciously is huge. We do not know to what extent then our students who go into higher studies and work systems will find our holistic education processes meaningful.

How much can we change the system from within the system? There is always a helplessness about impacting the macro culture. All that can be said is that it is empowering for everyone in the school space to work to foster a micro culture they believe in and apart from making learning processes more meaningful, it is extremely nourishing to the being.

Seetha Ananthasivan *has a deep interest in understanding how we can build communities which are coherent with Nature's principles. She is passionate about the development of eco-psychology, holistic education as well as organic food and farming. She is the editor of the Bhoomi magazine and the founder-trustee of the Bhoomi College and Prakriya Green Wisdom School.*

www.bhoomicollege.org *&* ***www.bhoomimagazine.org***

KNOWLEDGE AND EXPERIENCE *SATISH KUMAR*

Modern education primarily promotes information and, perhaps, to a lesser extent knowledge but unfortunately there is very little room and opportunity in our schools and universities to include experience.

It is believed that a pupil or a student is an empty vessel and the responsibility of the teacher is to fill the empty vessel with as much information as possible. This is a mistaken understanding of education. The word education comes from Latin word '*educare*' which means to lead out or to bring out what is already there to unfold what is dormant, to make explicit what is already implicit.

It would be good to compare a student with a seed. A tree is already in the seed, a gardener or an orchard keeper or a forester cannot teach the seed to become a tree. The work of forester is to provide the right soil and conditions so that seed is able to self-realise and become a tree. Similarly pupils and students have a potential to be who they are but their potential is implicit. The work of a school or a college and of the teacher is to provide the right inspiration, appropriate context and good conditions for the pupils and students to discover themselves and be self-realised into mature human beings.

A seed becomes a tree, blossoms and then gives fruit to humans and to other living beings. They give oxygen to maintain life. In other words trees serve the cause of sustaining life without any desire for self-aggrandizement. Trees remain humble and particularly when full of fruit they bend low, they show flexibility. Trees provide a good example.

When we are educated we also need to serve the cause of life, enhance the earth community and sustain human relationships. Education is not for self-promotion or self-interest, education is not to get a good job so that I can buy a big house, a big car and other material possessions for my comfort. Education is not for enhancing the ego or desire for name, fame, status and position for myself.

Education is a journey of self-discovery and self-realisation in the service of human community and earth. This is an ideal view of education.

Trees grow, blossom and flourish by going through the experience of seasons, heat and cold, rain and drought, no tree has ever escaped the experience of a warm summer and a cold winter. Only by going through such experience can trees become strong and resilient. If a tree was kept in the comfort of a greenhouse and prevented from the ups and downs of climatic conditions they will not be so resilient and enduring. In any case how many trees can be kept is greenhouses? They have to be out in fields and forests to fend for themselves even without a forester or gardener. The wilderness in which trees survive is the source of their strength.

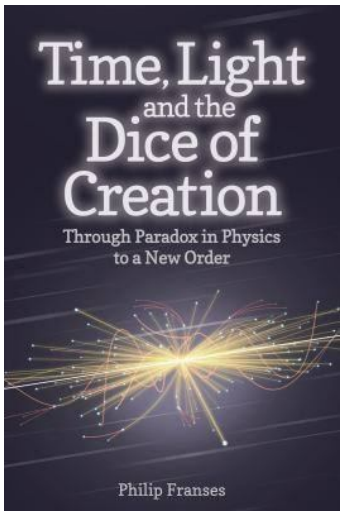
In the modern systems of organised and institutionalised education we have lost that sense of the wild. People who grew up in indigenous cultures knew the art of living using their hands and legs as well as their minds and hearts. They knew how to connect, how to relate, how to appreciate and how to endure. They were self-reliant whereas modern education creates humans who lack the skills and confidence to be resilient and self-reliant and serve selflessly. Modern education creates job seekers and employees and the jobs they do are mostly minding the machines or shifting the papers. Even the farmers hardly touch the soil, plant the seeds, harvest the crops or milk the cows. They mostly sit on huge tractors or combined harvesters driving the machines.

Most of the manufacturing has gone the same way, rather than humans being the masters of the machine, machines have become the masters of humans. Machines have replaced human hands and in the robotic age we are facing the prospect of robots replacing humans altogether. So the modern education is not only responsible for de-skilling but also for de-humanising us.

In order to evolve from information to knowledge and then in to true education we need to introduce the idea of learning by doing. We need to use our head, heart and hands to gain knowledge as well as undergo life changing experiences.

It is time to wake up and rediscover the meaning of education again and transform it into a pilgrimage of self-discovery. That can happen only when we are prepared to embrace uncertainties, ambiguities, difficulties and hardships. We are prepared to face the problems rather than run away from them. Only when we have problems we can use our imagination to solve them. In the comfort of classroom we can obtain information, in the luxury of libraries we can gain knowledge but experience can be gained only when we are out in the storm of life and in the rough terrain of nature.

Satish Kumar *has been the Editor of Resurgence& Ecologist magazine since 1973. His autobiography* ***No Destination*** *is published by Green Books.* **www.resurgence.org**



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Puppets Educate, Agitate, Animate!! *Unlicensed, illegal and thus unhindered by the censor they have always been a live news service for the people, satirizing local events, taking pot shots at the government and spreading the retail gossip of the day.. The unnamed puppeteer, hidden behind the mask of the puppet, giving voice to the people has existed as the voice of society for millennia.*

Puppetry takes many forms*, but they all share the process of animating inanimate performing objects to tell a story. They are immediate and authentic. Hewn from scraps of cloth, paper and duct tape, they are the quintessential tricksters--court jesters without the court, able to cross boundaries of both opinion and propriety, enabling us to critique society and government with handmade beauty and wit.*

Puppetry was first recorded *in the western world in 5th century BC in Ancient Greece. Some forms of puppetry may have originated as long ago as 3000 BC in Asia. Various scholars trace the origin of puppets to India 4000 years ago, where the main character in Sanskrit plays was known as "Sutradhara", "the holder of strings". China has a history of puppetry dating back 2000 years, originally in "pi-ying xi", the "theatre of the lantern shadows".*

Puppet *plays are a mixture of narration and dialogue, and, though the performer's voice will certainly vary for the different characters, the whole inevitably acquires a certain unity that is one of the most precious attributes of the puppet theatre.*

(A finely cut Wayang Kulit puppet from Java, Indonesia. It's made from buffalo skin and with rods made from cow horns)

UNESCO designated Wayang Kulit, a shadow puppet theatre and the best known of the Indonesian wayang, as a Masterpiece of Oral and Intangible Heritage of Humanity on 7th November 2003.