



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 an 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.

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