Holistic Science Journal

Vol 1 Issue 3 July 2011 £5 ISSN No ISSN 2044-4370

KNOWING

Iain McGilchrist Emilios Bouratinos Jessica Kerr Daisy Allen Henri Bortoft

This Ouroboros drawing is from the early alchemical text The Chrysopoeia of Cleopatra dating to 2nd century Alexandria in Egypt encloses the words hen to pan, "one is the all". Its black and white halves represent the Gnostic duality of existence. The image is sometimes referred to as the Greco-Egyptian ouroboros or the Alexandrian ouroboros. (Egypt fell under Greek cultural influence after invasion by Alexander the Great). The use of the name "Cleopatra" here does not refer to the famous female pharaoh of the same name.

"The alchemists, who in their own way knew more about the nature of the individuation process than we moderns do, expressed this paradox through the symbol of the Ouroboros, the snake that eats its own tail. The Ouroboros has been said to have a meaning of infinity or wholeness. In the age-old image of the Ouroboros lies the thought of devouring oneself and turning oneself into a circulatory process, for it was clear to the more astute alchemists that the prima materia of the art was man himself. The Ouroboros is a dramatic symbol for the integration and assimilation of the opposite, i.e. of the shadow. This 'feed-back' process is at the same time a symbol of immortality, since it is said of the Ouroboros that he slays himself and brings himself to life, fertilizes himself and gives birth to himself. He symbolizes the One, who proceeds from the clash of opposites, and he therefore constitutes the secret of the prima materia which [...] unquestionably stems from man's unconscious."
Carl Jung, Collected Works, Vol. 14 para 513

"A basic difference between the magicians and the new mathematical men was that whereas the magician sought to internalise the world, to draw it into himself, the mechanist sought to externalise the world, to separate it completely from his own psyche. Yates has proposed that 'when mechanics and mathematics took over from animism and magic, it was this internalisation, this intimate connection of the [mind] with the world, which had to be avoided at all costs.' In opposition to the old magical way of knowing, the new mathematical science was to lead, not to an emotional, subjective engagement with the world but to a detached and supposedly objective understanding."
Margaret Wertheim Pythagoras Trousers, 1997

In learning about holistic science, one of the greatest lessons has been about paradox. Unable to cram into our finite beings the hugeness of each moment, we are granted two extreme views of the world, at the periphery of sense-making. On the one side, a rational thinking machine processes its own reality; on the other side, the wholeness of being is made present to our broad attention.

This paradox in knowing is evident across the world today – we see the beauty of the earth but systematically steer for its destruction. The knowledge 'I think therefore I am' has predicated existence to appear after the mind has asserted its own authority. We pilot a machine insensitive to our own good in the flying.

It is to the heart of this deepest mystery into which this issue steps to reveal the trick of the mind we think we have. Emilios Bouratinos challenges science to move from the question 'what do we know?' to 'how do we know?' Henri Bortoft in detail charts Goethe's method to integrate and go beyond these two ways of knowing into the unity of the phenomena. Iain McGilchrist navigates, in his expertise of both medicine and literature, between the evidence and experience of the two ways of knowing.

The lesson is obvious, that when science dissects consciousness with the lens of the analytical attention, it is ignoring both an internal and external aspect of our living relation to whole nature. It is imperative that we open up to the consequence of this.

While we debate the degrees of warming that will cause catastrophe to the earth, our analytical attention having fulfilled its working remit, then goes on to other things; we thereby lose touch with that broad attention that would prioritise something of life-threatening urgency. The understanding about every corner of specialised knowledge is completely useless when we have forgotten all about the knowledge of 'who are we to know?' Our knowledge of where we think we are, hides the choice that relates our being in the feel of a journey we are on.

The issue delves into an exploration of time; Newton's absolute concept of a time standing eternal outside the influence of change, was challenged by Einstein's theory of relativity, where time is a dynamic parameter of the action it measures. Time returned to its whole source becomes a quality of living, rather than a fragmented commodity which can be parcelled out.

The thread of knowing follows into the question of biological formation. We explore how hermeneutics, the interpretation of texts and biosemiotics, the study of signs, enter into the living dialogue of significant parts into an overall meaning.

We arrive at creative unity, about which Tagore wrote ***(From 'East and West' in Creative Unity, published by Macmillan, 1922):***

'Truth has its nest as well as its sky. That nest is definite in structure, accurate in law of construction; and though it has changed and rebuilt over and over again, the need of it is never ending *[the analytical mind]*. For some centuries the East has neglected the nest- building of truth. She has not been attentive to learn its secret. Trying to cross the trackless infinite, the East has relied solely upon her wings *[the intuitive journey]* . Shall the messenger of the sky and the builder of nests ever meet?'

Philip Franses

Credits:

Cover, page 24 and inside back cover:
Hans Arkveldt , Australia.

Ouroboros
Time, life continuity, completion, the repetition of history, the self-sufficiency of nature, and the rebirth of the earth can all be seen and known within the circular boundaries of the Ouroboros. The image has been seen in ancient Egypt, Japan, India, utilized in Greek alchemic texts, European woodcuts, Native American Indian tribes, and even by the Aztecs, the African and the Chinese from pre-historic times. It has, at times, been directly associated to such varying symbols as the Roman god Janus, the Chinese Ying Yang, and the Biblical serpent of the garden of Eden.

Page 3 Egyptian 21st dynasty, 11th century BCE
Page 5 Native American – from web – source unknown
Page 6 Andrea Alciato's Emblematum liber or Book of Emblems in Latin in 1531,Italy
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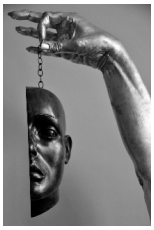
Inside back cover: African Yoruba divination bowl, 6th century
Back cover Lucas Jennis' engraving published on an alchemical emblem-book entitled De Lapide *Philisophico ,1625*

Val Charlton's poem and sculpture featured on page 46



' I made a sculpture some years ago which started when I saw it complete in a waking vision. I then had to make it to understand the metaphor. At the time, around 1996/7, I knew little about the left and right hemispheres of the brain but I have experienced many layers of understanding as I've pondered on this image.
The arm is one and a half times life size and was modelled in clay from my own arm, then moulded and cast in polyester resin and covered in gold leaf. It is the right arm - left hemisphere, sprouting from the earth- matter; the head sliced down the centre from front to back is the left side of the head - right hemisphere?'

Holistic Science Journal (ISSN: 2044-4370) published quarterly *by Earthlinks UK,* registered charity (No 1133056)

Editors: *Philip Franses, Stephan Harding, Voirrey Watterson, Minni Jain*
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Contributions are welcomed and should be typed clearly or sent by email to ***journal@earthlinksall.com***
Email: **journal@earthlinksall.com** **Website**: www.**earthlinksall.com/journal**
Printer: Kingfisher Print, Totnes Devon
Printed on Evolution paper (75% recycled fibre/ 25% FSC certified virgin pulp), using soya-based inks

Vol 1 Issue 3 July 2011 *Holistic Science Journal*

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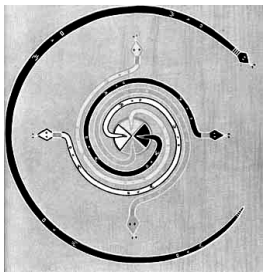


From current MSc in Holistic Science students at Schumacher College

Posts from the field

Perspective from the East

CONTEXTUAL WHOLENESS

Emilios Bouratinos

One of the hot subjects currently debated among scientists and philosophers is that of the limitations of science. Is there something lacking in the scientific method, as currently practiced? Could the type of reasoning used when applying this method need to be adapted to new findings? Should the fundamental premises underlying the scientific method and supporting the reasoning be examined from a deeper level of abstraction? Is there something wrong with the very way nature is objectified in order to be observed and studied?

By using the currently accepted approach to science we are in a position to measure and fathom some of nature's features, like solid states, radiation, or complex systems. The fact that other features (energy, dark matter, gravity, retroactive causality or the nature of health) have still not been made sense of, is attributed by many to the fact that science has not yet advanced sufficiently to find ways for doing so. The proponents of this position believe that to secure progress in the above area, all they really need is to extend the present research methods, improve the measuring devices, perfect their computational skills and refine their reasoning power.

The possibility that there may be features in nature, for which the familiar criteria of acquiring scientific knowledge are inadequate, doesn't enter the thinking of these proponents. Their position forces us to raise the question of criteria. Scientists will have to deal with this problem eventually, as the old criteria increasingly fail to explain the new findings. Some of these findings are quantum entanglement (in both the subatomic world and living organisms,) the incredible plasticity of living matter, man-machine interactions, strange attractors and those other recent scientific breakthroughs mentioned above.

Immanuel Kant expresses in his *Critique of Pure Reason* the opinion that reason requires a critique from within its domain. If he is right, we are justified to also invite a critique of that critique. For example, we today analyse our understanding in terms of unconscious forces, memories and conceptual projections. Should we not attempt to do the same for our scientific understanding? For example, should we not look into what Carl Jung calls the 'rationalist neuroses' and 'rationalist superstitions of our age?'

There is only one point we must watch in going down such a path. The critique of a critique of reason must be formulated from a level of abstraction deeper than that conceived by Kant. To understand something well enough to pass judgement on it, requires an ability to *stand under* it -- to see where its roots are, where the observer's roots are and how objectively the latter is able to apprehend them.

Richard Tarnas made this the cornerstone of his *The Passion of the Western Mind* when he wrote*:* "[O]nly by recalling the deeper sources of our world and worldview can we hope to gain the self-understanding necessary for dealing with our current dilemmas."[1, p xiii]

Seeing beyond objects through objects

Ultimately, reason cannot sit in judgement of reason. Reason can be judged only by a mindset that has become aware of what informs the objectifications on the strength of which reason has come into being in the first place. The careful weighing of how these objectifications have been arrived at is what gives reason its particular character and direction. Equally it points to its limitations.

Another conclusion emerges as well. That which invites us to develop a structured view of things matters more than that which the view itself reveals; that which allows us to form a judgment matters more than that which the judgment refers to. Through their dynamic interplay, the aspects of the science-consciousness interaction establish a kind of feedback loop. What we know and think influences what we perceive and conceive; how we perceive and conceive influences how we know and think. What we have here is dynamic process. It is not a tidy structure or a determining principle.

Consciousness thus can be used to influence science as much as science can be used to influence consciousness. A model proving useful here may be that of the mind-brain interaction. Firing brain cells trigger emotions, sensations and thoughts. By the same token, emotions, sensations and thoughts trigger brain cells into firing. The cause is the outcome and the outcome the cause.

Which comes first (the neuronal arousal or the thought) determines for many whether consciousness is ultimately physical or non-physical. The notion put forward here is that the dichotomy between physical and non-physical reality stems from object-mediated thinking, which restricts understanding when taken to its limits. Consciousness, like nature itself, is what it does and does what it is. Important is not which comes first – the neuronal arousal or the thought. A neuronal arousal may result from *retrocausal action*, [2] as indicated above. It may also be the outcome of some particular *non-observable initial conditions,* of the kind that chaos theory detects at the roots of any level of organization.

The mental event (thought, feeling, belief, interest, information etc.) doesn't only mobilise the neurons; it affects them physically. There is growing evidence for that. Scientists became aware of it during the 'Mind and Life' experiments conducted at Harvard on meditating Tibetan monks in 2004. These experiments show that meditational practices have a significant bearing both on how the individual thinks or acts and on the very neuronal *structures* where the thinking manifests and the action begins. [3]

Unsatisfactory understanding

Yet another conclusion emerges. We need to establish a new discipline -- *self-reflective inter-disciplinary consciousness studies*. Such studies will empower science to become more useful in investigating reality. It will also empower society to shed more light on the root-causes of some of its major problems, including suggestions on how best to handle them.

The fact that brain-wiring is now known *not* to be determined before birth, the realization that brain structure can be changed even through plain measuring, shows that self-reflective inter-disciplinary consciousness studies *can* play a decisive role in showing not merely what limitations science needs to transcend and why, but where the changes should start from and how. The new non-paradigmatic science here envisioned will need self-reflective consciousness studies to find its way -- and (thereby) point to a more satisfactory understanding of reality than is presently possible.

The unsatisfactory nature of our current understanding of reality doesn't arise from what we conceive to be its content. It arises from the unsatisfactory way our understanding has come to operate. To such an extent have we allowed our selves to conceive the world in the guise of a collection of objects, that we approach even the need for corrective action in object-mediated terms. We don't ask ourselves what has caused the limitations to begin with, or what can be done to abolish them.

Self-reflective inter-disciplinary consciousness studies represent one way of doing exactly that. However, to succeed we need to start from examining two things. First, how did it happen that for us in the West consciousness lost sight of itself? In Asia, through meditation and in pre-classical Greece, through introspection, we used to be able to check on our selves. We didn't allow our abstractions to run away with us.

Today the sense of just-being has been replaced with the sense of just objectifying. From experience we have moved to description of experience and from self-awareness to self-consciousness. Psychology has taken over from ontology, information from knowledge, crystallisation from focusing.

Chinese fuzziness

The second thing we need to examine is why we developed the tendency to clearly delineate the objects we perceive and then to get gradually absorbed into their outlines to the exclusion of others.

Some may claim that dealing with clearly delineated objects represents an all-human trait. It doesn't. In old China nothing was considered purely one thing or another, subject or object. Chinese logic was fuzzy par excellence. The sages didn't focus on unchanging states. They focused on changing patterns and on the regularity of their manifestation.

Neither did people believe in crystallised relationships. Synchronical occurrences and the deeper existential patterns they reveal, were what attracted the Chinese. In the Chinese worldview, creation is the outcome of a natural fluctuation. A physical unit develops this or that characteristic, or moves in this or that direction, because of the particular circumstances and pressures enveloping it. But the circumstances and pressures are not local – appearances to the contrary. *The entire universe determines what happens to each of its trillion trillion units.* And it does so by means of the local and non-local links bonding it to that one particular active unit. [4]

The crucial question is whether scientists allow the 'what' of their personal beliefs to spill over into the 'how' of nature, or, on the contrary, they invite the 'how' of nature to spill over into the 'what' of their personal beliefs. Since the Middle Ages the former has been the case. Scientists have felt that they had to be truer to what the reigning doctrine spells out than to what nature reveals. There were rebels of course – there always are. Copernicus, Galileo, Parakelsus and in our times Einstein, Goedel and Jung are telling examples. But in the end, the 'what' of human understanding prevailed over the 'how' of nature. The rebels of yesterday became the models for today.

It will hopefully become the purpose of self-reflecting inter-disciplinary consciousness studies to reverse this trend. A new qualitative science – a science of processes -- will thus emerge. Nature, not some mental construct, will become the arbiter of what can be safely considered a 'what,' for how long and to what practical purpose.

It doesn't mean that humans must revert to instinctual behaviour. It means only that humans must stop wanting to dictate what nature's phenomenal order is like. They must invite instead "the spirit of nature to bring forth its own order through the human mind when that mind is employing the full complement of [its] faculties – intellectual, volitional, emotional, sensory, imaginative, aesthetic, epiphanic," as Richard Tarnas puts it. In such conditions, Tarnas explains, "the human mind lives itself into the creative activity of nature…. and the world speaks its meaning through human consciousness." [1, p.435]

Science, objectification and consciousness

So far it was argued that to successfully meet the growing challenges facing science and society today we must abandon the object-mediated approach from which we investigate physical reality. But some thought needs to be given to how science and society may be reformed so that more of their inherent potentialities come to the surface. Can shining the torchlight of consciousness on science and society be of use in such an enterprise? If so, shouldn't this torchlight first be directed on its own self? Is it feasible for a person intent on knowledge beyond information to avoid Socrates' imperative for self-knowledge?

Becoming familiar with why we carve up the world in the way we do will be the first step in such a direction. Other steps will follow. How does consciousness sense that which cannot be objectified? How (and why) does it lock into the objectifications it concocts? How does it handle (and relate) the objectifications to one another? Most of all, to what extent does

consciousness bring wholeness, experience and memory to bear on what attracts its attention?

In spite of having dealt extensively with consciousness in its neurophysiological aspect, neither contemporary science nor epistemology, have asked such fundamental questions. They haven't even suspected that they should be asking them – that without so doing the answers they obtain by way of usual research are only partially true and often alarmingly misleading.

Having said that however, it would be a mistake to consider that the limitation of science today is that it apprehends nature in terms of object-mediated determinism. The limitation is that object-mediated determinism has become a paradigm. We lock into what we grasp and a little later we lock into how we interpret that which we have locked into. Things, ideas, feelings all become permanent fixtures. They lose their dynamic aspect. The left hemisphere of the brain, as Iain McGilchrist suggests, has taken over. [5]

Detrimental paradigms

Here a different path is followed on the question of paradigms. It applies particularly to new paradigms formulated by some in blind reaction to the old. To brand things 'right' or 'wrong' means that the world is conceived in terms of unexamined clichés – not in multilayered, trans-conceptual and interpenetrating wholeness.

The roots and effects of object-mediated thinking (not to mention the widespread implications of this thinking) will not be discussed here. Attention will be drawn instead to the following two questions: (1) What is the good of replacing fragmentation with wholeness if we objectify the conception of wholeness and thereby lock into it? (2) What is the use of replacing 'wrong' with 'right' so long as we believe that 'rightness' is decidable – that we, as thinking individuals or societies, can actually objectify the truth?

To think of an answer to these questions we must start from realising that wholeness is not the totality of things. It represents their qualitative and ontological interpenetration. This being the insight, science and society should be concerned less with being 'right' and more with being responsive to nature -- without projecting paradigmatic conceptions onto it. Nature equally uses wholeness and fragmentation, structure and process, linearity and non-linearity, consistency and spontaneity. But it never does so exclusively. There is always a little of the one in its seeming opposite.

New ways of thinking, not just new thoughts

Each time we lock into our objectifications we ignore nature's ways. We treat things as though they occur on the same level of description, or are informed by the same rationale. Differences among units of existence are ironed out. They are not viewed from the specific observational outpost appropriate to them. They are not apprehended with reference to what prompted the observer to isolate them in the first place, to compare them or to study them.

We need to be preoccupied less over *what* to conceive and more over *how* to conceive. We need to care less for the nature of physical reality and more for the quality of knowing. We need to be concerned less with what to accept as appropriate and more with what not to discard because the reigning theory considers it inappropriate. New observations (leave alone new findings) demand new ways of thinking. They don't demand just new thoughts. We cannot practise holistic science with a fragmented (and a fragmenting) mindset – one that treats wholeness as the conceptual opposite to fragmentation.

Paradigms – even seemingly desirable ones -- are detrimental because once established, they make us apprehend reality on their terms. They assign arbitrary significance to certain features, relationships and patterns at the expense of others. They edit out all the gradations, subtleties, dynamics, spontaneity and multi-levelness of physical existence. Paradigms thus undermine the ultimate *search* for what obtains beyond the perceptible. They abandon process in favour of structure.

From the minute we lock *into* an entity, state or relationship, we lock out the variability of

the whole it is a part of. We exclude the most fundamental quality of the world itself -- not to mention the way this quality influences the particular entity, state or relationship we are momentarily involved in.
Aristotle's criticism of the Pythagoreans becomes pertinent here. He writes: "All the properties of numbers and scales which they could show to agree with [their conception]…of the heavens, they collected and fitted into their scheme. And if there was a gap anywhere, they readily made additions so as to render their whole theory coherent." [6]

Not merely contemporary science, but contemporary philosophy and theory could learn from the above astute Aristotelian observation. However, scientists, philosophers and theorists would first have to become aware of how Aristotle conceives objectivity. So far this hasn't been attempted. Existing definitions are mostly circular. You define in terms of what you think you know -- and you know in terms of what you think you define.

A holistic approach to wholeness
To make people aware of this situation, we need to look more seriously at what ultimately qualifies holism -- and nature as a result of it. This entails endorsing at least three significant epistemological premises, which impinge directly on how perception is effected.

The first premise is that we can never acquire an objective overview of all the entities, states, forces and relationships in the universe. There are four reasons for this:

(I), as Werner Heisenberg points out, we ourselves are part of the whole. [7] We can therefore never truly observe all of it, leave alone abstract it.

(II), even if we did manage to get outside our skin and observe the whole universe; too much of it is around for us to be able to take it all in by way of abstraction. It would require at least as long as the universe has been around to do the job!

(III), the constituent parts of the universe interpenetrate one another in such a complex fashion across space, time, form, levels of organisation, electrical charges, structural varieties and ontological strange attractors that any attempt to fit them into one coherent objective picture would completely overwhelm us.
(IV), those who insist on concocting such a picture do so by leaving out what *they* consider as being of secondary importance. Thus they undermine whatever claim to an objective description of nature they may nurture. Being partial, all descriptions of nature suffer from this kind of limitation. Goedel's incompleteness theorems merely substantiate the fact mathematically.

Plunging into experience
Let us move to the second epistemological premise. It is that we cannot tackle wholeness with a mindset schooled in bottom-up structuring. Indeed we cannot investigate any subject through a methodology not informed by it. If we desire to really understand the whole on its terms, we need to stop seeing physical reality exclusively as a compilation of fragments.
Finally, the third epistemological premise, which must be taken into account when trying to add a qualitative to the quantitative understanding of wholeness, is that we view the whole as the organizing principle of the world in its entirety. i.e. we need to see it for what it actually achieves. We cannot film successfully an object racing along at a speed and in a trajectory which our camera has not been built for.
The same applies to the understanding of wholeness. The mindset required for apprehending it must be adequate to the task. It won't be sufficient for it just to conceive wholeness through a combination of quantitative components. Wholeness is the context, as well as the fibre, of being itself. It resides in the mind of the perceiver to the extent that it infuses the reality which the mind perceives.

Concluding thoughts
This article will finish by adapting the views of two important thinkers on the question of the limitations of science and the abstracting mind. The first is Jeremy Naydler, a specialist on ancient Egyptian religion. The second is Tew

Bunnag, a writer and teacher of meditation, tai chi and other practices from the East.

Naydler's adapted views go as follows:
While aspects of the whole may be studied both philosophically and scientifically, the normal everyday consciousness is not adequate to the task. The deeper understanding required for studying wholeness arises only when the philosopher or scientist are prepared to allow themselves to be conceptually challenged by the material they are studying. A point must then come when the philosopher or scientist are no longer studying qualitative wholeness. They are moving into qualitative wholeness themselves. [8]

Bunnag's adapted views run as follows:
Finding the answers to problems and then raising them to the level of absolute pronouncements is a practice undermining the comprehension and handling of nature. Socrates knew that very well. He realised that any attempt to define the truth of a particular subject backfires. For one thing, nature is always incomplete; that is why it keeps evolving. For another, truth (in Greek 'aletheia') is not a formula. It is a state of mind. That is why in our times, wholeness demands of us *not to take answers too seriously.* It invites us to stay more with the questions -- to listen carefully to what nature whispers in our ear, *when* and *as* it does.
If 'aletheia' is a state of mind, qualitative wholeness is a state of being. It becomes its own worst enemy if viewed as the substance of, or the path to, certain knowledge. It follows that this article will have served its purpose if the few answers it suggests are received as mere tentative probes in a certain direction -- perhaps worth pursuing in the future if enough interest is raised.
The key to understanding is to remain open to further insights. It isn't to encapsulate them in air-tight formulas. Our civilisation shows that the age of doctrine – religious, philosophical or scientific -- has finally exhausted its potential.[9]

References

1. Richard Tarnas, The Passion of the Western Mind, Ballantine Books, New York, 1991,
2. See Daniel P. Sheehan Frontiers of Time, AIP Conference Proceedings No 863, San Diego, California, July 2006
3. Antoine Lutz, Lawrence L. Greishar, Nancy B. Rawlings, Matthieu Ricard and Richard J. Davidson, 'Long-term meditators self-induce high amplitude gamma synchrony during mental practice,' PNAS, Vol. 101 No 46 (Nov. 16, 2004), pp 16369-16373. Also Sharon Begley, 'Scans of Monks' Brains Show Meditation Alters Structure, Functioning,' Science Journal, The Wall Street Journal, Nov 5, 2004. Eric Kandel 'A New Intellectual Framework for Psychiatry,' published by the American Journal of Psychiatry in 1998.
4. See Joseph Needham Science and Civilisation in China, Vol 2, Cambridge University Press, Cambridge, 1962.
5. Iain McGilchrist The Master and his Emissary: The Divided Brain and the Making of the Western World, Yale University Press, New Haven, London, 2009.
6. Aristotle, Metaphysics, A 5, 985b23.
7. Werner Heisenberg, Der Teil und das Ganze (Of Part and Whole), Munich, 1969, p 28.
8. Jeremy Naydler, Shamanic Wisdom in the Pyramid Texts: The Mystical Tradition of Ancient Egypt, Inner Traditions, 2005, pp 9-11
9. Tew Bunnag, in personal communication with the author, July 6, 2011

Emilios Bouratinos *is a philosopher of science, who was born in Athens in 1931. Disenchanted with 20th century analytical and positivistic philosophy, Bouratinos turned early on to the thoughtful writings of the great physicists of our era. He discovered that quite a few consider a better understanding of the mind indispensable for advancing further in the study of physical reality. Thus, since 1972, Bouratinos has been devoted to the study of consciousness from a footing that is equally inter-disciplinary and self-reflective. Today he advocates the creation of a new science that, starting from the great breakthroughs of 20th century physics, will accept the profound implications of these breakthroughs for the way we think about and handle the world.*

Henri Bortoft

(a longer version of this will appear in Pari Dialogues edited by David Peat, and Henri's forthcoming book Dynamics of Being)

Goethe Returns to the Senses

We like to think that the way in which science developed has a quality of necessity about it, in which case the form that science takes must be necessary and not in any way contingent. But what is necessary about the discovery in 1417 of a Latin manuscript written in first century AD, describing the Greek philosophy of atomism, which then became the basis for the radical transformation of the philosophy of nature leading to the mechanical philosophy and all its ramifications? Surely such a discovery is contingent? It is an example of how one factor can change a whole situation, but not a case of necessity. Yet looking back now, we tend to endow the way that science developed with a quality of necessity as if it could not have been otherwise. Pointing this out does not imply in any way that science somehow isn't true. Of course it's true. But it's not the only possibility, and as long as we think it is we will be unable to transform our understanding of our relationship with nature, instead of just tinkering with it at the edges.

The founders of modern science were dedicated to the mathematical approach to nature. What were called the "primary qualities" were simply those aspects of nature that appeared in the light of mathematics. Although it *is* nature that shows up in this light, this is by no means the only way that nature can appear. As we have seen, the ascendancy of the mathematical was accompanied by a downgrading of the sensory. But there is no necessity here. It is possible for the mathematical aspect of nature to be emphasized without this implying in any way that it is superior to nature as revealed through the senses, or conversely that the sensory is inferior to the mathematical. However, this is just what happened historically: sensory *experience* was relegated to second place in favour of the mathematical.

The influence of the mathematical came in the first place from the Arabs – whom the mediaeval Europeans referred to as "our Arab masters". With the Arabs it seems that mathematics was not cultivated in isolation, but always balanced with other pursuits, such as music and poetry. However, this factor seems to have been left out when mathematics was imported into northern Europe, where as a consequence the emphasis on mathematics became much more one-sided. In the 13th century, Roger Bacon said in his *Opus Maius* that the mathematics was the "door and key….. of the sciences and things of this world", and concluded: "wherefore it is evident that if, in the other sciences, we want to come to certitude without doubt and to truth without error, we must place the foundations of knowledge in mathematics". It is astonishing how this remark made over eight hundred years ago encapsulates the one-sided mathematical approach that western science has worked with ever since.

This is what Goethe reversed when he returned to the senses and put sensory *experience* first instead of the mathematical. Adopting Roger Bacon's phrase, we could say that for Goethe the senses were the "door and the key" to science. At first this seems unremarkable. After all, this is just what most of us would have assumed anyway – since most of us would probably be unaware of the formative influence of mathematics and think that science is based *directly* on the evidence of the senses (the philosophy of empiricism). But Goethe does not return to the senses in the empirical sense of relying on the evidence of the senses to gain information about a phenomenon. He was concerned with nature as it comes to presence in the *experience* of the senses. This means putting attention into the sensory experience itself, entering into the

lived experience of sensory perception, so that rather than just being 'sensory' in the empirical sense, it is better described as the 'sensuous' experience, or perception, of the phenomenon. Doing this reverses the direction of the automatic learning sequence, and shifts experience away from the verbal-intellectual mode of apprehension into the sensuous-intuitive experience of phenomena.

We tend to rely for the most part on the verbal-intellectual mode of apprehension, because this is what developed through education in modern western culture. The verbal-intellectual mind functions in terms of abstract generalities that take us away from the richness and diversity of sensory experience – this is both its strength and its weakness. It is focussed on what is the same in things, their commonality, so that even without our realising it we become immersed in uniformity and cease to notice differences. For example, if there are two leaves of a tree, as a matter of habit we will tend to see them in a general way as just 'leaves' and overlook the differences between them. This is a consequence of what psychologists call the process of automatization or habituation. The normal learning sequence goes from the sensory experience of concrete cases to the abstract generalization. Thus, in the case of the leaves, whereas to begin with we might see each leaf concretely in detail, we eventually replace this with the mental abstraction 'leaf'. When this happens our attention is transferred from the sensory experience to the abstract category, so much so that, without our being aware of it, we begin to experience the category more than we do the concrete instance. When this stage is reached what we "experience" is only an abstraction triggered by the sensory encounter, and not the concrete case itself. This stage of automatization, where we experience the category and not the actual occurrence, is demonstrated very clearly in the well-known anomalous playing card experiment.

Goethe's way of thinking goes in the opposite direction to this learning sequence – which, incidentally, is necessary for coping with our daily lives. He redirects attention into the experience of the senses, and in doing so he thereby withdraws it from the verbal-intellectual mind. There is no question here of trying to "stop" the verbal-intellectual mind that works with abstractions – any attempt to do so would have just the opposite effect. By practising active seeing, plunging into the sensory, the verbal-intellectual mind is "suspended", so that attention is brought back into the phenomenon itself, instead of being trapped in verbal-intellectual generalities. Goethe puts the phenomenon at the centre of attention and he keeps it there (it's hard work because it reverses the habitual direction of experience.) By redirecting attention into sensuous experience he plunges into the sheer phenomenality of the phenomenon. This reverses the usual direction of the process of habituation from experience to generality, and thereby promotes the process of deautomatization and hence a renewed encounter with the phenomenon itself.

But this redeployment of attention into sensuous perception by active looking – what could be called reversed seeing – is only the first stage. After this there comes the stage of what Goethe calls 'exact sensorial imagination', and which he describes as "recreating in the wake of ever-creative nature". The aim here is to visualize the phenomenon as concretely as possible – not to fantasize about it, embellishing it, but to imagine it as nearly as we can to the phenomenon we encountered through sense experience. This is an exacting discipline, trying not to add anything which is not there in the phenomenon, and at the same time not to leave anything out. Here again the phenomenon itself is made the focus of our attention. But whilst focussing on the phenomenon in this way, what we are doing effectively is to make the phenomenon more "inward". We are going into the phenomenon, as we do in active looking, but now we are going into it by bringing it into ourselves. This means that we are creating a "space" for the phenomenon by means of our attention so that we can receive it instead of trying to grasp it – so that we become participant in the phenomenon instead of an onlooker who is separate from it. If we now return to the sensory encounter with the phenomenon, we will find that our senses are enhanced and we begin to become aware of the more subtle

qualities of the phenomenon. As we follow this practise of living into the phenomenon, we find that it begins to live in us. Whereas the intellectual mind can only bring us into contact with what is finished already, the senses – enhanced by exact *sensorial* imagination – brings us into contact with what is living, so that we begin to experience the phenomenon dynamically in its coming-into-being.

This is exemplified by Goethe's way of seeing the colours that appear when we look through a prism. Since the colours only appear wherever there is a visual boundary, a simple way of doing this is to construct a straight black/white boundary and look at it through a prism – the boundary and the axis of the prism should both be horizontal for the optimal effect. Vivid colours are seen at the boundary, and which they are depends on its orientation. If black is above white the colours seen are red, orange and yellow; if white is above black the colours are pale blue, a deeper blue (sometimes called indigo), and violet. As soon as we label them we begin to think of them as separate colours. But they are not so clearly distinguished in sensuous experience, where we find they seem to merge one into the other as we move through them with our eyes. When we put attention into seeing, as if we were going into the colours through our eyes, we become aware of the sensuous quality of each colour – for example, the redness of red, that red is *red*. We do not usually experience this sensuous quality, but just register the colour as 'red' or 'blue', etc. by observation – i.e. by sense perception which gives us the information that it is 'red' but does not take us into the experience of red.

The second stage is the practice of exact sensorial imagination. Now we put aside the physical manifestation and work entirely in imagination, trying to visualize what we have seen as exactly as we can. As we move through the colours at a boundary in imagination, we begin to experience their sensuous quality as if we were within the colours – one student described this as feeling like she was swimming through the colours. We find there is a dynamic quality in the colours at each boundary. What we experience is not separate colours – red, orange, yellow, or pale blue, deeper blue, violet – but something more like "red–lightening–to–orange–lightening–to–yellow" as a dynamic whole, and similarly with the darkening of blue to violet. There is a sense that the colours are different dynamic conditions of "one" colour. This dynamic quality gives us an intuition of the wholeness of the colours at each boundary. This is not given directly to sense perception, but appears when sensuous perception sublimes into intuition through the work of exact sensory imagination. In this way the sensuous-intuitive mode of perception replaces the verbal-intellectual mode. The colours are no longer thought of as being separate (verbal-intellectual) but are experienced as *belonging* together (sensuous-intuitive). The way to the wholeness of the phenomenon is through the doorway of the senses and not the intellectual mind. We find there is the sense of a necessary connection between the *qualities* of the colours at each boundary. It is not just accidental, for example, that the order of the colours is red, orange yellow – and not red, yellow, orange – but it is intrinsic to the colours themselves. This kind of connection between the qualities of the colours is missing from the traditional Newtonian theory that light consists of colours which are separated when it is passed through a prism. In this case there is no intrinsic necessity in the order of the colours, only an order that is imposed extrinsically by the attribution of a wavelength to each colour. In the Goethean case there is an experience of meaning in the phenomenon, whereas in the Newtonian case the phenomenon is explained. The transition from the abstract verbal-intellectual mode of apprehension to the concrete sensuous-intuitive mode is exemplified very clearly in Goethe's account of metamorphosis in the life of the plant. Recent work in developmental genetics has thoroughly vindicated Goethe's insight using the techniques of modern research . However, what matters most with Goethe is not so much the *fact* of metamorphosis as experiencing the metamorphic way of seeing – and this is the factor that is missing in the research laboratory. Here again Goethe's way proceeds by active looking and exact sensorial imagination. We can see this most readily by considering the leaves up the stem of the flowering plant. We begin by focussing

attention closely on the unique particularity of each leaf, looking carefully at its form and structure, and then trying to visualize it as well as we can. When we look at it again we will find that our perception is enlivened. Now when we follow the same procedure with the next leaf, we will notice differences, and yet at the same time there is a sense of similarity to the first leaf. After repeating this process with several leaves as we move up the stem, we can go on to practise the exact sensorial imagination of the sequence. We visualize the first leaf, and then move in imagination to the next leaf, and so on. We will soon begin to have an intuition of the sequence as a movement that is a dynamic whole – a dynamic gestalt – instead of just a series of steps.

We begin to have the intuition that we are seeing "one" leaf manifesting in different forms. We have the sense that this "one" leaf is intrinsically dynamic, and that this dynamic whole is a movement of *self-differencing* which produces "multiplicity in unity". The verbal-intellectual mind, in contrast, focuses on the sameness of the different leaves, and from this abstracts the notion on a "one" leaf which is simply what all the leaves have in common – their lowest common denominator. All differences are excluded from this "one", whereas for the sensuous-intuitive mode of perception the differences are within the "one". Instead of abstracting unity from diversity, we have the intuition that the diversity is within the unity, indeed that the diversity *is* the unity because this is the dynamic unity of self-differencing. This becomes clear when we work concretely with the plant in the way that Goethe indicated. When we do we have the sense that we are seeing the plant in a different dimension which is intensive instead of extensive. If we do not do this, and instead just follow our usual proclivity for abstract thinking, we will fail to distinguish between these two different modes of unity, and fall back into the mental attitude of an onlooker, i.e. thinking of the plant in its finished state, instead of participating in the coming-into-being of the plant in our thinking – what Craig Holdrege calls "learning to think like the plant lives". The key thing is that, where the verbal-intellectual mind sees "sameness in the midst of difference", the sensuous-intuitive mind sees "difference in the midst of sameness". There is a reversal of perception here that it is hard to convey unless it is experienced – it's as if our perception of unity and diversity is turned inside out, so that diversity is seen *within* unity instead of unity being abstracted *from* diversity. To do this we have to turn it round and experience the unity from the "point of view" of the living plant which is bringing forth multiplicity out of itself, instead of from the point of view of an observer who is trying to find unity in a multiplicity which is already given. This is an example of the difference to which Heidegger refers when he says "the way in which an entity we are interpreting is to be conceived can be drawn from the entity itself, or the interpretation can force the entity into concepts to which it is opposed in its manner of Being.

So far we have only considered metamorphosis in the leaves of the flowering plant. But in "The Metamorphosis of Plants" Goethe is concerned with all the organs of the plant – sepal, petal, stamen, style – which he sees as modifications of one organ. He describes metamorphosis as the "process by which one and the same organ presents itself to us in manifold forms", and in a letter to Herder he described this "one" organ as "the true Proteus…. who can conceal and reveal himself in all forms" – Proteus being the Greek God who can present himself in manifold forms, always differently, and yet always Proteus. The movement of thinking here is indeed very different from looking for uniformities and commonalities in order to find a "general plan common to all organs", which is the approach so often wrongly attributed to Goethe. The dynamic idea of the unity of nature that we find in Goethe is also very different from the kind of unity we find in the universal laws of nature, which came from the mathematical approach in science, and which had such a cultural impact in the Enlightenment. The unity of this universal also leads our thinking in a direction that excludes difference - and eventually degenerates into uniformity – whereas the dynamic unity we find in life leads us to recognize diversity as creative unity.

There are often situations in which we can learn to recognize the difference between seeing "unity in diversity" or "diversity in unity". A few years ago I visited the Horniman Museum in South London to see the new aquarium that had just been installed. Afterwards I wandered through to the anthropological exhibits, where I found myself in one section standing in front of a large glass case extending the entire length of the wall, containing masks and other head gear, decorated shields and weapons of various kinds – all the shields were grouped together, and similarly the other artefacts – in a way that gave a sense of their belonging together. No attempt was made to relate them to each other explicitly – it was just the way they were arranged. In the case of the decorated shields, for example, they were arranged in a series, so that the eye could move along from one to another whilst at the same time taking in the series as a whole. I was reminded of the way that Goethe laid out the leaves of a plant in a series, and I realized that here also with these human artefacts there are two ways of seeing. In one way we can see that they are all based on the same plan, and that this common plan is the unity in the diversity. The movement of thinking here is *away* from difference *towards* unity. But in this movement, as difference is left behind, the unity begins to appear as a reduction of the diversity of the phenomenon. It becomes fixed and abstract, and there is the feeling that it lacks something as the differences recede into the background, leaving what is the same standing out more clearly. This is the kind of unity we find when we begin "downstream" with the finished products, as we must, but then go even further downstream to abstract unity from their diversity. But there is another way of seeing, which also begins with the finished products, but moves in the opposite direction and goes back "upstream", placing ourselves within the coming-into-being of diversity. When we do this we see the unity concretely as a *productive* unity. We are now "on the other side", no longer an onlooker standing outside of what we see, but as if we ourselves were within the productivity, participant in the producing instead of standing in front of the products. The unity can therefore no longer be abstract, but includes difference within it as a natural consequence of the productivity. Difference stands out now, instead of receding into the background, but the difference is now the *dynamic* unity of the productivity. In other words, the unity is generated in the very act which differences, instead of being abstracted by ignoring the differences. As I stood in front of the decorated shields in that glass case, I found that I could practise going from one way of seeing to the other – from unity in diversity (the finished products) to diversity in unity (the productivity). It was evident in this experience that diversity *is* dynamic unity. So when we see diversity we are looking at unity, but not recognizing it at first – and so we go looking for it in another direction, away from the phenomenon into abstraction. It is by practising working with seeing in this way that we can come to experience the intrinsically dynamic quality of unity in Goethe's thinking, which seems to be missing from so many accounts of his work because they rely too much on the verbal-intellectual mind and not enough on the practice of seeing.

The Bimodal Brain

The difference between the verbal-intellectual and the sensuous-intuitive modes of experience is correlated with the difference between the left and right hemispheres of the brain. This is not in any way intended to imply neurological reductionism. Although the discovery of the hemispheric differentiation of functions became very popular in the 1970s, the tendency then was to divide human functions into two separate lists, allocating each function to one side of the brain or the other. This led to many ridiculous exaggerations, most notably the one which effectually portrayed the left hemisphere as "snaps and snails and puppy dogs' tails" – which was identified as being male – and the right hemisphere as "sugar and spice and all things nice", and which of course was female. It is little wonder that "the subject of hemisphere differences has a poor track record, discouraging to those who wish to be sure that they are not going to make fools of themselves in the long run". But this has now changed, so that "despite the recognition that the idea has been hijacked by everyone from management trainers to advertising copywriters", it has now become possible to

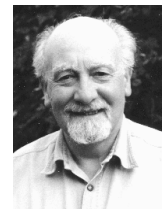
take it seriously again, especially since the publication of McGilchrist's magnum opus, from which the following account is taken. The most fundamental difference between the hemispheres lies in the kind of attention they give to the world:

> "One of the more durable generalizations about the hemispheres has been the finding that the left hemisphere tends to deal more with pieces of information in isolation, and the right hemisphere with the entity as a whole, the so-called *Gestalt".*
>
> "Then there is the *primacy of wholeness:* the right hemisphere deals with the world before separation, division, analysis has transformed it into something else, before the left hemisphere has *re-*presented it. It is not that the right hemisphere connects – because what it reveals was never separated; it does not synthesise - what was never broken down into parts; it does not integrate – what was never less than whole".

But the key difference which emerges is that the right hemisphere is concerned with the immediacy of lived experience – "the right hemisphere delivers what is new as it 'presences'" (p.179) – whereas the left hemisphere is concerned with the representation of experience – it 're-presents' what is 'present' to the right hemisphere. Because we only *know* things when they are represented, there is tendency for us to rely on the world as it appears through the left hemisphere, and therefore to overlook the primacy of experience, and indeed to mistake the secondary representation of experience for the experience itself – which is very familiar in phenomenology (the light which the discovery of hemispheric difference throws on phenomenology, and reciprocally the way in which phenomenology illuminates the world as experienced through the two hemispheres, is one of the most valuable insights that has emerged recently).

Another key difference is that "where the left hemisphere is more concerned with abstract categories and types, the right hemisphere is more concerned with the uniqueness and individuality of each existing thing or being" (p.51). Not surprisingly, therefore, since it "attends to individual things in all their concrete particularity" (p.153), it is the right hemisphere which mediates the experiences of the senses, whereas the left hemisphere mediates the verbal-intellectual representation of experience. We experience things *livingly* through the right hemisphere, and so it is not surprising to find that we do this by returning attention to the senses and withdrawing it from the verbal-intellectual mind. Goethe's concrete way of working therefore promotes a shift from the dominant (but not primary) left hemisphere back to the right hemisphere, from what is known and familiar to what is living and new, from what is re-presented to what is 'present' – "the senses are crucial to the 'presence' of being" (p.153). The right hemisphere "pays attention to the Other, whatever it is that exists apart from ourselves", whereas the left hemisphere pays attention to itself, to the representation it has created and which cuts us off from the Other (p. 93).

We can now see the neuropsychological correlate of the difference between the verbal-intellectual and the sensuous-intuitive modes of experience. We can see that Goethe's way of working, by returning to the senses through active seeing and exact sensorial imagination, brings about a shift from the left hemisphere dominance of the verbal-intellectual mind to the right-hemisphere experience of the wholeness of what is livingly present that is characteristic of the sensuous-intuitive mind. This may well be Goethe's greatest discovery: how to encounter what is active and living in nature by means of the senses and their enhancement, instead of remaining in contact only with what is already finished by relying on the intellectual mind. What we can now add to this is the discovery of the neuropsychological correlation between Goethe's way of science and the difference between the modes of functioning of the two hemispheres of the brain. Perhaps such a contemporary approach may provide a doorway through which Goethe's sensuous-intuitive way of science can come into the world today.



Henri Bortoft is an independent researcher in the philosophy of science. He did postgraduate research on the problem of wholeness in quantum physics with David Bohm and Basil Hiley at Birkbeck College. He regularly opens up a new world to his listeners, including on the MSc in Holistic Science at Schumacher College. He is the author of *The Wholeness of Nature*.

The Master and His Emissary

Iain McGilchrist

(From an introductory lecture at Schumacher College May 2011)

"How did I come to write a book on the twin hemispheres?

In this transcribed talk, Iain McGilchrist describes the roundabout way he took to writing The Master and his Emissary. First, as a literary scholar, he talks of his discomfort with the way what was beautifully whole was reduced to 'a handful of fluff' by the academic process of criticism which led him to write his first book 'Against Criticism.'

I was a literary scholar at one point. I had always felt that the world was *more* than a mechanism, though as a child this was what I had heard. This didn't tally with my experience, it didn't tally when we went on holiday to the country and I could tell that what was there was something completely different. There was something living here that I had some sort of a dialogue with and I felt that from a very early age. I learnt the word 'numinous' later which was useful to describe that feeling of something 'other' and 'special' and 'divine', which was sort of hanging around beautiful places. So I suppose that was there from the word go and I found that the world that I was growing up in was increasingly inclined to deny it.

I started off studying the sciences at school. Then I studied history and languages, and later went across to study the classics. At Oxford I wanted to study philosophy and theology, because it seemed to me to be quite arbitrary to cut the idea of God out of things, simply because of all the basic questions that I had asked myself from childhood on, the big ones such as 'Why is there something rather than nothing?', 'What does it mean to *be* at all?' All these questions seemed to me to lead one outside the terms would normally use to construe the world. And what you chose to call it didn't really matter, it was something other and beyond. So theology had a place in philosophy, and vice versa.

I ended up instead studying English literature. I kept thinking all the time I was reading literature, there was something wrong with what we are doing. Fortunately the approach of John Bayley (my supervisor) to literature was very different from that of any kind of schematic, dogmatic, literary critic. He had a marvellously personal and intuitive sort of way of exploring things. He was good at alerting one to the things that were in the tone – of alerting one to the something that was going on which one couldn't really pin down.

Fundamentally, I was constantly questioning what we were doing when we were criticising works of literature. And the reason was that time and again I found that I had enjoyed reading a poem or the works of a poet or I enjoyed a novel (or whatever it was, but particularly this was true of poetry and of the plays of Shakespeare) and when I tried to talk about it, I ended up paraphrasing the content, which meant that it was no longer instantiated in the precise terms and words which constituted the poetry and it became something completely different. This problem besets the whole business of literature, that what you get out of it when you de-contextualise it and you abstract it, it is something completely different from what you have got there in the work itself – concrete, individual, unique, something that is its own best expression.

It struck me that somebody, somewhere, had taken huge pains to make things absolutely unique, concrete and implicit, so that the meanings were interwoven in a way that you couldn't, except with violence, pull apart - and that then, if you did so, you were left with just

a handful of fluff. Like pulling apart a beautiful tapestry. That was exactly what I was being asked to do – to de-contextualise, to abstract, to generalise. Another thing that was striking was that there was a way in which the weaknesses of a poet or a writer were redeemed in the context of the whole. So that when you actually came to look at these bits that weren't really anything special, they were actually not just imperfections that got sort of glossed over in the whole; *they were actually part of why you really liked the whole*.

For example Hardy has a very quirky use of language and he sometimes goes so far as to use phrases that are ungainly when you look at them. He invents words, and sometimes there is a clunkiness about them, and sometimes there is a naivety about his work, and yet what actually attracts one to it is the strange quiddity, the sort of Hardy-ness of it, which is intensely moving.

And then there is something about perfection. In our striving for perfection, for abstraction, for generalities, for certainty, we are missing the implicit, the uncertain, the often far from perfect, that makes the thing valuable in itself, and it was our relationship with it that changed what we found. Because when someone else read it, they found something different. So there is no *one* poem, because it is re-created every time somebody reads it, much as a painting is re-created every time somebody looks at it – there is no single work of art there.

This was all the stuff that was milling around in my mind. And I had the freedom at All Souls College to write a book about it, which was called '*Against Criticism*'.

In this book I tried to show how criticism had to work contrary to itself. It had to work by stealth in order to achieve its end. It had to feign going in one direction, but go in the other direction. I was trying to write about why the implicit was important. Why, when you took something that wasn't in the focus of attention out of where it stood, in context, and placed it, isolated, in the focus of attention, it turned into something completely different. So this business of taking things apart into bits – it wasn't just that they weren't the same as the whole, but you could at least re-achieve the whole by putting them together. It was that, once you had taken any of these 'parts' out, they no longer were what they were at all when they had been in context – they were something quite different. They looked trivial, flawed. This led me to think that this is something to do with the neglect of the embodied nature of these things. The way they work as an embodied thing that can't be turned into any other expression for me as an embodied individual.

I had a huge mental block about Wordsworth. I had to do a special paper on a couple of great poets, from a selection, and I thought I would do 'Wordsworth and Coleridge' because I loved Coleridge. My thought was: Coleridge is terribly interesting, and I know he's got a fascinating mind. But this Wordsworth! For God's sake! Pompous, boring man! And everything he said was so banal! What was it? And yet people whose opinion I really value think he's great – so I must be missing something. I'm going to do this paper with him – I'll have the consolation of Coleridge, and I might even get to understand Wordsworth. So I got into it and what happened was that I ended up thinking that Coleridge is fine, but that Wordsworth was one of the greatest poets that ever lived!

And this turnabout happened actually because of an 'aha' – several 'aha' – moments, and it happened just like that. There was a morning I remember, and I can even remember the window where I was sitting, when it suddenly dawned on me how wonderful this stuff all was! Then there was another occasion when one of my supervisors (for another paper altogether) – we had been talking already for about two hours, in an hour-long tutorial – said 'I'm going to read you a passage from *Tintern Abbey*'. And I almost said to her: 'Look, don't bother reading that, I know it by heart, I've been reading it since I was a teenager'! Anyway, I'm very glad I didn't, because, when she read it, I just thought *I had never read this poem*! It was as dramatic as that. I thought I had just never heard this before.

It changed my life. I remember as I was walking down the street back to College, I was

having an epiphany, really – my feet were hardly touching the ground. And I never looked back. That was the sort of 'between' thing that happened. It wasn't the sort of thing that happened by pulling it apart, and trying to work out what was going on in the workings. It seemed to me this 'between' thing happened with an individual, and an individual work. That was unique and I was unique. That was incarnate, I was incarnate, and everything about me couldn't be taken out of context and made explicit, and neither could this work of art. I later discovered that Aristotle had said that works of art are like organic beings, like living creatures.

Iain then went on to study medicine, from an intuition that the brain held the key to the question of original wholeness and its subsequent dissection. This step into the unknown brought Iain to the relationship between the two hemispheres of the brain.

When I read John Cutting's book *The Right Cerebral Hemisphere and Psychiatric Disorders* (OUP, 1990) which is still a classic in its field, I thought it was very interesting that he was focussing on the right hemisphere. Because in medical school I had heard a lot about the left hemisphere, and how clever it was, and all the things it did that made us human – language, reason, and so forth. But as to quite what the right hemisphere did, nobody knew. There was a bit of muttering about something visuo-spatial. It did sort of creative things, and fluffy things – but, really, quite honestly, if you were a serious chap, you weren't going to get too interested in all that. But here was a very serious and intelligent man, who had seen something very interesting through sheer pragmatic, empirical observation, as a clinician, and after a lot of research. He had worked in neuropsychiatry with people who had had strokes and tumours, and he had noticed that actually there were very interesting things happening to these people when they had a stroke or a tumour in one part of the brain. It wasn't just a bit of functioning, like language or something, that went off – it was that their whole way of construing the world changed. He did a lot of important research on this, and it eventuated in this book on the right hemisphere.

The context, the 'betweenness', and so on – this all suddenly came at me out of the talk that John Cutting was giving on the right hemisphere. He hadn't quite formulated it that way, but some of the stuff that he was talking about rang bells immediately, because what he was saying was that the right hemisphere is much better at understanding implicit meaning, interpreting body language, at reading faces. It understands the tone of voice, it understands irony, it understands humour, it understands metaphor, and it's in touch with the body more than the left hemisphere. That was just the starting point.

Then I went off to Johns Hopkins and got involved in a neuroimaging project there, and the question that I was intrigued with was the question of the asymmetry of the brain. I saw very clearly, as I sat, day after day, delineating areas of the brain, comparing volumes and so forth, that in schizophrenia the normal asymmetry of the brain is lost. Sometimes it's reversed. Sometimes it's preserved. But generally there is a tendency for it to be lost. *The normal brain is asymmetrical*. But in this situation the brain was no longer symmetrical. I didn't know then, what I learnt later, that there is an adage in the animal literature: 'asymmetry pays'. Asymmetry is very important from an evolutionary point of view, and animals that are properly asymmetrical in their brain functioning gain, and those that don't have differences between their hemispheres don't perform so well. In fact, you can stop a chick's brain from lateralising properly, by exposing it to light on day nineteen of incubation. So you can experimentally look at these chicks, that don't have properly asymmetrical brains, and compare them with those that do. And they don't fare as well. I didn't know that then.

At this point I came across another book. And this was *Madness and Modernism* by Louis Sass (Harvard UP, 1992). He is a psychologist with a very broad background in philosophy, literature and the arts. The subtitle of this book is *Insanity in the Light of Modern Art, Literature and Thought*. The thesis of this book involved recognising something I already knew. And when I read this book the light came on!

Because I saw the phenomena that patients with schizophrenia describe (and in those days, because I was working in the NHS, I spent all my time with patients with schizophrenia). The phenomena they describe are exactly the phenomena that modernism has been at pains to re-present, and re-construct, for the viewer and the reader. This is a beautiful and subtle book. What he was really pointing to was that people with schizophrenia have a sense of the alienness of the world, they are frightened of the world, it seems fragmented, it seems flattened and unreal, which adds to the horror of it, they have no connection with it, there's no affect for them, their approach to things is highly technical and rationalistic.

One of the most beautiful things that he points out very early on – and it's so true – is that madness in this sense is not about a *lack* of reason, it's about an *excess* of reason, about taking reason to extremes. No reasonable person ever would do so in context, and no reasonable person would apply reason like this. As soon as you started to see this, and its manifestations in art, you began to see something very profoundly interesting. But it rang even louder bells for me, because I had already been thinking, with the help of John Cutting, that actually schizophrenia mimics the condition where the right hemisphere has gone AWOL. Now that doesn't mean to say that necessarily, when you image the brain of a schizophrenic you see that there is nothing going on in the right hemisphere, and everything is going on in the left – it's not as simple as that. But if you list the various things that are abnormal about the phenomenological world of the schizophrenic subject, and find out where else in the organic literature (in terms of brain injuries, strokes, tumours) you can find people who have similar changes to their world, those insults, those tumours, those strokes will be in the right hemisphere. So it's people who have right hemisphere strokes who find that suddenly the world is an alien place, that it's gone flat. They lack empathy, they cannot understand the implicit, they can only understand the explicit, they can't understand metaphorical meaning, they misunderstand human relationships, they begin to rationalise in all sorts of improbable ways, they lack common sense. This is exactly like the world of the schizophrenic. So if Louis Sass had hit upon the fact that the modern world looked schizophrenic, and if it was true that schizophrenia looks like a right hemisphere deficit, then perhaps our world had a right hemisphere deficit. That was my thinking in 1992.

That was when I really started gathering information about the two hemispheres. And this was difficult, because all serious neuroscientists had been put off gathering any information, because there had been a story in the 60's and 70's that language and reason were in the left hemisphere, and creativity and emotion were in the right hemisphere, and that this was what differentiated the two hemispheres. But as our knowledge increased, we found that language was served by *both* hemispheres, that reason went on in *both* hemispheres, *both* took part in creativity and *both* dealt with imagery.

From this circuitous journey, Iain arrived at the topic of the Master and his Emissary. The two hemispheres, instead of being simply two halves of the processing unit, actually represent two modes of seeing, through two types of attention.

With animals and birds that have the eyes on the side of the head, there is a straight crossover in the brain. So when you see them turning their heads to use the left eye, you know they are trying to engage their right hemisphere, and vice versa. So you can just observe them, and see what happens. And there are significant, reliable and consistent differences in the way they use their hemispheres. What is that about?

The easiest way to understand this is to think of the conundrum of a bird trying to feed and stay alive. It is a conundrum, because it's got to be able, at one and the same time, to pick out a tiny seed against a background of grit and pebbles that may look very similar, peck it accurately and eat it quickly, and at the same time it's got to keep the widest possible attention open for predators. So it's got to have one kind of attention, that knows what it's after, goes for it efficiently, clearly picks it and consumes it. A kind of attention that is already spoken for, that is acquisitive, and is

useful. Then, simultaneously, it's got to have another kind of attention, which is not spoken for at all –this attention must have no preconceptions about what it is going to find: it might be a mate, it might be a foe, it might be almost anything. It's got to be on the lookout, and it could be coming from any direction. These two kinds of attention are very difficult to combine in one mind; and it is my contention that the reason we have two masses of neurones, two cerebral hemispheres, is that we actually need to attend to the world at all times in two different ways.

Now attention sounds boring, because the cognitivists make it sound like just another function. But of course attention isn't like that. A machine can manipulate numbers, but it can't attend. Attention is an aspect of consciousness. Only a conscious being can attend. And it is profoundly creative – it is part of how we actually generate what comes into being for us. So that alerts us right away that something quite interesting might be going on here. And actually, if you look at other things about birds and animals, you find that they have other differences between the hemispheres. They form social bonds better using their right hemisphere; they approach their mates more with their left eye. And they grasp their prey using more their right eye (the left hemisphere) and the right paw, or claw. So there seems to me to be two broad ways of looking at the world. One is a relational consciousness, without preconceptions, which is interested in forming bonds, being vigilant and having a sustained and coherent view of the world. And another that yields lots of little tiny pieces, like the little bits of a mosaic, that are very precise, but on their own mean nothing, but are terribly, terribly important – because without them you wouldn't be able to eat, and you wouldn't be able to live.

So when you come to look at the human situation, does this seem at all in keeping? The first thing I found is that, in humans, sustained attention, and vigilance, and alertness, are better served by the right hemisphere; and narrowly focussed attention, detailed attention, is better served by the left hemisphere. People who have a right hemisphere stroke have what has been described as a pathological narrowing of the window of their attention. Generally speaking the right hemisphere is able to do the things the left hemisphere does, but it just doesn't do them so well; whereas the things that the right hemisphere does, the left hemisphere can't do at all. It's just that the right hemisphere is not specialised in what the left hemisphere does, and therefore generally we tend to use the left hemisphere for doing them. If the left hemisphere is not able to function, you can produce focussed attention with your right hemisphere –but you normally wouldn't bother.

That is one of the starting points, and that gives rise to the various modes of engagement with the world that distinguish the two hemispheres. The absolutely fundamental phenomenological way of attending to the world leads to a whole coherent picture. If you don't see the whole, you have to build up a world from pieces that are de-contextualised, and that are static, and fixed, and certain, and you have a very useful map of the world, which gives you certain little bits of information, but it doesn't give you any idea of the whole. The right hemisphere sees the whole picture, sees things interconnected, inevitably in a context, as flowing and changing, but the price is that for the right hemisphere nothing is ever certain. There is a trade-off, if you like, between accuracy and truthfulness. We need certainty in order to exist in the world – or at least the illusion of it – and the only way we can get that is by the partial version that is yielded by the left hemisphere.

Now that is very useful. The left hemisphere knows how to enrich what the right hemisphere knows. And the movement is like this: the beginnings of our understanding, the beginnings of our thinking, the beginnings of our awareness of the world, and of everything, is sub-served by the right hemisphere. But then the left hemisphere comes along and does something very important. It unpacks what was formerly implicit, it expands what was before compressed, it makes clear and focussed things that before were complicated and interwoven, and in doing so it helps us to see things that otherwise we wouldn't have

seen. But in themselves they are never enough, they are never the truth. And that means that our left hemisphere vision needs to go back into the broad context that the right hemisphere holds and enrich it. It's a dialectic process. You have A followed by B, which doesn't negate B, but it enriches and unfolds an aspect of it, and that's taken up into the synthesis of the two. This is exactly what Hegel talks about as the flowering process – when the bud is opened, it is replaced by the full flower, and the flower can't exist if the bud exists. So in essence it is, in some sense, contrary to the bud; and yet in some ways it is the unpacking or the unfolding of the bud. And, without the flower, there cannot be the fruit. The fruit is, if you like, the negation of the flower, but it is also the fulfilment of the flower. This relationship, where one thing succeeds another by an apparently contrary dialectic, but actually is fulfilling it, is a theme we will keep coming back to.

Iain arrives at the title of the book, which is how the two modes of attention represented by the two hemispheres have been drawn into a lopsided relation.

That is imaged in the title of my book which is *The Master and his Emissary*. This was something I found in Nietzsche. In this story there is a wise spiritual master who governs a small community so well that it flourishes and grows. He realises he can't look after all of what's required for the health and well-being of his community; but he also realises something much more important, which is not that he can't do it, but that he mustn't do it, even if he could. *Because if he tried to do it, he would lose something else.* He would be less himself, and not know things that he knows. He had to stay where he was. And he therefore appoints the brightest and best of his ministers to go and do his work on his behalf. This emissary goes off with high hopes from the master to do this work, and the master has to trust his emissary and not know what it is the emissary knows. He knows that. But the emissary doesn't know what it is he doesn't know. He goes off and thinks: 'Look, I'm busy going off around this place, I'm doing all the heavy work here, I'm the one who understands what's going on, I'm the one that makes things happen. And that master, it's all very well for him, to be sitting there back home, squatting there, smiling seraphically – what does he know?' So he pretends on his travels that he is the master, and he puts on the master's cloak. As a result, essentially, the domain falls into ruins, because, in that Rumsfeldian way, this emissary *doesn't know what it is he doesn't know*.

And later I came across this saying of Einstein's, that 'the rational mind is a faithful servant and the intuitive mind is a precious gift: we live in a world that worships the servant and has forgotten the gift'.

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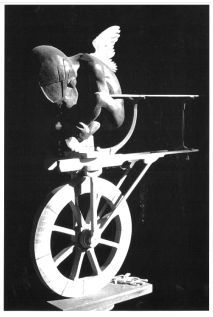
Ode to The Master and His Emissary **By Val Charlton**

Why is the brain divided in two?
In all birds and animals you'll find this is true
Insects and reptiles are also thus structured
Does survival depend on the brain being ruptured?

Apparently so Iain McGilchrist discloses
Unequal asymmetry is what he proposes
Incompatible forms of knowledge flowing
Yet two quite essential methods of knowing
(….more follows)

The Vivid yet Elusive Experience of Time

Camilo Peñaloza



Time, what is time but seeing another moment drift by, one after another after another for eternity or is it? How to define time has always been a troublesome task, in St Augustine's words: *"What then, is time? If no one asks me, I know. If I wish to explain it to someone who asks, I know it not"*(Fraser, p. 35) It certainly seems that our daily experience of life is just another glimpse of the vast reality out there, a never ending, everlasting reality. A reality that goes on and on, step after step and it does so with or without us. We may owe this view to Sir Isaac Newton who proposed over 300 years ago a new view of the world in which he confined us to the idea of an absolute space and time. This hypothesis was questioned at the beginning of the 20th century by Albert Einstein and his theory of relativity. In it he proposed that space and time (Space-Time) are moulded by light, therefore concepts such as time dilatation and length contraction arise. This view of life certainly questioned the physics of the time yet it has been proven correct throughout the years. However it surely feels in our daily lives that Newton's idea is more familiar, it makes more sense to our daily perception and experience of the world.

I believe this is a fitting subject for further exploration and inquiry both for time and space; in this case I will only inquire in time and our direct experience of it. When studying physics I came upon Einstein's relativity and the Lorentz transformations for space and time. These transformations allow for the physical laws to remain unchanged regardless of the frame of reference and are key elements in carrying out any calculations in both special and general relativity. However when working with these transformations I found myself struggling to figure out how to transform time, then finally I "cheated" and used simple algebra to rearrange it in a way for it to work. Then it struck me, where can I find time? When or how do I experience time directly? Is it all in my head? After my first experience with the science of qualities; the study and further exploration of time through Goethean science was an unavoidable path.

When doing Goethean science we are encouraged to go directly into the phenomenon itself, where meaning – in Agnes Arber's words – *"may be held to signify the intuitive knowledge gained through contemplation of a visible aspect"*(Bortoft, p. 19) and as Goethe himself named it *Anschauung.* In doing so – as Henri Bortoft puts it – you experience the phenomenon "Upstream" instead of "Downstream". In this case Upstream can relate to the Primary act and Downstream to Secondary acts; however in this context Primary and Secondary don't relate in a linear causal way as we are used to, but rather in a dynamic interplay in which the Primary is the ever-present essence and Secondary is any possible manifestation of this essence. Knowing this, the intention is now clear that in exploring time through this method the aim is to obtain time in its Primary state.

Before going into the endless possibilities and experiences that Goethean science brings, let us explore how time works in our modern world. This could be an endless task and for the purpose of this paper I shall only approach this from a physics perspective knowing that this is clearly restrictive and that there are many other perspectives that could shed light on such a subject. If we go to a dictionary we find that time is defined as:

"Originally measured by the hour angle of a selected point of reference on the celestial sphere with respect to the observer's meridian. The fundamental unit of time measurement now is the second based on an atomic oscillation"(Dictionary of Science and Technology)

Seeing such a definition is somehow striking since it strays far away from what our reality and experience of time really is. Yet it allows us to understand the fundamental way of

recording and defining time in our modern perspective and that is by periodic effects. A period is the *"Time taken for one complete cycle of an alternating quantity"*(Dictionary of Science and Technology)for example for the earth to go around the sun. With the help of better technologies our ability to measure time more precisely has increased greatly; however it seems clear, by the definitions shown above, that our knowledge of Primary time has not been fully explored.

One thing that can be said, it appears that our measuring of time is directly related to our ability to distinguish realities. If we were unable to distinguish between day and night, our understanding of the passing of time would be completely different; further if we were unable to distinguish anything at all we would not be able to measure time at all. As Richard Feynman puts it *"Does "time" exist on a still smaller scale? Does it make any sense to speak of smaller times if we cannot measure?"*(Feynman, Leighton, & Sands, p. 50) In the ability of distinction we find our ability to measure and register time, but does this have anything to do with how we experience and live time? Does the act of distinction also influence our direct experience?

Many will argue that time is only what is measured and that our experience adds no value since it may be tainted with subjectivity. I believe that through the qualities explored by the Goethean method we can not only add value, but discover new dimensions to time and what it means. When going into time and trying to see time from a Goethean perspective, which is by experiencing the phenomenon of time directly, it is barely or not at all graspable. There is a need to be able to contemplate the phenomenon directly to be able to glean some intuitive knowledge from it, as it is possible to do when we study plants as Goethe did. Therefore the question arises, 'How can we do phenomenology if the phenomenon is barely graspable?'

As I explored this idea, I found that time went by, and then I understood that my experience of time is related through the experience of what I am doing. For example when I am at a lecture, I am having a direct experience of the lecturer, the topic being discussed and the people surrounding me. Additionally as all this is going on, however unconscious or unaware I am, I am having a direct experience of time. But to take the example further we may ask ourselves the following question 'Why does my experience of time feel different through a particular lecture if I know all lectures last an hour?'

It is at this point that it must be noted, we are slowly entering the realm of Primary time since it feels as if we are embarking upon a dark and unusual path.

'So is this example then of an exception or is it the rule?' Well there are certainly several more examples that relive this same experience, to mention just one, a perfect example from our daily lives is with movies. Good movies usually tend to go by smoothly and surely time seems to fly by, hence the expression. On the other hand when watching a bad movie, time seems to drag. So we can see that even though this is the same event, the same situation, the same sensory perception, the experience is completely different. At first glance the reason appears to be obvious, what I find dull makes my experience feel longer and what I find interesting makes it otherwise. Even though this may be so, what this suggests is that time is relative to the perspective of the subject and not absolute as Einstein suggested in his Theory of Relativity, however this time it is a knowledge coming directly out of my experience and my direct relation to it.

In Einstein's Relativity we need incredible speeds to be able to see how time and space become relative, what is it in this case that triggers the possibility to make our experience of time relative? My guess is that meaning is responsible for this. So whether I give a positive or negative meaning to what I'm doing, my experience of time can shift from either flying by or dragging, therefore our experience of time is directly related to that of meaning in some way. It feels as if time is a consequence of giving meaning to an experience. So what if we tried to examine time before meaning, it definitely appears as if we would be looking at the picture of the giraffe all over again(See Figure 1).

Figure 1"Many people at first see only a random patchwork of black and white areas; but on looking further some people will suddenly see(...) the head and upper neck of a giraffe" (Bortoft, p. 51)

Apparently then there is a "moment" in between giving meaning to an experience and actually living the experience and we can call this the coming into being. Bear in mind in this case, *moment* refers to an a-temporal feature since it is before time (This shows how limiting language can be when dealing with such a subject. To avoid further confusions, from now on any other word which by itself refers to time will be italicized to suggest its a-temporality). So it is just after I give meaning to something that my analytical mind quickly separates the variables so it can interpret the experience. Now before we go on with this journey it must be pointed out that by mentioning meaning we are entering a realm which is much more complicated than what this paper can deal with, therefore I will use the definition best suited for the purpose here; however I am aware of other several other possibilities that might be considered.
I have mentioned that meaning somehow precedes time which is by itself a very contradictory affirmation since the word *precedes* already suggests a notion of time, having this in mind let us understand meaning as an act of distinction. Let us go back to the measuring of time which is done by working with oscillations between two different states. It can be safely said that time is directly related to change and this is something related to our day to day experience. Now in measuring time it can be said that there is a measurement of the changes the system goes through, in this case between two different states (recall atomic oscillations mentioned before). The differentiation of these states and therefore our possibility to measure time, is linked to our ability to distinguish one from the other, if this were not possible then my ability to measure time would be lost. Therefore in the *moment*, in which something is distinguished, the ability to measure time is regained, however within distinction, meaning comes along. However this raises a couple of questions, 'Is there something *before* distinction?' I believe there is. And if so 'is it meaningless?'
If this is true, 'how do we tap into this world *before* time and distinction?' When trying to experience the phenomena upstream, you go through the process of searching for the moment where it comes into being. It is my belief that there are several different paths that may allow one to experience this world, even if it is only a glimpse, a peak into a timeless reality. Before actually discussing the possibilities of what this might mean I shall talk about the process itself that I have explored not only by myself but with other people which will enable us to understand a little bit more of the coming into being of time.

THE EXPERIMENT

The intention of this experiment is to explore the nature of time through our experience of music. This experiment arose thanks to a suggestion made by Henri Bortoft in one of his lectures. Before going into the results, experiences and possible conclusions, let me briefly describe the experiment.
The experiment consists of 3 steps:

1. Listening to a song, with no special mindset.
2. Listening to the same song, this time "concentrating on the beat and fixing the rhythm" in your mind, the description might be: " a line, a wave, a curve" and secondly it must not contain symbols, pictures, forms.
3. Listening to the same song, this time allowing the music to manifest freely, with no expectation whatsoever of what should be manifested, enjoying this manifestation.

This simple experiment was conducted three times, two of which involved only one person and once with a group of 17 people. In all the experiments, the song used was the same - "Adagio in C Minor by Yanni".

Results:

It is important to underline that the results search for the qualities instead of quantities, therefore quantities were not measured.
With that in mind the results try to gather as far as possible the different qualities reported by the participants.

1st Time:

There was a general consensus that the tune appeared to be longer, however no attributes were described or given.

2nd Time:

The participants found that listening to the tune required much more effort and concentration; expressions suggesting this were "Heady", "Difficult", "Hard", "Tense". Also reported was the quality of non-involvement given by words like "Counting", "Score", "Equalizer", "Two-dimensional".

3rd Time:

This time there was a sense of unboundedness and openness as well as a sense of participation, which can be understood by the following expressions "Free", "I saw Colors", "It was a Story", "Songness of the song", "Timeless", "I could appreciate the music". When asking for a broader description of the images perceived by different listeners, there was a broad consensus in the terms applied such as "Spirals", "Forests", "Leaves Falling".

So how does this experiment and these experiences relate to time? If we recall, we were trying to explore the possibility of a world *before* time and distinction and my suggestion is that this method may allow us to glimpse this world. Before analyzing the possible meanings of the results it might be stated that each mindset is just a way of allowing ourselves to start comprehending time. For example the second time certainly refers to the conception of time as the abstract absolute feature to which Newton referred to, it is that conception of the adding of moments to construct our sense of time. On the other hand the third time could be conceived as a moment before distinction, therefore of a time which has no meaning and is less graspable.

In the study of phenomenology and Goethe's way of science. we encounter different ways of knowing - relating these steps to the experiment will allow us to understand it better (See article by Henri Bortoft for description of this method).

The experiment and its results can be understood having this structure in mind. The 1st time could be the intuitive appreciation and as said before this is an unconscious process therefore the lack of description. The 2nd time is the exact sensorial perception as we constrain our way of knowing to what we "measure" which is consistent with the common interpretation and sensation of being in the head. In the case of music, measurement also comes as musical notes therefore the impression of "counting" or "scoring" was described in what was heard. The 3rd time the liberty to let the music express itself allows for the fluid movement of the exact sensorial imagination to kick in. Even though the descriptions of the experiences are different there is a constant sense of freeness and of appreciation of the music in which several stories were manifested suggesting a direct participation of each listener. However having covered all of the results, two questions remain: 1. 'Where is the 4th way of knowing, intuitive insight, expressed in this experiment?' 2. 'What do these experiences have to do with our discussion of time?'

The answer to both of these questions is probably the same, since it is in this seeing and beholding where we experience the time *before* time. During the 3rd time some people experienced an intuitive insight directly into the Primary nature of the song expressed by some as the "Songness of the song". This insight into the Primary state (sometimes called Wholeness) could be demonstrated by some of the coincidences that appeared within the experiences. Interestingly enough. some other people said that they experienced a sense of timelessness. It is my belief that this is

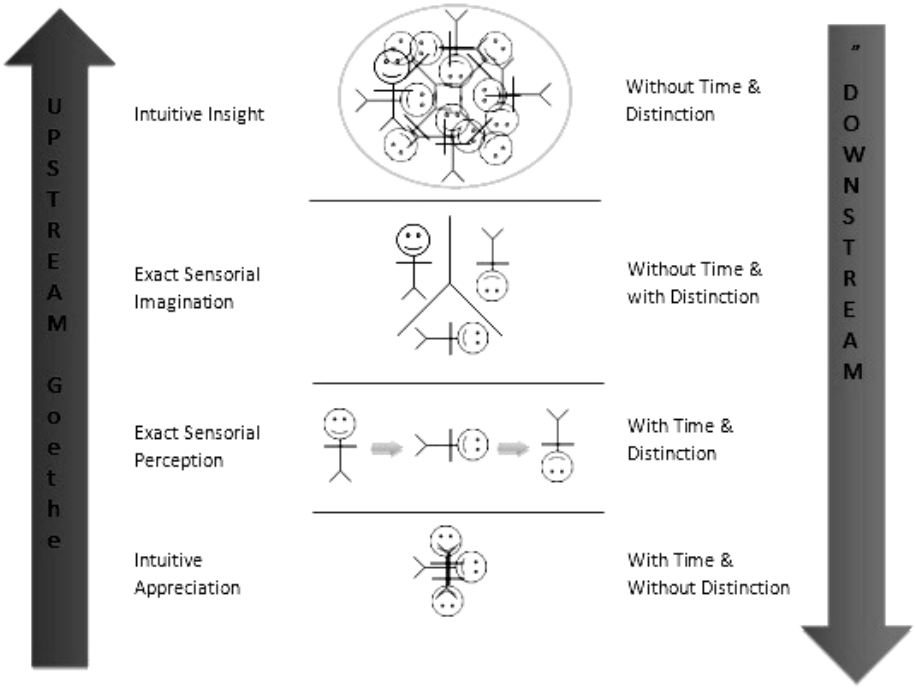


Figure 2: Exploration of the ways of knowing, distinction and time through the phenomenon of rotation.

two different expressions of intuitive insight which try to convey the same idea - a sense of wholeness. In Figure 3 this idea is expressed and later discussed in relation to the experiment.

This picture illustrates both the experience and concept of wholeness and how this relates to time by using the symbol of rotation. In the first level the named intuitive appreciation is related to a moment in time but no distinction is portrayed. This is an initial direct understanding of the system however it by no means gives a clear concept which can be meaningful. Moreover, this suggests the need to spend more time on the phenomenon so as to be able to understand it. Gradually it is seen that time is needed to be able to understand. This is evident in the next level when distinction appears. This allows us to understand each element separately and comparatively so as to understand all the facts of what rotation is; all of this within the framework of time. However the idea of how to have rotation is not fully grasped, therefore we need to step into level three and try to imagine this in a fluid manner.

This is never an easy task, especially when trying to do so through a rigid framework, a framework such as time. This is because it challenges our imagination to go beyond this framework and as a consequence of such an act, the once useful framework must now go. But after leaving time it becomes evident that the next immediate step must be the letting go of distinction. Slowly we approach the last level in which finally the wholeness of the phenomenon expresses itself.

The distinguishing which made time possible now merges back into the same original unity from which everything was created, back into wholeness. Thus the quality of distinction, which separates the wholeness into understandable parts, is now lost. This ability to distinguish internal from external, objective from subjective is left behind when stepping into this new realm of wholeness.
This last picture illustrates how this can be an experience often indescribable and mind blowing as all the possibilities within this phenomenon are expressed in a timeless manner. Having said this it must be understood that this experience is such as to bring clarity, as Goethe himself says "*If we*

imagine the outcome of these attempts, we will see that empirical observation finally ceases, inner beholding of what develops begins, and, at last, the idea can be brought to expression."(Holdrege, p. 24)

It may certainly seem as if this ultimate knowledge or insight is the goal to aim for when doing Goethean Science, but this would also be a mistake. It must be remembered that our own framework is the one that enabled us in the first place to then make the necessary leap into a broader knowledge. If we look in more detail at what has been said we will find out that this methodology somehow suggests a loop between going upstream and downstream constantly so as to acquire a deeper knowledge of any phenomena. Hence we must constantly return to our initial framework as to expand our possibilities of growth. Thereby embracing the constant dynamic flow of this process which enables these glimpses of wholeness to become ever so much more natural and insightful.
If we go back to the initial dilemma 'what is time?' after going through this journey. would we be able to answer it? I believe not. I believe that as stated before, this is a process which involves going over and over and over again through the same steps and to embody the process ever more often. However it can be said that there are new qualities of time that are now better grasped and probably even explained. For example the sense that time is an ever changing independent feature of the world is certainly questioned by our paradoxical experience of timelessness which suggests otherwise. And even the direction of time is challenged which certainly seems as if it could go both ways. Time then becomes a paradox through our vivid yet elusive experience of itself.
A feeling of disappointment certainly arises as we "fail" to obtain a conclusion, or more precisely a sense of "knowing" of the phenomenon of time. What is it then that we are left with? We are left with an incredible way of knowing the world, which on a deeper level challenges and transforms our need to "know" the world into the need to "LIVE" the world. A beautiful way of embodying the natural dynamic flow of nature unfolds into infinite wonderful possibilities.

References

Bortoft, H. (1996). The Wholeness of Nature: Goethe's Way of Science. Lindisfarne Books.

Chambers Dictionary (1999).

Dictionary of Science and Technology. Chambers Harrap Publishers.

Colquhoun, M., & Ewald , A. (1996). New Eyes for Plants: A workbook for observing and drawing plants. Hawthorn Press.

Feynman, R., Leighton, R., & Sands, M. (1964). The Feynman Lectures on Physics. Addison-Wesley.

Fraser, J. (1987). Time: the Familiar Stranger. The University of Massachusetts Press.

Holdrege, C. (2005). Doing Goethean Science. Janus Head, 8.1

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Ode to Master and his Emissary (continued)

The blind Left side lives in this box
It cannot deal with paradox
Cannot know mysterious life
Which makes its entrance through the Right

The Right hemisphere is wider and bigger
Holistic – confirming the words of Heidegger
The Right sees pattern in its comprehending
Faster more complex in its understanding

The implicit, unconscious, sublime and intuitive
Can be expressed through Art, Myth and Music
This is the province of Holistic Right
Which disintegrates under philosophy's light

Philosophers generally work through the left
But this faulty procedure leaves them bereft
Using language as their analytical tool
Is like speaking of 'Red' in the language of 'Blue'

(… more follows)

Jessica Kerr

Sifting through the evocative etymology of classical myth, we uncover an image both humble and strangely intriguing: *a heap of stones.* Mute and still, this literal translation of the ancient Greek word '*herma'* belies the energy and dynamism of the archetypal trickster eternally couched within it - "the one who stands at the gate of the underworld, on the threshold between the human and divine worlds, at the place of transformation" (Cashford, 2003: 337). Fleet and deft, carrier of words and spirits, *Hermes* was known as the patron of boundaries and the protector of those travellers – thieves, explorers, fugitives, departed souls - who crossed over them. As the emissary of the gods, Hermes' name has now come to mean *messenger*, and from this we inherit *hermeneutics*: the study of the interpretation and analysis of texts. The study, that is, of how we receive and respond to the messages texts offer us as they cross the threshold of our cognition and imagination. Traditionally a theoretical discourse, hermeneutics is now expanding to support a vital inquiry into the nature and origin of meaning within living systems. In other words, we now recognize that actively interpreted texts are no longer necessarily literary or cultural, but are manifest in infinite complexity in the biological and ecological realm as DNA, the membranes of cells, complex biota, and the meta-organism of Gaia herself: the living earth.

Hermeneutic biology, in shifting the emphasis of our scientific inquiry from form to organization, is closely linked to the concept of 'autopoiesis' - literally the 'self-making' of living organisms. Through an exploration of these new ways of seeing within science, we discover threads of meaning that link biology, complexity mathematics, and Gaia theory. Along the way, fragments of myth and metaphor also emerge, enticing and engaging our intuitive selves in the ancient, eternal, and deeply felt question: what is life?

I was first introduced to the idea of hermeneutics, or textual interpretation, as a literature student at Canadian universities. Over several decades, our professors explained, our disciple had been undergoing a rapid and multi-faceted shift, evolving from a discourse concerning itself entirely with original historical context, biography, and authorial intent, to a more radical investigation of humanity and meaning. Keen students were encouraged to experiment with the New Criticism, Reader Response Theory, deconstructionism and post-modern/post-colonial analyses – all schools of thinking that sought, enthusiastically and in various ways, to open diverse texts into engagement with multiple readers and their worlds. We no longer saw texts as static vessels of a singular, ultimate meaning – that of the author – but rather as complex entities that interacted with and evolved in relationship to their environments. Interpretation, then, was a vital process of both uncovering information and experiencing the emergence of insight within us. Through it, we situated ourselves within a great web of meanings and connections – a reorientation that ultimately invited us to participate more fully with a complex and ever-changing world. In their guide to cultural theory and hermeneutics, Edgar and Sedgewick note that "one may move, through the activity of interpretation, to an engagement with the *other*, which is able to re-structure the interpreter's preconceptions, and thereby the basis of their understanding. Interpretation, therefore, is an unlimited, open-ended process" (2002: 167). I can still recall the almost physical sensation of my mind opening to encompass new ways of thinking and seeing in those years. It was an exciting time.

Yet, true to our faculty – the "Humanities" – we never considered that these kinds of active, creative readings could take place anywhere other than within our very human minds. How limited our views still were. In his book "Nature's Due: Healing our Fragmented

Culture" holistic scientist Brian Goodwin describes hermeneutic *biology* as "a study of the process whereby organisms make meaning of their genetic texts by expressing them in a form (morphology and behaviour) appropriate to their habitat and their history" (2007: 99). The very exciting implication of this new hermeneutics is that humans, ever proud of linguistic achievements that apparently distinguish them so clearly from other forms of life (and are often used to justify domination over them), are in fact, as Aldo Leopold would say, *plain members of the biotic community* - a group of gifted speakers in a world of wondrous speech. Intelligence and meaning, it would seem, are fundamental characteristics of life.

But what does this literally mean? Theoretical biologist Anton Markos explains that the main objective of hermeneutic biology should be to "get rid of the genocentric view that identifies the genome as a recipe for building the body [of the cell or organism]. It should pose questions about the *builder*, who takes the genome as a mere dictionary of the language in which the recipe is written. Proteins – 'words' uttered in the language – enter into complicated syntactic and semantic relations, which constitute the cellular *parole*. The cell is thus a materialized *parole*" (Markos, 2002). This exploration beyond mechanistic genetic determinism signals a paradigm shift in the life sciences. It was a shift highlighted by individuals working on the human genome project around the time of its completion in 2001 as, to their wonderment, an unavoidable gap appeared and grew between genetic "information" and biological expression (E.F. Keller, 2000). Leading scientist Evelyn Fox Keller expressed the humility many researchers – researchers who had for many years believed themselves to be on the cusp of cracking a complicated but ultimately linear code of life – felt upon facing this astonishing and intelligent complexity: "the very successes that have so stirred our imagination have also radically undermined their core driving concept, the concept of the gene. As the human genome project nears the realization of its goals, biologists have begun to recognize that those goals represent not an end but the beginning of a new era in biology" (ibid.).

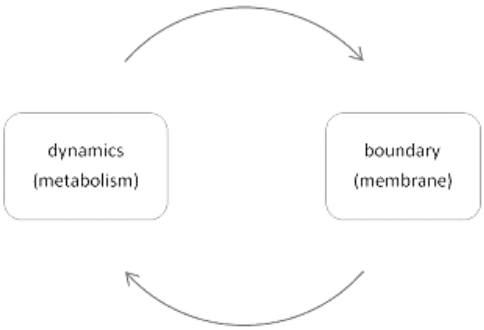
Markos goes further to suggest that living organisms are communicating coherently not only within their own organizational processes, but with those of *other organisms and systems*, effectively forming a sophisticated ecological system of biochemical dialogue. The study of such dialogue now comprises the growing field of *biosemiotics*, a word composed of the Greek root for 'life' and 'sign' (2002). In shifting our focus to genome-protein interactions and the epigenetic factors of morphology – in entering this 'new era in biology' - we move from an over-emphasis on form to an inquiry into the relational qualities of living systems. We move also into a growing appreciation of life as more complex, mysterious, and beautiful than the reductive thinking mind could ever have previously known.

Self-Organization

These insights into the complex relationships unfolding within organisms on the structural and relational levels have lead to radical re-conceptualizations of how life orchestrates itself. The term '*autopoiesis'* - literally '*self-making'* - captures the self-organizational quality of living systems and points to the mechanism that makes them autonomous. We are now able to see that that the molecular components of a cellular autopoietic unity are dynamically related, embedded in a network of ongoing interactions or transformations that continually produce the unity itself – the organism. As Chilean scientists Maturana and Varela point out, "what is distinctive about [living beings] is that their organization is such that their only product is themselves, with *no separation between producer and product*. The being and doing of an autopoietic unity are inseparable, and this is their specific mode of organization" (1987: 48) (emphasis added). This astonishing and elegant non-linear process is the chief distinguishing factor between living and non-living systems.

Autopoietic systems likely emerged at the time in the earth's history when organic molecules like proteins, which have enormous complexity and pliancy, were formed (Maturana & Varela, 1987: 46). In the right biochemical conditions, it seems, autopoietic systems arise almost inevitably. The cell membrane is a crucial participant within this process. Semi-

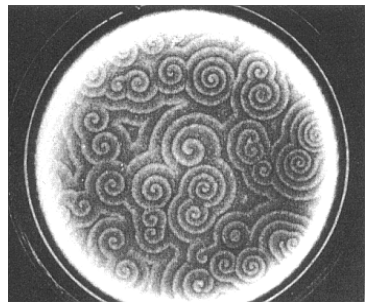
permeable and intelligent, the membrane actively chooses which molecules are granted entry and exit from the cell; it not only limits the extension of the transformation network that produces its own components, but also participates in this network (ibid.). Thus the workings of metabolism and the creation of the cell membrane are two different aspects of a unitary phenomenon, rather than sequential processes:



This non-sequential relationship between form and the dynamic leads us back to the hermeneutic circle: the whole comes into being through the parts while simultaneously the parts are contained within, and manifest through, the whole. This wonderfully paradoxical phenomenon of life simultaneously *emerging* from the environment (through its dynamic) and *distinguishing itself* from the environment (through its membrane) also recalls Goethe's sense of morphology as a process of both differencing and relating. Goethe's way of seeing opens our eyes to the unity present within apparently distinct parts, thereby shifting our focus from something fixed (form) into something fluid (dynamical emergence); in a similar way, deep reflections on the autopoietic nature of life prompt us to reconsider our place within a brilliantly coherent, creative, and symbiotic world.

When an autopoietic unity encounters a lack of energy or scarce resource, it is capable of reorganizing its system with incredible ingenuity (a capacity we would do well to cultivate as our own source of abundant, readily available energy - fossil fuels – dwindles). A classic example of this synchronized, spontaneous reorganization is found in slime moulds; when food or moisture in the environment is running low, individual cells begin to signal to one another by means of a chemical called cyclic adenosine monophosphate (cAMP) they release into their surroundings, which stimulates neighbours to both release a signal of their own and move towards each other. This effectively initiates a process of aggregation, and subsequently several thousand previously autonomous cells form a complex multi-cellular organism capable of cellular differentiation at different points within the structure. The organism thus completes its life cycle, sprouting a long stem and fruiting body before releasing spores and effectively reproducing (ibid). The intelligence inherent in this process of sophisticated communication is clear, reminding us that an organism needn't possess a brain to embody mind.

Beloussov-Zhabotinsky reaction



Aggregating slime mould amoebae

Turkey Tail Fungi (*Tramestes versicolor*)

Complexity Theory

Complexity theory (or dynamical systems theory), while not a theory of physical

phenomena, presents concepts and techniques that contribute to a more refined understanding of natural systems. Significantly, through mathematics and advanced computer technology, we are able to make underlying patterns in nature visible in distinct shapes that contribute to the revelation of coherence in life. This "new mathematics", as Fritjof Capra explains, "is one of relationships and patterns. It is qualitative rather than quantitative and thus embodies the shift in emphasis that is characteristic of systems thinking – from objects to relationships, from quantity to quality, from substance to pattern" (1996: 113). In the new mathematics, people from diverse backgrounds may access another sophisticated language with which to communicate something of the dynamic nature of life.

Chaos theory and the theory of fractals are branches or subsets of complexity theory. Fractal geometry, famously referred to by its creator, Benoit Mandelbrot, as "a language to speak of clouds", enables us to describe and analyze the real, irregular shapes in the world around us rather than abstract, perfect shapes existing only in the mind. Fractals, those stunningly detailed, self-similar patterns, are plotted differential equations that reveal to us the *dynamics of relationships*. These dynamics are continually unfolding all around us: in the Romanesco cauliflower Satish Kumar prepares so beautifully for our meals, in the tributaries of veins and capillaries running through our living bodies, in the patterns water makes on the surface of the earth. In the Pacific Northwest I could happily pass days on the soft forest floor, simply gazing up through a delicate and infinite fractal web of fragrant cedars, whispering and shifting against the paler sky. Beyond the cedars, long clouds gather and drift, effortlessly performing their own exquisite, fractal dances. Unlike the Mandelbrot set or the Koch curve, the fractals manifested in nature are always slightly irregular – and yet meditating upon them is a powerful way to connect with the eternal, unfolding patterns of the natural world.

Chaos theory, deeply influenced by the work of Mandelbrot and fellow fractal mathematicians, explores other manifestations of the process of *iteration*, the mathematical characteristic underlying strange attractors (Capra, 1996: 140). Attractor basins, plotted in phase space, reflect a complex system's process of settling into a particular type of strategy, or a pattern of self-organization, in response to its surroundings: "when the system has settled into that region it will tend to remain there if environmental conditions are fairly stable; it is said to self-regulate or to be homeostatic or autopoietic or in dynamic equilibrium" (Boulton, 2011: lecture). Strange attractors beautifully illustrate these general dynamic properties of chaotic systems, namely that of 'bounded freedom' – a quality of being that is neither completely random nor regularly ordered, patterned, or predictable. A chaotic system operates within a certain range of values but never repeats itself exactly, and is extremely sensitive to initial conditions and feedback; thus simple and apparently linear equations may generate enormously complex attractors, like the butterfly image meteorologist Lorenz discovered when he plotted millions of iterations of an apparently straight-forward calculation on his computer at MIT in 1962. Examples of chaos can be found in the rhythm of a healthy heartbeat, the social activity of termites, the population dynamics of wild animals (Goodwin, 1994: 65), and even the elegant wobble of the moon and planets on their epic, elliptical journeys (Harding, 2011: lecture); when plotted in phase space, all reveal processes of self-organization occurring within strange attractor basins.

The Living Earth

From the work of Maturana and Varela we have learned that the key characteristic of living systems is self-organization. This new understanding of life prompts us to ponder the greatest and most complex dynamical living system – Earth. James Lovelock's Gaia hypothesis (elaborated with the help of Lynn Margulis) and his subsequent Gaia theory propose that the surface of Earth operates as an organism in which geology and biology are tightly coupled to regulate key surface parameters such as atmospheric composition and global temperature, at levels comfortable for life over vast stretches of geological time (Harding, 2010: lecture). Gaia theory thus very elegantly reconnects living elements (biota) with non-living elements (geology, hydrology,

and atmosphere) of the Earth in postulating a scientifically rigorous model of the earth as a holistic, living organism.

The Gaian system operates via feedbacks among autopoietic biota and the earth, atmosphere, and water they have arisen in relationship with over 4.6 billion years. While examples of both positive (self-amplifying) and negative (self-limiting) feedback loops are ubiquitous on our planet, the stability of Earth's temperature and atmospheric composition seem to indicate that negative feedback systems dominate on the surface of Gaia. "In Gaia the exquisitely delicate receptivity of living beings to their surroundings acts as an environmental sensor for the planet as a whole" (Harding, 2006: 74). Through such feedback systems, the composition of Earth's atmosphere and climate are regulated around "set points", as in homeostasis, but those set points change with time. Such slowly but steadily changing set points distinguish Gaia as a *homeorrhetic* system, and a complex one: to the bewilderment of scientists attempting to make accurate climate change models, Gaia is coherent and patterned but also inherently unpredictable and eternally dynamic.

Yet Daisyworld, the computer model programmed by Lovelock and refined alongside ecologist Stephan Harding, is an elegant example of how mathematics can still reveal essential characteristics of natural systems to the human mind. Created from just six simple but interconnected equations, the original version of Daisyworld showed that one property of the global environment – temperature – was "regulated effectively over a wide range of solar luminosity by an imaginary planetary biota without invoking foresight or planning" (Lovelock, 1998: 39). As such, Daisyworld offered a direct rebuttal to the accusations of scientists like Ford Doolittle and Richard Dawkins that Gaia would have to be teleological (that is, conscious and purposeful) in order to self-regulate (ibid.). Experiments with modulating characteristics and conditions of the model later demonstrated very conclusively that complex ecological communities with more species and more interactions between these species – that is, *biodiverse* systems – are better able to recover from disturbances than simple communities (Harding, 2006: 82). Perhaps increasingly refined models of earth's systems will eventually quantify the intuitive, felt sensation many of us experience already: that biodiversity, the richest possible profusion of life, is key to planetary resilience.

Such an exploration of the Earth as a whole system, as a living entity, leads us back to our inquiry into expression and meaning: "in the hermeneutic circling of Gaia, the parts (biomes, atmospheric and geo-chemistry, etc.) express the wholeness of Gaia, while the whole of Gaia (global climate, mass extinction events, liquid/solid water balance, etc.) comes into being through the self-interpretation of its constituent parts and their interrelations" (Croft, 2010: 16). Through this greatest of all hermeneutic circles, we begin to discern the dance of Gaia and her manifestation within our own consciousness; connected again to the unity and intelligence of all participatory beings on the planet, we discover Gaia in the deepest sense. In fact, the return of this ancient mythological name, *Gaia*, to our daily language, and most especially our scientific language, is extremely significant. Jules Cashford and Anne Baring point out that "underlying this phenomena is the idea that only a personification of the Earth can restore a sacred identity to it, or rather, her, so that a new relationship might become possible between humans and the natural world" (Baring & Cashford, 1991: 304). We can no longer justify or defend a conception of Earth as a mere *herma*, a heap of stones, scattered over with happenstance life forms fumbling across it; the most sophisticated science behooves us to embrace Gaia as a living being suffused with intelligence, mystery, and power. And this life of the world, this quality of soul or psyche, is everywhere manifest:

'For animists, matter and psyche are indissoluble, for the psyche of the world resides nowhere else but in matter itself. Thus the great archetypes of Gaia and anima mundi that figure so importantly in the human soul could well be prefigured in some mysterious way not in some abstract realm far from this world, but in the very molecules and atoms that constitute our palpable, sensing bodies' (Harding, 2006: 88).

To fully embrace this realization, the world invites us to gather together and celebrate the thinking, feeling, sensing, and intuitive aspects of our own selves. Conscious of our own wholeness, then, the wholeness of Gaia may likewise be illuminated.

A New Mythology

In weaving our way lightly through hermeneutic biology, autopoiesis, complexity mathematics, and finally Gaia theory, we discover iterations of the same, most inspiring message: life is dynamical, unpredictable, self-organizing, and coherent. These insights profoundly affect our understandings of this planet - our home - and our place within it. They also signify our entrance into a "place of transformation" like that mythical threshold attended by Hermes, within which we might heal some of the damage we have inherited from generations of reductionist science and runaway industrial growth - in essence rediscovering our relationship to all of life. As Brian Goodwin writes, "the recognition that every single species has evolved a language within a text, the genetic thesaurus, from which meaning emerges in the process of creating the individual organism, means that we now take our place as simply another instance of this expression of living meaning" (2007: 109).

In the words of Fritjof Capra, "instead of being a machine, nature at large turns out to be more like human nature – unpredictable, sensitive to the surrounding world, influenced by small fluctuations. Accordingly, the appropriate way of approaching nature to learn about her complexity and beauty is not through domination and control, but through respect, cooperation, and dialogue" (1996: 193). Capra and others suggest that through the related methods of inquiry we have explored, "a theory of living systems consistent with the framework of deep ecology [is emerging], including an appropriate mathematical language and implying non-mechanistic, post-Cartesian understanding of life" (1996: 157). Perhaps this theory of living systems, united with our own phenomenological, sensual experience of the sacred Earth - the sacredness that, as Gary Snyder writes, "helps us out of our little selves and into the whole mountains-and-rivers mandala universe" (1995: 43) - offers us something of the new mythology so many of us are seeking: that of wholeness, relationship, and intrinsic value. It is a mythology, then, that our bones already know; it is one of remembrance.

References

Baring, A. & Cashford, J. (1993) The Myth of the Goddess: Evolution of an Image. London: Penguin Books.

Boulton, J. (2011) Systems Thinking for a Complex World Lecture Series: Schumacher College.

Capra, F. (1996) The Web of Life. New York: Anchor Press.

Cashford, J. (2003) The Moon: Myth and Image. London: Octopus Press.

Croft, A. (2010) 'Meaningful Earth: An Exploration of the Hermeneutic Life of Gaia.' Holistic Science Journal, vol. 1, no. 1, pp. 14-18.

Edgar, A. & Sedgwick, P. (2004) Cultural Theory: The Key Concepts. London: Routledge.

Franses, P. (2010) MSc. Holistic Science Lecture Series: Schumacher College.

Goodwin, B. (1994) How the Leopard Changed Its Spots. London: Butler and Tanner Ltd.

Goodwin, B. (2007), Nature's Due: Healing Our Fragmented Culture. Edinburgh: Floris Books.

Harding, S. (2006) Animate Earth. Vermont: Green Books Ltd.

Harding, S. (2010) MSc. Holistic Science Lecture Series: Schumacher College.

Keller, E.F. (1983) A Feeling for the Organism. New York: Freeman.

Lovelock, J. (1989) The Ages of Gaia. Oxford University Press.

Markos, A. (2002) Readers of the Book of Life. Oxford University Press.

Maturana, H.R. & Varela, F.J. (1992) The Tree of Knowledge. London: Shambhala.

Session, G. (ed.) (1995) Deep Ecology for the 21st Century. London: Shambhala.

Stametz, P. (2005) Mycelium Running: How Mushrooms Can Help Save the World. Berkeley: Ten Speed Press.

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Biosemiotics and the New Paradigm

Daisy Allen

Where are we and how did we get *here*?

Of all the important and deeply pre-occupying questions that have fascinated humans through the ages, one of the most troublesome is that of the dichotomy between 'experience' and 'reality'. This dichotomy was posited as the 'essential human condition' as early as the Upanishads - Indian philosophical texts written somewhere around the 9th century BCE. (Favareau 2010:5) And it has continued to fascinate us ever since, not surprisingly given that the basis of our life experience is subjective, but we also experience a world 'out there' that appears to be independent of our minds. The history of scientific thought is too much to go into here, but suffice it to say that somewhere along the way, the idea of a 'reliably traversable bridge' between mind-dependent experience and mind-independent reality disappeared. (Favareau 2010:5-6) Francis Bacon and René Descartes certainly had something to do with it, in that they both seemed to mistrust their own minds, viewing it as somewhat like an 'impenetrable glass through which we see the world darkly, rather than face to face'. (Favareau 2010:21) The 'priority of signs to objects became lost from view and (thus the) objects of experience become not a partial revelation of surrounding nature and culture, but a screen separating the mind from things'. (Deely 2001:520) They felt that the mind clouded their quest for absolute truth, and sought a mechanism that could remove the fallibility of the human mind from science altogether. (Favareau 2010:25) Descartes was very successful in elucidating his ideas, in that following him there was a distinct split between material reality and knowing reality - the famous mind-body dualism. Along with this, both Descartes and Bacon viewed consciousness as a solely human quality, and as such it became less important in the study of the natural world - if most of its animal occupants did not have consciousness then it could not be that important. (Favareau 2010:28) Consequently we inherit the idea of mind-body dualism, and the idea that animals are like machines - just an interaction of parts with no feelings or consciousness. This led to the advent of reductionism - the idea that these 'machines' are no more than the sum of their parts, and that complex systems (e.g. an animal) can be reduced to accounts of individual components of the system. This essay will explore some ideas in science that are leading to a paradigm shift, and the idea of holism. Although there are many threads that could be followed on this subject, the focus will be on biosemiotics as a model that could provide both subjective and objective methodologies in holistic science.

Emergence of a new paradigm

Indeed, science has moved on since the time of Bacon and Descartes, and science is moving back in the direction of a unified explanation. I will discuss briefly two aspects of science that helped cause this shift - the idea in physics of oneness or holism, and the idea of epigenetics in biology.

Holism and physics

But what is holism? Very simply put holism is the idea that all is one. If we see that all is connected, the whole must necessarily include consciousness, and thus the subjective experience, as part and parcel of life. Ironically, we can take a reductionist approach to break down holism into some innate qualities that allow us to gain a deeper understanding, as detailed below.

- Wholeness or Oneness

Previously, classical science thought that elementary particles were the building blocks of the universe, and the study of them could explain everything. Einstein's theory of relativity was an indicator that science was on the wrong track though, implying that no coherent concept of independently existent

particles is actually possible. So, if the particle concept was no longer to be taken as a primary basis for understanding the universe, what was to replace this idea? David Bohm found that beyond the level of the particle, is 'the complex movement of electromagnetic fields, in the form of light waves'. (Bohm 1990:174) This unified field is an 'undivided wholeness in flowing movement...(a view) that implies that flow is, in some sense, prior to that of the 'things' (or particles) that can be seen to form & dissolve in this flow'. (Bohm 1990:151) It is from this 'field' or foundation that particles are manifest. He named this undivided, dynamically flowing wholeness, the 'holomovement', and said that 'in its totality the holomovement is not limited in any specifiable way at all....thus the holomovement is undefinable and immeasurable'. (Bohm 1990:151)

- Holographic in nature

This is the idea that, like in a holographic plate, the whole picture can be seen in each part, and each part can be seen in the whole. Henri Bortoft's distinction between counterfeit and authentic wholes rests upon this idea. (Bortoft 2007:3) Authentic wholes can be thought of as somewhat like a holographic plate. Conventional thinking follows a linear, summative course, and places the whole secondary to the parts - the whole emerges as a result of adding up the parts, but this is not how a holographic plate works - the whole is present in all the parts even if less clearly defined in small parts. But neither is the whole prior to the parts - the parts do not come from the whole, the whole is not a transcendent 'super-part', in the words of Henri Bortoft. (Bortoft 2007:10) To try to understand the whole in a linear fashion, moving either from the whole to the parts or vice versa, will always result in a counterfeit or dualistic whole. As Henri describes it; 'the whole emerges simultaneously with the accumulation of the parts, not because it is the sum of the parts, but because it is immanent within them'. (Bortoft 2007:12) He also describes the character of this emergence of the whole as the 'unfolding of enfolding, so that the parts are the place of the whole where it bodies forth into presence'. (Bortoft 2007:11) This is similar to Bohm's description of an implicate and explicate order. He describes the holomovement as a 'vast, rich, unending flux of enfoldment and unfoldment'. (Bohm 1990:51) The implicate order contains everything enfolded within it, and the explicate order is 'the place of the whole where it bodies forth into presence' through the manifest. The whole could be seen as the potential of all things. The implicate order is not manifest and so could be seen as 'empty'. This 'emptiness', however, allows for the 'fullness' of potentiality - in its emptiness it contains the potential for everything! (Bohm1990:191)

- Emergence and Unpredictability

An important part of holistic vision is the focus on the relationships between things, rather than on the things themselves. This interconnectedness of systems leads to the understanding that the behaviour of even quite simple systems is very hard to predict - there are so many connections and thus potential actions within the system. Jan Smuts defined holism as a tendency to form wholes that are greater than the parts through creative evolution. (Freeman 2005:154) It is this interconnectedness of the parts that allows flexibility in options, and thus creative evolution to occur.

4. Loving Compassion

A true understanding of the concept of holism naturally leads to feelings of loving compassion for all other beings. With a worldview of unity, 'other' becomes self, and loving compassion is enhanced;

"Knowing the universe to be non-dual reveals our connection with all of life. We are not apart in any sense; we do not act upon the world - we are utterly in and of the world. When that is known, our motivation becomes naturally compassionate, and our wish is to do that which circumstances show to be needed, as best as we are able to see it."

(Morgan 2010:2)

Due to these, and other ideas in physics, the role of 'information' and 'meaning' are beginning to assume a fundamental role, and a concept of 'it from bit' has been introduced, symbolizing 'the idea that every item of the physical world has at bottom, at a very deep bottom, an immaterial source and explanation, in short that all things physical are information-theoretic in origin'. (Ogryzko 1997:1)

Biology and the information problem.
Von Baer's discovery of epigenetic development of fertilized ovum into structures expressing hereditary traits added to this paradigm shift by opening up the 'problem of information' in biology. Information under the Cartesian model of mind-body dualism could be one of two things; either a relation proper only to the mind, or a pure product of material interactions. (Favareau 2010:29) Neither of these definitions were satisfactory to explain epigenetics, and so new explanations are being sought.

How can we integrate this into science?
There have been scientists in the past attempting to get at this dynamical nature of life, with the inclusion of the subjective - notably Johann Wolfgang Von Goethe. He developed a methodology that not only included the subjective, but actively used it. Goethe outlined a four-stepped process to bring rigor to the use of sensory faculties in determining information about the external environment, and to allow the observer to 'see' the process of 'coming-into-being' - the dynamic, constantly flowing, essence of life. (Bortoft 2007:33) Although Goethe made an important contribution to the development of science with his emphasis on a new way of seeing, his methodology is limited in its applicability. For example, precisely because of the placement of the subjective at the centre of his methodology, it requires practice and time. In herbal medicine Goethean research has been conducted on the medicinal properties of plants, but because it requires time, quite a lot of people, and consensus to be reached amongst these people, it tells us not much more than whether a plant is warming or cooling. (Robertson & Robertson 2006) It is also hard to see how Goethean methodology could be applied to, for example, physiological processes inside the body. Thus we arrive at bio-semiotics - a more interdisciplinary approach to the study of information and sign processes in life, that has developed from a lineage of scientists such as Goethe.

The basics of Biosemiotics.
The word is made up from the Greek *bios*, meaning life, and *semeion*, meaning sign, and can thus be interpreted to mean the study of the production, action, and interpretation of signs in the biological realm of life. It represents this paradigmatic shift in the Western view of life, suggesting that semiosis is life's intrinsic feature. (Kull 2003:15) It could be thought of as the study of the language of life - language in this context is used in a wider sense than that of the human realm, rather of the language of *signs* that is common to all living things. It explores the *processes* by which information is generated, communicated, and acted upon in the world - it is the scientific understanding of how the subjective experience of organisms (which is different depending on their biological structure and organization) 'comes to play a genuinely causal role in the ongoing co-organization of nature'. (Favareau 2010:43) However, biosemiotics gets at the generation of information beyond the material level also, as will be revealed by Peirce's thinking below. The important points to note in this paradigm shift are; the undivided nature of the universe, the re-definition of consciousness to mean something more than just a human faculty (i.e. self-awareness of some type as an intrinsic feature of life), and the central importance of information and its processes in life and the organization of nature.

Peirce's vision
It is beyond the scope of this essay to delve deeply into biosemiotics, but a description of some of Charles Peirce's ideas are necessary for his ideas underpin much of what has since developed in this field. Rather like Bohm and Goethe, he saw the universe as a 'continuous seething fabric' of energy, that he described as being 'governed by general habit taking tendency'. (Arning 2009:97) Peirce developed a systemization of logic that was triadic. He felt that genuinely triadic relations could not be reduced to monadic or dyadic relations, and that anything that appeared as a larger polyadic relation could be analyzed in terms of a triadic relation. (Favareau 2010:39) This informed his work on semiotics, and thus he conceived of a triadic sign relation between *sign*, *object*, and *interpretant*. (El-Hani et al 2007:27) He also denoted categories that applied to this triadic relation - firstness, secondness, and thirdness. (Favareau 2010:40)

For Peirce, sign relations were a species of a larger genus of relations by which 'potentiality becomes actualized, and the actualized interacts with other likewise realized actualities so as to result in a pattern'. (Favareau 2010:40) We can see that Peirce was referring to 'the scientifically examinable (and scientifically necessary) relations of *possibility*, *actualized existence*, and *law*'. (Favareau 2010:40) This reveals the profound depth of Peirce's thinking - he was tackling the subject, really, of how the universe came about and how it continues to be. As Favareau says;

"The very "beginning" of our contemporary cosmos was a single point of undifferentiated energy (if, indeed, "energy" is not already too sophisticated a term) whose "development" into our current universe is nothing other than the history of its successive recursive change as, at each point, literal physical possibilities are made available only as the result of immediately preceding action, and as one of those possibilities is actualized, a new and slightly changed set of possibilities (and constraints) come into being. Thus, we see (retrospectively): the uncoupling of the unified force, which results in the generation of quarks that then makes possible the generation of hadrons, the results of whose interaction in the rapidly cooling universe gives rise to the existence of neutrons, that can then later join together with the protons to form the universe of atoms that. . .ad infinitum."
(Favareau 2010:40)

A brief description of the triadic notion of sign relations and categories is necessary at this point, as detailed below.

Peirce's Categories

1. Firstness: This refers to the sign in the triadic model, and describes the current state of the world which is present to the perceiving agent as an unlabeled 'raw feel' - in its firstness. (Favareau 2010:40) It describes pure sensation, prior to the conscious perception and ascribing of meaning. Peirce talked of this phase consisting of consciousness that is not distinguished from any other 'stretch' of consciousness. (Arning 2010:111)

2. Secondness: This refers to the object in the triadic model of sign relations. This is when the sensations of firstness are *perceived*, and thus sensations are turned from a web of 'brute sensations' into a web of meaningful perceptions. (Favareau 2010:41)

3.Thirdness: This refers to the interpretant in the triadic model. Once the sensations, perceptions, and the relations within that web (i.e. of sensations to perceptions, perceptions to other perceptions) become representable as signs in their own right, the re-contextualisation of firstness and secondness (sensation and perception) into symbolic 'understanding' occurs. (Favareau 2010:41) This is the phase in which habit or pattern forms - it could be seen as a triadic relation between sign, object, and interpretant that has been played out so many times as to become 'set'.

The ever-changing interconnected web

If we look back at the description of thirdness, or the interpretant, we can see that it is a reaction to something - i.e. a change brought about due to the interpretation of a sign by an object. So an interpretant necessarily becomes a sign itself, and thus life is made up of a continual process of semiosis. (El-Hani et al 2007:29) This gives a further insight into the holistic nature of biosemiotics, in that it respects the interconnected complex web of relations, and is in constant flux - there is no final sign, only a constant generation of ever-changing signs.

The categories and Goethe's methodology

Peirce also believed that 'ultimate truth was accessible to inquiring minds through non-rational channels'. (Arning 2010:97) The categories described above have been compared to different modes of consciousness, and one author has described the stages through the process of Vipassana meditation. (Arning 2010:108-112) In this comparison thirdness has been related to the *reactions* of the human mind to sensations and perceptions - this is seen as the realm in which we are 'at the mercy of our minds', which may mistake fleeting moods for reality. (Arning 2010:108) When lost in this realm, we are often unaware of what is *happening now.* The process of Vipassana meditation encourages a move away

from these reactions, into the realm of secondness - pure sensations with no analysis or judgment of them. With commitment and practice, this may lead to an experience of firstness - undistinguished consciousness. This could perhaps be comparable to Goethe's methodology, where he advocated the use of the senses to directly perceive nature - in other words, quietening the reactions of the mind to enable clearer sensation of what is really there. Henri Bortoft talks of this as a quality of seeing that can 'bring out' the seen thing - in other words it is a participatory experience between the observed and the observer. (Bortoft 2007:279) Peirce's description of firstness sounds somewhat like Goethe's description of the 'Ur-phenomenon' - the *process* that flows through *form*. This, to me, sounds almost like a stage that is in between the unmanifest and the manifest - it is the flow of energy that has some intentionality to 'become' something material. Peirce's description of a further category - zeroness - on the other hand, sounds more like Bohm's concept of the implicate order;

"Pure zero is prior to every first. The nothing of negation is the nothing of death, which comes second to, or after, everything. But this pure zero is the nothing of not having been born. It is the germinal nothing, in which the whole universe is involved or foreshadowed. As such it is absolutely undefined and unlimited possibility - boundless potential."

(Arning 2010:112-3)

Thus, it could be seen that Peirce was conceptualising a bridge between the implicate and explicate orders - a process through which the unmanifest becomes manifest, or comes-into-being as Henri Bortoft might say. Zeroness is the implicate order, firstness is the bridge between the orders where consciousness and energy are becoming organized but not yet manifest as material, and secondness and thirdness are the manifestations of that organization.

Does biosemiotics see both upstream and downstream at the same time?

Biosemiotics can be seen as sign-posts that have been erected to point at the processes that have already occurred in the 'coming-into-being' of things (downstream). But it also shows us a process by which things might, in the present, come-into-being (upstream). This can be illustrated through Henri Bortoft's discussion on language. Once language has already come-into-being, then it can be seen as just a *re-presentation* of something, and downstream. (Bortoft 2007:314) But in its creation it is 'upstream' in that the word and the meaning cannot be separated, they are created together, at the same time - as one whole. (Bortoft 2007:315) He refers to the story of Helen Keller first grasping that a particular movement of the hands was a sign, and that this sign had meaning, and says that language is unique in that it is not just perception, but meaningful perception i.e. that language is the grasping of perception and meaning *at the same time*, and that through this it represents the 'upstream' coming-into-being of things. (Bortoft 2007:315) This idea of the creation of language can likewise be applied to the creation of any kind of sign. By studying the processes of sign relations, biosemiotics tries to get at both the coming-into-being of language (i.e. the creation of signs/language), and the continuation of signs/language once meaning has been ascribed (i.e. the formation of patterns or habits).

Can biosemiotics represent both causal and non-causal relationships?

Although it has been mentioned above that biosemiotics helps to understand the subjective experience of different organisms in playing a *causal* role in the organization of nature, it is also trying to get at the *non-causal* nature of complex, living systems. If we think of Henri's description of language, when a word or a sign is first created is there a causal relationship? The assignation of meaning is novel - it was not there previously, a leap into the unknown is made, and a new connection formed - perhaps this represents the non-causal relationship.

In conclusion

We have explored briefly the historical context leading up to the emerging paradigm shift in science, what biosemiotics is, why it is holistic, and how it is qualitative and can be applied subjectively. But how is it more applicable to science than Goethe's methodology? The application of Peirce's categories to internal

thought processes is somewhat like Goethe's methodology - they both require practice, commitment, and discernment. So they both face the problems of trusting one's own, and other peoples, discernment between internal and external stimuli. They also both, in this respect, are based on the subjective experience, and as such may be questionable as 'evidence' in current science. What sets biosemiotics apart is the fact that it provides a conceptual framework with which to view sign processes from an objective perspective - inasmuch as this is possible, given that our entire experience of life is subjective. Perhaps biosemiotics also provides the conceptual framework for a bridge between mind-dependent experience and mind-independent reality. The triadic model of biosemiotics can be used to try to understand the workings of, for example, the immune system. El-Hani and colleagues have applied this model to the functioning of B-cells in the immune system to try to further understand the way information is generated and communicated within the body. Of course, as in any other area of study, biosemiotics faces the 'problem of the observer' as described by Thure von Uexkull, another important figure in biosemiotics. As mentioned above, each organism's means of semiosis is constrained by their particular biological structure and organization, and thus they have different methods of sign generation and processes, and so we get the branches of phytosemiotics (plants) and zoosemiotics (animals), as well as anthroposemiotics (human). Uexkull says that within the human body we deal with phytosemiotic sign-processes that occur within and between cells, which are regulated by zoosemiotic sign-processes that occur in the physiological functioning of the body, and anthroposemiotic sign-processes in our experience of the body and in the study of it. Thus medicine constantly deals with 'the problem of how phyto-, zoo-, and anthroposemiotic sign processes are interrelated in sickness and in health'. (Uexkull 1984:187) It also deals with the problem of how the human observer can grasp the meaning of the sign processes of other living beings with only our own anthroposemiotic concepts. (Uexkull 1984:187) So, while biosemiotics reveals itself to be deeply holistic and interdisciplinary in its philosophical grounding, it requires further study into the actual practicalities of application in science. There is, however, great potential.

References

Arning C. (2010) Into The Realm Of Zeroness: Peirce's Categories And Vipassana Meditation. Semiotica 176(1/4):95-115.

Balaz I. (2005) Impetus, Perception, Sign, Signal, Information: Growth Of A Living System From A Complex One. Foundations Of Information Science 2005:1-11

Bohm, D. (1990) Wholeness And The Implicate Order. Ark Paperbacks, London

Bortoft H. (2007) The Wholeness Of Nature: Goethe's Way Of Science. Floris Books, Edinburgh.

Bortoft H. (2011) Schumacher Lecture, 'Science With Qualities'.

Corning, P.A. (2002) The Re-Emergence of "Emergence": A Venerable Concept In Search Of A Theory. Complexity, Vol 7(6):18-30.

Deely, J. (2001). Four Ages of Understanding : The First Postmodern Survey of Philosophy from Ancient Times to the Turn of the Twenty-First Century. University of Toronto Press, Toronto.

El-Hani C.N., Arnellos A., and Queiroz J. (2007) Modeling A Semiotic Process In The Immune System:Signal Transduction In B-Cells Activation. TripleC 5(2):24-36.

Favareau D. (2010) Essential Readings In Biosemiotics. Springer, London.

Freeman, J. (2005) Towards A Definition Of Holism. British Journal Of General Practice Vol 55(511):154-155.

Kull K. (2003) Thomas A. Sebeok And Biology: Building Biosemiotics. Cybernetics And Human Knowing 10(1):47-60.

Lao Tzu. in Wilhelm R. (Ed) (1985) Tao Te Ching; The Richard Wilhelm Edition. Arkana, London.

Morgan, D. (2010) Buddha Recognizes Buddha. Throssel Hole Press, Northumberland.

Ogryzko V. (1997) Physics And Biosemiotics. In: Rauch I., and Carr G.F. (Eds) Semiotics Around The World: Synthesis In Diversity. Mouton de Gruyter, New York.

Robertson K., and Robertson M. (2006) Discussion Paper On Goethean Science Methodology

Uexkull T. (1984) Semiotics And The Problem Of The Observer. Semiotica 48(3/4):187-

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Altered States of Consciousness

Ayahuasca, San Pedro and the shamanic path to wholeness

Simon Ralli Robinson

It is now more than 30 years ago since Fritjof Capra wrote 'The Tao of Physics' highlighting the remarkable similarities between Eastern religions and Western quantum physics. These insights, as Capra openly revealed in the preface, were inspired by his own personal experiences with what he called 'power plants,' plants which have been ingested by shaman for millennia, revered by peoples across the world as Gods, for their hallucinogenic properties, resulting in such extraordinary changes to their consciousness, that for many, can not be distinguished from the spiritual and religious revelations of our greatest mystics and sages.

Capra was by no means the first scientist to gain deeper insights into the natural world from natural and synthetic hallucinogens. Alan Rees, writing in 'The Mail on Sunday', revealed the following story, which he subsequently confirmed with Crick in person:"Dick Kemp told me he met Francis Crick at Cambridge. Crick had told him that some Cambridge academics used LSD in tiny amounts as a thinking tool, to liberate them from preconceptions and let their genius wander freely to new ideas. Crick told him he had perceived the double-helix shape while on LSD."

The classic psychedelics are considered to be LSD, Psilocybin, DMT and mescaline. The two chemical groups into which these drugs are classified are the tryptamines and the phenethylamines. Tryptamines include DMT, psilocybin, LSD and Tabernanthe iboga. Phenethylamines include mescaline found in the peyote cactus and the lesser-known San Pedro cactus.
In the Amazon basin, indigenous and mestizo shaman drink the mystical brew ayahuasca. It is referred to by many different names, such as yagé, caapi, 'vine of the souls' or 'vine of the dead.' The name ayahuasca, as well as referring to the drink, also refers to the vine Banisteriopsis caapi. This vine contains three monoamine oxidase inhibitors, harmine, harmaline and tetrahydroharmine, which are hallucinogenic at sufficient dose levels.

Shaman refer to the vine, of which there are a number of varieties, as the base of the drink. The light, or the source of hallucinations, comes from either the leaf of the chacruna plant, Psychotria viridis, or from the leaves of the huambisa plant, Diplopterys cabrerana. These leaves contain N,N-dimethyltrypamine, or DMT, which is also present in the human brain. However, the hallucinogen is not active orally, since a stomach enzyme called monoamine oxidase, blocks it. The active ingredients in Banisteriopsis caapi inhibit the stomach enzyme, enabling the N,N-dimethyltrypamine to enter the brain.

The ayahuasca vine and the chacruna leaves are the basic ingredients of the ayahuasca drink. Different shaman will often add additional plants, such as toé, tobacco, pucha pari, marosa etc, for their many different properties such as cleansing, spiritual protection, enhancement of visions, and healing.
While illegal in many countries due to the active ingredient DMT being a class A category drug, ayahuasca is legal in Peru, and also Brazil, where a number of syncretic churches incorporate ayahuasca into their Christian and mystical services. Thousands of 'ayahuasca tourists' fly to Peru each year, to take part in ceremonies, and it is increasingly becoming available in North America, Europe and Australia, although those who do drink it rarely do so for purely recreational use.

The side effects of ayahuasca can include severe vomiting and diarrhea, and the visions if seen can provoke utter terror in those who experience them. Visions are only likely to be experienced if the drinker has undertaken a period of detoxing and abstinence from many

different foods including coffee, alcohol, red meat, sugar, spices and salt, and therefore it is almost impossible for people to abuse. Ayahuasca is far more likely to provide some of the harshest lessons in life to those who attempt to do so.

Until around 1990, the main scientific interest in ayahuasca had been in botany, chemistry, human neuropharmacology, and anthropology. Benny Shanon, a cognitive psychologist is the first, and perhaps only, psychologist to attempt to chart the phenomenological ayahuasca experience from a psychological perspective (Shanon, 2002). Ten years of research contributed to the most comprehensive psychological study of ayahuasca undertaken, with over 2,500 user reports analyzed, complemented by Shanon's own personal experiences of around 130 ceremonies, a huge number for a scientist to have taken part in. Shanon asked the question "What is experienced when one drinks ayahuasca?" and his analysis answered by looking at the experience from many different perspectives:

0. Structural Typology
1. Style of visual images
2. Interaction and Narration
3. The Contents of Visions
4. The Themes of Visions
5. Ideas, Insights and Reflections
6. Alterations to consciousness and perception of time
7. Non-visual perceptions
8. Stages and progression of visions within and across ceremonies

More recently, Shanon (2010) has expanded his topological framework, to examine in more detail the deep epistemological questions of meaning and interpretation of those who experience ayahuasca at its most ineffable and transcendental levels, and for whom orthodox theories of psychology become woefully inadequate:

Psychological Knowledge
Ayahuasca can provide novel insights and self-understanding, with ayahuasca often described as being the equivalent of receiving years of psychoanalysis in just one or two sessions.

Knowledge Related to Nature and Life
Ayahuasca drinkers will often experience a profoundly close link to nature, animals, plants and minerals, especially when it is drunk in the natural setting of the Amazonian rainforest. These experiences can be extraordinary for those who have them, for example transforming into an eagle and flying above the rainforest canopy, really experiencing what it is like to be that animal or plant or tree.

Philosophy and Metaphysics
Ayahuasca can generate philosophical and metaphysical ideations and reflections. For me, I have received deeply intuitive understandings of the symbolism of the ankh, Thoth, David Bohm's implicate order framework of quantum physics, and the Tao. These experiences utterly defy any attempts to capture in words, reflecting the teachings from many Eastern religions that true reality is beyond language, words and human understanding.

Artistic Performance and Creativity
When under the influence of ayahuasca, the level of musical, singing and occasionally dancing performances is greatly enhanced. I have found that when singing icaros, sacred healing songs of which I have been taught, I have sung with a delicacy, intonation and vibrato that I could never think of achieving outside of an ayahuasca ceremony.

Specialized and Factual Knowledge
Shanon emphatically states that he does not believe in paranormal or parapsychological phenomena, and is explicit in stating that he has found no evidence of the obtaining of new factual evidence through drinking ayahuasca. This is in direct contrast to Stanislav Grof, who does provide compelling evidence that this is the case with those who are administered LSD in a supportive psychotherapeutic context (Grof, 2009).

Only a very tiny proportion of Shanon's research has been with indigenous or Mestizo shaman, who for centuries and more probably millennia have drunk ayahuasca in order to be able to diagnose illness in patients 'supernaturally'. They do so in partnership with the spirits of the plants, who they refer to as los doctores. Shanon collated personal

reports of the phenomena, but did not complement these with any other forms of analysis or experimentation. Shanon's interpretation is that "what ayahuasca furnishes is heightened insight and comprehension which are based on already existing empirical knowledge and long-term practice" (Shanon, 2010).

Those shaman in the Amazon who are healers who drink ayahuasca to diagnose illness are more commonly known as curanderos, and their training and experience with ayahuasca generally starts when they are in their teens. They will, from an early age, be taught by a teacher, their maestro, to recognize thousands of plants and their healing properties. However, to really get to know ayahuasca, and to really get to know the spirits of the plants, the apprentice curandero has to spend not months but years alone in the rainforest, without clothes, just a blanket, following an extremely limited diet of mainly fish, plantain and other jungle fruit. In these years of solitude, the apprentice will drink both ayahuasca and samples of every plant, flower or tree that they will be using as future medicines, to become intimate with the properties of that plant.

The curandero heals in partnership with the spirits of the plants, and it is this that the plants teach the shaman how to do. The shaman heals holistically, by determining what 'illness' is trapped within the patients soul or spiritual body. This form of illness is conceived as an energy imbalance, where perhaps emotions and negative thinking become trapped in the body, resulting in more physical illnesses in the physical body. In order to heal a patient, the plants will show the shaman where in the spiritual body these concentrations of negative energy are, and the shaman will then use a combination of techniques to extract them. These include the singing of sacred songs, icaros, while playing shacapa, an instrument made from dried leaves of the carrizo plant, blowing tobacco smoke, blowing sacred breath into the spiritual body (soplas), and also sucking the energy out of the body (chupas).

Following a sudden growth of interest with westerners in the last 20 years, a number of books about ayahuasca have been published, but very few have documented in any detail the incredibly rich and sophisticated pharmacological knowledge and conceptual frameworks of illness of the curandero (Luna, 1984; Beyer, 2009). There have been no medical studies of this healing modality, despite much anecdotal evidence of its efficacy, and despite shamanism being the oldest spiritual and healing practice, although the relatively new multidisciplinary ethnopharmacology is starting to redress this issue.

The approach I have taken with my research with ayahuasca has been to complement both the works of Shanon and Beyer with a comprehensive and structured phenomenological account of my own experiences as an apprentice ayahuasca curandero (Robinson, 2010). I first travelled to Peru in 2008 to participate in a two week ayahuasca retreat, in order to heal some deep psychological traumas from the past. I then decided to return to Peru in 2009, simply to participate in some further ayahuasca ceremonies with Javier Arevalo, but to my surprise, and without asking, was taken on as his apprentice.

Javier continually emphasized to me that the visions experienced by both an apprentice and maestro shaman are qualitatively different to those of participants or patients. Javier initiated me into the secrets of the shacapa, taught me icaros, and how to perform the sopla, the sacred healing breath on a patient. Within any literature on curanderos, it is extremely rare to read an account by a westerner who has been taught how to perform a diagnosis, via conscious communication with the spirits of plants, using the full range of shamanic techniques, as I have attempted to do so.

The first thing I should say is that I had to learn how to move from head consciousness to heart consciousness, to really trust ayahuasca not fight it, and this lesson was probably the hardest, as it involved a shamanic initiation by the ayahuasca, whereby my body was slowly

killed off, one vital organ at a time. This was not a visual hallucination, this was having the experience in the total belief that it is happening to you, and for me it was terrifying to the point where a trained therapist had told it had been the worst psychotic episode she had ever witnessed. Many people do not go back to ayahuasca having experienced the legendary terrors that it can bring, but I did.

Javier structured my lessons so that initially I would be drinking quite mild ayahuasca. I was slowly introduced to los doctores, or perhaps they slowly introduced themselves, and showed me how they help the shaman diagnose illness not through any form of empirical language-based knowledge, but in a more visual, direct and intuitive way. It is this form of knowledge of a curandero that Shanon makes no reference to, which I feel reflects his lack of this specific form of experience with ayahuasca. In each ceremony the doctores were teaching me by showing me how they were healing my own body, and again it is rare in the ayahuasca literature to read accounts of experiences inside the 'body'.

Although it is nigh on impossible to explain, what is an ineffable experience, I will try. Ayahuasca can be said to make your body 'transparent', and I certainly found this to be the case. Lying down, in the darkness of a temple in the rainforest, listening to Javier's beautiful icaros calling the doctores to us, around an hour after first ingesting the brew, I would sense them approach me. I would often experience them not as Beyer did, taking on a human form, but as fantastic matrices of light, highly organic matrix structures, dancing as they flew, fusing with my own consciousness so that we would become one. My physical body would gradually begin to melt into nothingness, and I would experience a vast expansion of my own consciousness which would correspond with seeing the doctores expand in many dimensions. Their canopies of light would unfold in such a-way that it was like being in a hyper-dimensional brilliantly electroluminescent cathedral, looking up at an ever expanding ceiling of beams, arches and patterns that would stretch into an impossible vastness, which was my, or our, expanded consciousness.

They would then inside of this space 'fly' to any particular part of my body requiring treatment and they could show me symbolically where the negative energy was. Of course this energy had to be expelled, and this is done via the purge, via either vomiting or diarrhea, or both. When working with a patient, the doctores are able to be extremely precise in locating the area of the body that the illness is in. In one patient, a very young child, I was shown dark menacing insects in his urinary system, and was shown the achiote plant which was to be used as the cure. Javier after the ceremony confirmed that the child did indeed have an infection in this area, and that the achiote was the correct plant for the cure.

Are the visions of the shaman qualitatively different from participants, or patients? A curandero will have drunk ayahuasca thousands of times, unlike the vast majority of westerners who travel to Peru and the wider Amazon to take part in perhaps only one, two or a very small handful of ceremonies. These initial ceremonies by westerners can be spectacular, for example with reports of metamorphosis into eagles, flying over the canopy of the rainforest. But Javier was clear that these are just providing a very cursory insight into the spiritual world. What I experienced was initially disorientating, going far beyond any form of words, going far beyond any kind of world that had the structure of three dimensions and time, one that could only be experienced with a parallel and extreme alteration and expansion to my consciousness.

Time and again, those who have ingested ayahuasca and other hallucinogens report that they experience reality as an undivided wholeness, and also that both time and space are perceived to cease to exist. It is intriguing to speculate that perhaps one of the effects of hallucinogens in the brain is to enable the person to experience the implicate order of David Bohm (1980) directly. Bohm's concept of wholeness and the implicate order certainly can be seen as very shamanic in nature (and can also be likened to the metaphysics of for example Taoism or Hinduism). Javier continually emphasised the fact that this world

was an illusion, and that only the spiritual world mattered, or was the true reality. I asked for clarification, in terms of the relationship of this world to the spiritual world, and rather than giving a Platonic or dualist account, Javier said that although the material world was a part of the spiritual world, it was just one tiny fragment, mirroring the way in which Bohm describes the relationship of the explicate to the implicate.

The concept of expansion came up many times in ceremonies, and in one in particular, ayahuasca told me that science could only advance if it made the transition from reduction to expansion. I feel that it is now time that we expanded our thinking away from a reliance on reductionism, expanding our scientific thinking to include what are actually very ancient concepts of wholeness. These can really only be experienced in an intuitive mode of consciousness, and natural plant hallucinogens, if treated with the reverence and respect of our indigenous people across the planet, promise to guide us on our journeys to wholeness, and open up a vast new expanse of knowledge that is holistic in every sense of the word.

References

Beyer, S.V. (2009) Singing to the Plants A Guide to Mestizo Shamanism in the Upper Amazon University of New Mexico Press

Bohm, D. (1980) Wholeness and the Implicate Order Routledge

Capra, F. (1975) The Tao of Physics Shambhala

Grof, S. (2009) LSD: Doorway to the Numinous Park Street Press Originally published as Realms of the Human Unconscious (1975) The Viking Press

Luna, L.E. (1984) The Concept of Plants as Teachers among four Mestizo Shamans of Iquitos, Northeastern Perú. Journal of Ethnopharmacology, 11, 135-156

Rees, A. Mail on Sunday,(8th August 2004)

Robinson, S. (2010) Ayahuasca Curandero. MSc Dissertation, Schumacher College Available via download at www.simonralli.com

Shanon, B. (2002) The Antipodes of the Mind Charting the phenomenology of the Ayahuasca Experience Oxford University Press

Shanon, B. (2010) The Epistemics of Ayahuasca Visions. Phenomenology of Cognitive Science, 9(2), 263-280

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Ode to Master and His Emissary (postscript)

I've just grasped a paradox not understood
By quantum mechanic's great brotherhood
How can a wave and a particle be
one and the same simultaneously?

If they'd read Iain's book it would become clear
In the context of Left and Right hemisphere
The kind of attention we bring to our seeing
Determines the world that we bring into being

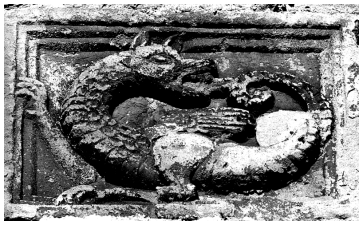
The Left brings a particle – matter embodied
The Right an informative wave that's less solid
Is it 'Explicate' –' Implicate' here that we witness?
David Bohm's explanation of unbroken wholeness

Descartes thought therefore he was
Cogito ergo sum
Only consciousness is certain
But we don't know from where its come.

Val Charlton

Processes and Paradox of the Self

Ann Morley



"The deeper layers of the psyche lose their individual uniqueness as they retreat further and further into darkness.'Lower down', that is to say as they approach the autonomous functional systems, they become increasingly collective until they are universalised and extinguished in the body's materiality, i.e. in chemical substances. The body's carbon is merely carbon, hence at bottom, the psyche is simply world. " (C J Jung CW 9.1 par 291)

Jung's first psychological theorising was based on his experience of complexes, which he thought of as unconscious patterning of the mind through relational experiences in early life, demonstrated unknowingly through assumptions and behaviour in adulthood. Later he came to see similarities of patterning in mythology, religion and fairy tales throughout history and proposed that archetypal patterns in the collective unconscious underlay the individual complexes of the personal unconscious. In a Jungian dictionary, this is now described as archetypal potential - the potential to take shape in the form of archetypal patterns. Some current Jungian thinkers are linking complexes with self-organising systems and seeing archetypes as generalisations from complex formation rather than as innate underlying patterns. Something of Jung's changing thoughts about the relationship between complexes and archetypes can be seen in this debate between a 'top down' archetypal primacy approach and the 'bottom up' approach of the primacy of complexes. Cultural complexes in which specific archetypal identifications may be recognised as active within cultures and time periods provide an intermediate top down influence. However, the thinking of the dynamics of self- organising systems holds the potential for new archetypal forms to emerge rather than seeing existing archetypes as the basic forms of psychological life.

How then do we understand the concept of the self? Jung's thinking about the self was divided between the self as the totality of psyche and the self as the centre of psyche.(Neither of these, of course, is the same as the meaning of the word self as used in the activity of a self-organising system.). In her paper in Volume 2 of this journal, Wendy Ellyat describes the Inclusional Geometry concept of a centre as a 'dynamic relational centre of flow'. I intend to discuss a strand of psychological theorising in tune with this image. In his paper, "The Self, Did you find it or did you make it?" written in 1991, but edited and published posthumously, exploring this paradox, Louis Zinkin a Jungian analyst, proposed that "The self is always a construction, one which is not possible without language and language is not possible without culture and culture is always shared." (Zinkin L 2008)
I will explore some of the thinking which influenced Zinkin and which has followed since Zinkin died in 1993.

From the 1940s onwards, Michael Fordham, a London based Jungian analyst, began to outline his theory of development through processes of de-integration of the self, in each meeting with new experience, followed by a re-integrative process as the self re-formed. If the experience was overwhelming, such that it brought about disintegration, this might then result in defences of, for example, splitting or dissociation in the self, as a defence against unbearable anxiety. This theory was being developed at the same period, the mid 1900's, as Winnicott's proposal of the true and false self. Both of these were predicated on a Primary Self, or Wholeness. In letters between Fordham and Louis Zinkin, Zinkin, who had been Fordham's supervisee during his training, proposed that if the Primary Self could be a timeless concept, rather than a concrete reality in developmental terms, he would have no quarrel with Fordham's theory. Michael Fordham seemed pleased with and accepted this sense of timelessness in relation to his concept. The Primary Self now could be thought to have been, that is to have existed, only after de-integrative, re-integrative processes had taken place and a self state or mode of experiencing and interpreting had come into being, with relationship at the core. A self state is not identical with Jung's concept of the self, the centre of being, but a developmental achievement in which each self state would have a sense of stability, together with a potential for ongoing change.

In the 1980's Daniel Stern, a psychoanalyst also working in Infant Research, described four stages of development of senses of self in infancy: the sense of an emergent self, the sense of a core self, the sense of a subjective self, the sense of a verbal self, all of which function alongside each other

throughout life. Stern proposed that by 8 weeks the infant's subjective organisation has developed to a level which he named a sense of an emergent self. He suggested that this could be as much a sense of process as of a product of those processes.
"I am suggesting that the infant can experience the process of emerging organisation as well as the result and it is this experience of emerging organisation that I call the emergent sense of self." (Daniel, 1985 pg 45)

By the age of six months, Stern then proposed that the infant, given good enough relational and environmental opportunities, will have developed a sense of a core self. The necessary experiences are those of self- agency, self-coherence, self-affectivity, self-history.
"A sense of a core self results from the integration of these four basic self- experiences into a social subjective perspective" (idem pg 71)

Core- relatedness then would establish the physical and sensory distinctions of self and other. This would be followed by a sense of subjective self in which the beginning awareness of mind in self and other can be detected, for example through 'sharing' activities. This development would enable the possibility of experience of separation from the other and also union or being with another.
"When the domain of intersubjective relatedness is added, core-relatedness and intersubjective relatedness co exist and interact." (idem p 125)

As language develops Stern proposed that this brought about another organisation which he named the verbal sense of self.
"Language then provides a new way of being related to others (who may be present or absent) by sharing personal world knowledge with them, coming together in the domain of verbal relatedness. These comings- together permit the old and persistent life issues of attachment, autonomy, separation, intimacy and so on to be re-encountered on the previously unavailable plane of relatedness through shared meaning of personal knowledge." (idem 173)

Since meaning in language is created in the relational setting, this opens the potential for descriptive expression of experience but also for distortion of experience.

Mary, a 40 years old business woman, dreamed of a small 2 to3 years old boy dressed in red dungarees, lively and actively present. Then to her shock, from the corner of her eye, she noticed nearby the shadowy still body of a small girl, seemingly lifeless. If this dream spoke of a deep split in her being, then it was not surprising that, in her life, this woman had followed what, at that time, were mainly masculine activities. The active little boy and the totally passive little girl could be seen as parts of the whole, into which her sense of self could be seen as having split. Rather than there being a dialogue between her receptive and penetrative desires, between her femininity and masculinity, there was a gap with a barrier behind which 'the little girl' lay discarded, a shameful part of her self

In Mary's life, as a two year old child, and in a very short space of time, she had experienced: her older brother starting school, so having a life of his own, a younger brother being born, so changing her relationship with her mother, and her father being away from home for a period of three years. Perhaps these might give some background understanding of her dream, in which feelings of rejection were symbolised by a female child and feelings of desirability by a male child, possibly leading to the potential for a split in self identification between the unwanted feminine and the wanted masculine aspects of herself. Cultural complexes, in this case linked with male and female roles, could be seen as having played a part, in both the early splitting and then in the symbolic understanding of the dream.

If Mary had had to make sense of her experiences at the age of two then it is not difficult to imagine that she might relate a feeling of being desired to her baby brother, and a sense of importance to her older brother. Given the absence of her father and her mother's involvement with the baby she might have felt overwhelmed and alone in her reactions and so been led to create a passive rejected 'little girl' and an active wanted 'little boy' within her self. From Stern's senses of self, she would have been in the developmental stages of subjective self and verbal self domains, where symbolism has begun. Her sense of a core- self may have developed in a healthy manner and still be functioning well through out these experiences but the beginnings of sharing and revisiting the persistent life issues of separation and intimacy might have been very limited. Her resolution of her dilemma could be seen to have been that her masculine elements would be wanted, not least by herself, and her feminine elements rejected.

Donald Kalsched, a Jungian analyst in New York, took this thinking further in discussion of his work with patients who, having experienced trauma in childhood, then re- traumatise themselves thus preventing authentic relationship. He reviewed other theoreticians from the analytical tradition and saw Fordham's ideas on defences of the self, which prevent integration of new experience, as linked with his thinking about what he described as the self-care system. This sounds benign, but within the

self care system he included the potential split between the Protector and the Persecutor. Self care might involve inner persecution of the metaphorical child, wanting love but fearing hatred and hurt, so that any vulnerability, any reaching out, would be killed before it was born. A de-integration would become a disintegration and the resulting defensive systems would block the potential for the development of a new re-integrated state. Paradoxically, unconscious complexes acting to preserve life could at the same time kill future authenticity of being and hide, if not prevent, the relational contact necessary for participation in life of aspects of the self.

Following her dream, Mary began to experience a re- engagement in life of 'the little girl', the feminine, reaching an expression of a desire in 'the little girl' to wear the red dungarees: and for the masculine and feminine to become present and in dialogue with each other. She became more aware of the destructive persecutor aspect of her self which strove to block her authentic experience. Both penetration and receptivity are important and necessary aspects of relationship, both intra and interpsychic, both aspects of engagement with life, and both expressions of the self in the world. Challenging the cultural archetypes prevalent in her earlier experience opened the potential for re-organisation, reducing the power of the archetypal attractors of her self structure.

More recently, neuro- scientists, using the modern tools of investigation, have considered their findings in relation to brain activity, imagery and subjective experience. Antonio Damasio proposed a model of a proto-self, a coherent collection of neural patterns of which we are not aware: a core self, following the development of core consciousness and offering 'a transient reference to the organism in which events are happening: followed by an autobiographical self, dependent upon both core consciousness and the development of an 'organised record of past experiences of the organism'. Damasio offered a process model of the sense of self which would seem to have overlap with both Fordham's developmental model and Stern's senses of self model, both emphasising repetitive processes and the potential for disintegration , dissociation and splitting within these processes.

"Our sense of self is a state of the organism, the result of certain components operating in a certain manner, and interacting in a certain way, within certain parameters. It is another construction, a vulnerable pattern of integrated operations whose consequence is to generate the mental representation of a living individual being. The entire biological edifice, from cells, tissues, and organs to systems and images, is held alive by the constant execution of construction plans, always on the brink of partial or complete collapse should the process of rebuilding and renewal break down. The construction plans are all woven around the need to stay away from the brink." (Damasio pg 145)

This psychological picture of the micro processes and paradox of the self mirrors the macro picture of the overall human and ecological worlds. It emphasises the iterative dynamics of interactions, with momentary experiences of wholeness as the stability of one or another attractor is revisited and archetypal forms reinforce and are reinforced in habitual living patterns. Now that we are experiencing life forms as on the brink and becoming more aware of the necessity to redesign our 'construction plans', perhaps the discomfort or disturbance felt in our senses of self could be of value in leading to the emergence of new archetypal forms.

References

Damasio A 2000 The Feeling of What Happens Vintage

Ellyatt W 2010 Opening the Whole Holistic Science Journal Earthlinks UK

Fordham M 1985 Explorations into the Self Karnac Books

Jung C J 1959 C W 9 parts 1 and 2 Routledge The Archetypes and the Collective Unconscious Aion

Kalsched 1996 The Inner World of Trauma Routledge

Samuels A, & 1986A Critical Dictionary of Jungian Thought Routledge

Bani Shorter, Fred Plaut Saunders P &2001 'Archetypes, Complexes and Self-organisation' Journal of Analytical Psychology

Blackwell Singer T &2004 The Cultural Complex Brunner-Routledge

Kimbles S Stern D N 1985 The Interpersonal World of the Infant Basic Books

Van Eenwyk JR 1997 Archetypes and Strange Attractors Inner City Books

Zinkin L 2008 'Your Self: did you find it or did you make it' Journal of Analytical Psychology

Blackwell Zinkin H & 1998 Dialogue in the Analytic Setting Jessica Kingsley Gordon R, Haynes J (ed)

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We need to look at the brain not as a divided brain but as a united brain and the left brain and right brain complement each other. They are not opposed to each other, they are not opposite to each other. In the same way as in our body we have the left hand and right hand. Left hand and right hand are not divided, they are not separate, they are two arms of one body. When you bring those two arms together, left and right, then they complement each other and they can hold the pot or make a pot or they can decorate a pot, they can build a house or they can do everything. But you cannot do that with just one hand, you need both hands. In the same way you need both hemispheres to do anything.

Wholeness from the Indian perspective is the combination of the two. In our body, we have the left eye and the right eye, in our nose we have the left breathing channel and the right breathing channel, when we are listening, we have the left ear and the right ear. They are all part of the same one, united brain, united body, united mind. It's always that two are present and united. They are not divided. They have slightly different functions, but those functions need the whole.

In the same way in Indian mythology, you always have the masculine and the feminine as two aspects of one single unit. If you take all Indian mythological gods, for example, there can be no Krishna without Radha, there can be no Rama without Sita, there can be no Shiva without Shakti or Parvati, there can be no male without female. Actually in Indian mythology we say that the feminine principle or the right hemisphere is the master and should be the first. Whenever in India we say the two names, we do not say the male name first, the female name comes first. In Indian mythology at least, the right hemisphere is the master and still rules! The emissary has not taken over in mythology!

In the west, first we divide and then what we also do is we put one above the other. So we put the society first – male/female, male better, female less important. Then we say right hemisphere brain and left hemisphere brain, left hemisphere better, right hemisphere lower. Educated- uneducated – uneducated peasants are lower than educated Oxford, Cambridge big universities being higher. So first of all we divide and then we put one above the other. We divide like Rene Descartes – we divide mind and matter and we put mind superior to matter whereas matter has the mind!

One thing that Iain McGilchrist says is very beautiful and I feel almost the key to everything. He says that reality is not a thing in itself. He says, reality is a relationship among things. So you are not real, I am not real, but the relationship between us is real. My body is an amalgam of relationships and that is *the* very important key. The same thing was said by Gregory Bateson. When he came here to Dartington he said 'we don't have five fingers, we have four relationships'. So Iain and Gregory are saying the same thing – reality is not the thing, the reality is the relationship between things.

The reality is made of relationships. And when there is relationship – there is no ego – because ego means that is the end of relationship. Superiority, I am better than you, I am your boss, I am this I am that I, I, I – I think therefore I am .. I, I, I – that's the ego. When I'm related there is no I. There is no left brain and right brain – but that which comes out from the whole united brain! We need to find that key again – it will open all the doors and resolve all the crises we see in the world today.

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*When only nine years old, **Satish Kumar** renounced the world and joined the wandering brotherhood of Jain monks. At the age of eighteen, he left the monastic order and became a campaigner, working to turn Gandhi's vision of renewed India and a peaceful world into reality. Fired by the example of Bertrand Russell, he undertook an 8,000 mile peace pilgrimage, walking from India to America without any money delivering packets of 'peace tea' to the leaders of the four nuclear powers. Since 1973, he has been the Editor of Resurgence magazine.* ***www.resurgence.org***

Feedback and Opportunities

We hope you have enjoyed reading this 3rd issue.

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Journal Review

Your two journals arrived a few days ago. But I was able to open the envelop only now. It was a very satisfactory experience. Glancing through the pages of the two copies I quickly realised what a feat it must have been for you to put them together. The material is interesting, balanced and insightful.

There is no doubt that wholeness in science needs to be isolated as a subject and discussed from many angles – language, logic, theoretical physics, biology, social anthropology, epistemology, brain science, history of civilisation, mathematics, philosophy and others. That explains why I loved you calling these various fibres of a holistic science 'rags' in your introduction to the first issue. Congratulations! The contributions of these disciplines to fathoming wholeness will eventually lead to a deeper understanding not so much of the subject itself, but of why approaching wholeness from an objectifying angle is productive only in the sense it makes one realise that in the end the intellect is counterproductive in this area. (See Heisenberg's uncertainty principle.)

Holism is a state of mind. It engages with the fragments making up the universe and their mutual involvement. That is, therefore, the way holism should be handled. Of course, we need to start from an intellectual understanding of what has caused the present disenchantment with the way we objectify things and lock into them conceptually. But once we have understood this, we must find ways to re-experience wholeness in the raw. More importantly, we must make sure that by doing so, we will not lose our ability to objectify reality and handle it in accordance with its own laws and priorities.

This is where your journal can – ***indeed must*** -- play a significant role. How this dual task can be achieved will eventually have to be discussed and tested.

Emilios Bouratinos

'All truth is crooked, time itself is a circle.'

Friedrich Wilhelm Nietzsche