ABSTRACTION AND EMBODIMENT

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Abstraction in the era of information

In the past century science and technology have brought about changes that deeply shape our world and our future, both in terms of matter and psyche. Traditional myths and symbols, rooted in millennia of our history as a species, have lost much of their effectiveness for comprehending our present reality. Traditional religious narratives are undergoing a deep crisis in most technologically advanced parts of the world. Science, while in a sense representing 'the new religion', is by itself incapable of providing meaning and ethical guidance and therefore cannot fill the gap left by the retreat of mythological consciousness.

If the 19th and 20th centuries have marked great advances in our ability to control vast amounts of energy, the key to understanding the civilization of the 21st century is the mastery of vast amounts of information. We are becoming an information centered culture. And this process is accompanied by a parallel change in the way we represent the world, and therefore also in the way we relate to each other and to the planet.

One way to describe this shift is in terms of the balance between the right and left hemispheres of our brain. According to the psychiatrist and neuroscientist Iain McGilchrist, the brain hemispheres correspond to two different styles of processing information (McGilchrist ,2010). The right hemisphere takes in and elaborates predominantly overall patterns, complete gestalts, and tends to respond intuitively to new situations, while the left hemisphere focuses on details, builds analytical representations of reality based on past experience. The tragedy of our times, according to McGilchrist, is that we have become predominantly left-hemispheric beings. We value the approach of the left hemisphere over that of the right hemisphere, we have downplayed the intuitive capabilities of the latter and have focused predominantly on the former's ability to calculate and build exact predictive models.

I am no expert at neuroscience, and the right brain/left brain model is far from being unanimously accepted by the neuroscience community. But I believe that there is an important kernel of truth in McGilchrist's approach, which is not strictly dependent on the right brain/left brain model. The essential point concerns two different styles of representing the world and orienting our action. I will call them 'embodiment' and 'abstraction'. The first takes in reality as an undivided whole, is close to lived experience and relies on pre-verbal, intuitive, largely unconscious processing, in which emotions play an important role. The second one is verbal and analytical. It relates to the world in terms of models and representations. Emotions may be an object of study for it, but their intervention in information processing is viewed with utmost distrust: the ideal of this mode is cool and impersonal.

In terms of this duality, our culture is strongly unbalanced in favour of abstraction and tends to lose sight of embodied experience. We relate to the world in terms of concepts, models and representations, which take on in our thinking and acting a higher degree of reality than the embodied experience that is their ultimate foundation. We live an increasingly virtual life in a world of signs that have replaced the concrete realities they point to.

Science

The highest form of abstraction is science itself. Modern science rests on experiment as its foundation. Scientific consensus is based on the repeatable character of scientific experiment. If I carefully describe an experiment I am performing today here in Totnes, you are supposedly able to replicate it in Tokyo next month obtaining the same results. That is what makes cumulative progress possible in science. And that is what gives science its predictive edge. But what

gives the scientific experiment its repeatability? Obviously no real, concrete situation is ever fully replicable. What can be replicated is an abstract skeleton of the concrete situation: those aspects of it that can be exactly described and measured. All the rest of it is unmanageable, and therefore irrelevant, for scientific enquiry.

The fact itself that this strategy is successful is remarkable. That is the realisation that Galileo phrased as "the book of nature is written in mathematical characters": mathematics is the highest level of abstraction in the description of our experiences. There is no doubt that the strategy of reducing the complexity of the real to its mathematical skeleton has great predictive power. And predictive power means technology, i.e. means power *tout court*. There lies the great seductive power of science. Blinded by its dazzling seductive power, we forget about the process of abstraction that lies at its base. The abstract model we have built suddenly becomes more real in our eyes than reality itself, the dry skeleton more real than the blood and flesh of the body.

While the achievements of science are truly astonishing, it is crucial not to forget what we have left behind. Abstraction is no problem if we remain aware of the founding operation that has generated it, i.e. the reduction of the fluid and infinitely complex lived experience to a repeatable core of abstract properties. The trouble is we forget. Our scientific models of the world take on a higher degree of reality than our lived experience. We assume the data of the senses to be fallible, and only rational analysis to provide a trustworthy picture of reality.

I should probably qualify the previous statements: the postmodern sociology of knowledge has devoted considerable attention to deconstructing the naive assumption that equates representation with reality. But its critique hardly achieves recovering the fullness of embodied experience. The critique itself is formulated in the language of abstraction and therefore its impact hardly reaches the world of everyday life, in which a medical doctor's description of the state of our body has greater authority than our own experience of it.

The economy

A crucial form of abstraction that has a tremendous impact on our lives is money. What is this elusive thing we call money? Its presence is ubiquitous and carries great weight in our daily interactions, yet its value seems to be purely conventional. It is the supreme abstraction of mercantile dealings, the general measurement of all exchanges of things or services. As such it is a clever invention: thanks to it, if I am good at making shoes but I need a hat, I don't need to find someone who is good at making hats but needs a pair of shoes. The conversion of all these things into money efficiently solves the problem. The trouble is that this clever device takes on a life of its own, this useful servant becomes a tyrannical master.

Long ago money was a thing among other things, and used to take on various concrete embodiments, like cowrie shells or handicrafts. Eventually its favorite embodiment came to be metal. But even then its "thingness" was rather superficial: Roman emperors quickly discovered that metal coins can be "shaved", saving on the metal while keeping the nominal worth of the coin unchanged. In modern times the "metal embodiment"of money has been represented by the gold standard, the supposed convertibility of money into gold. But that also is long gone.

Today the circulation of money on the globe is estimated at four trillion dollars a day. This does not include the circulation of derivatives ("futures"etc.), which is estimated to be considerably larger. 2% of these four trillions correspond to actual buying and selling of goods and services. 98% of it is purely speculative, not anchored in any real exchange. That such a situation is intrinsically volatile is only too obvious.

According to modern monetary theory, the nature of money is that of a credit-debt document. The notions of credit and debt are of course very ancient, much more ancients than money. In primitive economies, 'gift economies',(Sahalins, 1972) the credit-debt balance was realised through the exchange of gifts. Custom would in some measure regulate this exchange, which nevertheless would

remain something quite concrete and tangible, shaped by personal relationships with all their nuances, symbolic aspects and emotional charge.
In modern economies money with its abstract measurability replaced all that relational complexity and rendered exchanges much more rapid and efficient. Money is a useful servant, but it can turn into a tyrannical master. Left to itself (in a 'free market'economy) it has a disastrous impact on the cohesion of human society and on the life of the planet. Two characteristics of the money dynamics are crucial in this respect:
- a tendency to exponential growth of all economic activities
- a tendency towards concentration of money in the hands of a few
Exponential growth - Money, as the universal exchange medium, is desirable and therefore can be offered at an interest. Repaying interest implies producing more than the equivalent of the borrowed money. The natural course of a free market economy is a constant rate of growth of production. That means an exponential growth of the volume produced (and a corresponding exponential growth of resource depletion, waste and ecological impact).
Exponential growth of the economy on a finite planet means we are on a collision course with mother earth. We are destroying what supports our own life and that of all our fellow creatures. Eventually we may end up destroying ourselves.
Concentration of wealth - Owning a lot of money gives you a better opportunity to acquire more money than if you have just a little. This not only through the straightforward mechanism of compound interest, but much more significantly, at a larger scale, e.g. the scale of multinational corporations, through being able to shape the playing field of your financial and economic activities (buying information media, lobbying, bribing, etc.). This being so, the inevitable outcome of a free market economy is inevitably the concentration of wealth in the hands of a few. This point has been admirably argued by Thomas Piketty in "Capital in the 21st Century",(Piketty, 2013) with a rich historical documentation about the tendency of wealth to concentrate and a sophisticated analysis of the factors involved. Piketty's solution to this basic contradiction of capitalism is a global progressive tax on capital (which he calls "a useful utopia").
The most serious consequence of concentration of wealth is not necessarily the impoverishment of the masses, although this is frequently the case, especially in the Third World. A conceivable relatively optimistic scenario (at least in the short or medium term, before the depletion of resources and deterioration of the environment goes too far) is that the economic condition of the poor majority remains stable or marginally improves, while the rich minority becomes enormously rich, i.e. the gap between rich and poor becomes huge. Even this relatively optimistic version of the future is not at all a desirable scenario. It creates two races of people and spells the end of the dream of democracy.

Media and communication
A third aspect of the predominance of abstraction in our culture is the role virtual reality and electronic communication have in our lives. This is something so obvious it hardly requires any comment. e.g., video games and social networks are a large part of teenager reality in all developed countries. When my partner's kids join us in watching a film on the computer, she and I simply watch the movie, but the kids watch the movie, play a video game and chat with friends on what's app, all at the same time.
TV, films, video games and advertising contain an increasing concentration of stimuli. We are bombarded by an amount of information incomparable with anything of the past. And all this information is competing for our attention. The competition is mostly through images carrying the strongest possible emotional charge. Sex, blood and violence are standard ingredients: and, as the audience gets accustomed to them, higher doses or more gruesome forms are supplied. A shocking and highly significant phenomenon is how often acts of violence are video recorded by the perpetrators. It is as if the act itself loses

significance compared to its being recorded and being shown off

Artificial Intelligence

The culmination of this trend towards abstraction can perhaps be seen in the idea, taken seriously by a growing number of neuroscientists, that it will eventually be possible to transfer human consciousness onto an artificial non-biological support, i.e. to build a conscious robot. Some view this as the key step to permit space travel beyond the limitations imposed by our organism and eventually to perpetuate human culture beyond the survival of life on this planet. While this may sound like Promethean hybris, a projection of the power of our knowledge and technology way beyond what can be reasonably claimed at present, we should not ignore that there is a continuum from the present identification of our culture with abstraction to these extreme projections. The prevalent opinion in current neuroscience views consciousness as an epiphenomenon of electromagnetic processes in brain circuitry, i.e. a secondary manifestation of a dynamics entirely closed in itself and in principle reproducible in purely mechanical terms. If we accept that view, the only obstacle to realising human-like consciousness on an artificial support is the complexity of the human brain, which at present still defies our technical capabilities. But many things that were beyond our capabilities a few years ago are quite run of the mill now (reproducing strands of DNA, MRI scans, etc.). So the complexity of the brain is not necessarily an unsurmountable obstacle.

The shadow of abstraction

The process of abstraction lies at the root of the entire human civilisation. Science, art, language are all built on it. We certainly do not want to throw it away. Such a thing is not even conceivable. Yet we need to be aware that, beside its wonderful creative potential, it possesses tremendous destructive power. The tragedy is that abstract knowledge offers no ethical guidance. It is like the navigator in our cars: very efficient in finding the fastest route to a destination, but dumb about the choice of the destination itself. Other factors come into play in that choice.

What fundamentally drives our actions, what chooses our destinations, arises from a deeper level of processing in our body, a pre-verbal level having to do with emotions and operating largely below the threshold of awareness. The trouble is our culture is highly sophisticated in managing abstractions and rational knowledge, but very primitive in managing emotions and embodied experience. We have focused our attention predominantly on the rational, analytical understanding of reality and have largely ignored the complementary dimension of the intuitive, emotional, body-rooted experience.

This unbalance has various consequences. We can only connect with existence, with our fellow human beings and with other creatures through our embodied experience: when that dimension is devalued and forgotten, we lose our connection with nature, we cease to be part of the dance of 'all our relations'(the Native American expression to indicate all living beings), and we plough along with our own abstract logic, disrupting the cycles of life on the planet.

From a psychological point of view what consciousness rejects and denies goes to feed the shadow, the unprocessed or incompletely processed material that we push down into the unconscious. The repressed material keeps boiling down there until it forces its way back into consciousness, erupting often in crude and destructive ways. The psychological shadow has often been compared to a sack we carry on our back. Whatever we do not want to see, we throw behind us into the sack. But by doing that we do not really get rid of it: we keep carrying it and, when the sack gets too heavy, it bursts, and we are suddenly confronted with the repressed material in rather unmanageable ways.

Our culture has privileged the abstract and the rational and has thrown into the sack emotions and embodied experience. But wisdom arises only from the conjunction of these two complementary aspects.

How can we recover the balance of these two aspects?

The separation of mind and matter

The evolution of human culture towards the predominance of abstraction over embodied experience is a long continuous process. But a few significant turning points can be discerned. Between ten thousand and four thousand years ago the agricultural revolution ushered in writing, complex social organisation, specialisation, hierarchy, the city-state, commerce, money, priestly castes, kingdoms and empires.

Between three and two thousand years ago the advent of monotheistic religions replaced the old animated world in which all nature was alive and sentient with a theocentric-anthropocentric cosmos, in which the human dialogue was no longer primarily with the world, but with a transcendental being located above the world. Thus the world was demoted to a purely instrumental role in the cosmic drama involving man and God. This transition also marked the suppression of the divine feminine and the dominance of a patriarchal culture.

The final turning point is the birth of the modern world. A number of significant events took place almost simultaneously about five hundred years ago: the Copernican revolution, which displaced the Earth from its privileged position at the center of the universe: the discovery of America and the expansion of European culture all over the world; the beginning of modern science in the great revolution that the German philosopher Edmund Husserl has called 'the mathematization of nature'(Husserl, 1970), first sketched by Galileo Galilei (1564-1642) and then carried to completion by Isaac Newton (1642-1727).

In that complex transition I will single out the philosophy of René Descartes as a significant, almost archetypical, moment for our discussion on the shift towards abstraction. Descartes is, more than anybody else, responsible for the philosophical framework supporting the development of modern science. He tackled philosophy in what we might call a scientific perspective. He set himself the task of establishing philosophy on solid ground, by identifying a foundational statement that would be true beyond any possible doubt. It is highly significant that he found the only inescapable evidence not in his sensory experience, in his concrete embodied existence, but rather in his own thinking process: cogito ergo sum is his statement of this primary evidence.

What then can he say of the outer world the senses reveal to us? It will necessarily be the abstracted world seen through the cool gaze of the intellect. The outstanding characteristic of this "corporeal nature," in Descartes' eyes, is that it appears to extend through space, a characteristic that makes it localised and measurable, and therefore subject to objective study. (Let us remember that Descartes is credited for the invention of the Cartesian coordinates, a fundamental geometrical tool for describing localisation and motion in space.) He therefore called this world of matter res extensa, "extended stuff," as opposed to res cogitans, mind, the "thinking stuff" introspection puts us directly in contact with. Res extensa and res cogitans stand in radical disconnection from each other: they exist, so to speak, on different planes. The Cartesian separation of mind and matter seals the estrangement of the modern human being from the world, the isolation of the 'I' in its ivory tower surrounded by inert, insensitive res extensa.

The scientific paradigm and mechanism

A curious paradox is that, in spite of the fact that res cogitans was for Descartes the primary evidence, historically the most significant consequence of his separation of mind and matter was that it became legitimate for scientific enquiry to focus entirely on the world of matter, res extensa, in order to discover its intrinsic laws.

Technology was taking its first significant steps into the modern era, and the machine became the key metaphor for describing the world. Describing things in terms of mechanism, of cause and effect, enables prediction, and therefore affords control over phenomena, i.e. power. It was the start of the modern world. If the world is just inert matter, if it is just a machine, the whole world is open to exploitation. But depriving the world of a soul eventually leads to human beings losing their

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

The quantum revolution

How far do we need to go down this blind alley before we are ready for a change of paradigm? Life is a complex phenomenon, and as in our times the analytic tendency culminates, the seed of a possible reversal is beginning to sprout.

In a rather peculiar turn, this seed has first appeared within that eminently abstract endeavour that is physics. Quantum physics teaches us that the separation of mind and matter, consistently pursued in the exploration of the intrinsic laws of the objective world, leads back to the inseparable totality of mind-matter, consciousness-world. Diving deep into the heart of matter, exploring finer and finer levels of its structure, we are finally forced to realise that... matter does not exist. Or, to state it more cautiously: matter does not resemble at all our naive intuitive notion of it. It behaves in wild ways. And, perhaps more importantly, there does not appear to be a neat separation between what we call matter and what we call mind or consciousness. The two are inextricably linked. In the language of Iain McGilchrist, the ways of the left hemisphere, consistently followed to the end, lead back to the right hemisphere.

I will not attempt to reconstruct the actual historical process that brought physicists to a quantum way of thinking. I will follow instead a time honoured practice of physics by summarising a long and complex story in a single 'archetypal experiment', an experiment exhibiting in the clearest possible way the essential point without obscuring it with all the technical details that in actual fact keep people busy for decades. Here is the experiment.

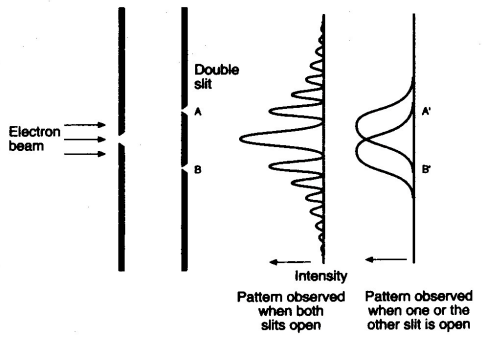

Figure 1

Some particles (let us say electrons) emerge from a source (the hole in the screen on the left side of Figure 1) and fly towards a screen which has two slits, let's say A and B, in it. These two slits can be open or closed. The electrons that cross them impinge upon a photographic plate on the other side which records their arrival: each electron leaves a black dot on the film. The question we ask is: what is the pattern of the dots we observe on the photographic plate?

The drawings on the right side of Figure 1 show the patterns we obtain when both slits are open and when only one slit is open. The curves indicate the density of the dots in various places on the film.

Let us begin with only one slit open. Just as one would expect, when only slit A is open most of the dots concentrate in front of it, with some dispersion on both sides (pattern A'). A similar thing happens when only slit B is open (pattern B').

But the distribution of black dots obtained when both slits are open is much more complex: it is the wavy pattern shown in Figure 1. That is called an interference pattern and it is characteristic of waves. It arises when two waves with the same wavelength meet. How does it arise? In some places the two waves superpose in phase, i.e. peak over peak and valley over valley: there they reinforce each other, they create a bigger wave. In other places they arrive out of phase (peak over valley, valley over peak) and they cancel each other out. The wavy pattern in Figure 1 is exactly what one would expect with two waves

coming out of each slit and meeting on the photographic plate.
Now two things are worth noticing here. First, electrons seem to have a double nature: they behave both as particles and as waves. By impinging on the photographic plate at a definite spot and leaving a single black dot they definitely behave like particles. But on the other hand these dots form a pattern which is unquestionable evidence of two waves meeting.
This is already rather strange, but there is something even stranger going on. If we get pattern A' with slit A open and pattern B' with slit B open, then we would expect to get the sum of pattern A' and pattern B' when both slits are open. That's not what happens: the wavy pattern in front is very different from the sum of A' and B'.
Let us examine this in more detail. What does our expectation of obtaining A' + B' depend on? It depends on an either/or assumption: if, when both slits are open, each electron crosses either through slit A or through slit B, without interacting with any other electron, then we are bound to get pattern A' + B'. Now the absence of interaction with other electrons can be ensured by using a sufficiently low intensity beam, i.e. by sending each electron widely spaced from all others. But then what does it mean that the pattern we observe when both slits are open does not coincide with A' + B'? It can only mean that in some sense each electron passes through both slits. Just like a wave would. It crosses the screen as a wave and it hits the photographic plate as a particle.
That's not the end of the story. Suppose that we want to clear up the issue of which path the electron actually follows in crossing the screen by placing next to slit A a Geiger counter that clicks when a particle crosses it. Now we will know which way the electron goes. What do we see when we do that? The interference pattern disappears. The pattern of dots on the plate actually becomes the sum of A' and B'. We turn off the Geiger counter: the interference pattern reappears.
This is a rather peculiar behaviour. It is as if the electron becomes localised, becomes a particle, only when we observe it, either by means of a Geiger counter or by means of a photographic plate. When nobody watches it, it leads a diffuse 'wave-like' existence, being in many places at once. It becomes 'thing-like' only upon being observed.
A final remark: this is not something specific to electrons. All the creatures of the subatomic world, whether particles of matter or particles of light, behave this way. At the micro level the world seems to be radically different from the world that our senses perceive.

Inseparability of mind and matter
I will not go into details of the debate on how to understand the fundamentals of quantum physics of which we just had a taste. Paradoxically, in spite of the immense success of quantum physics in describing the microscopic structure of all matter, a hundred years after the inception of the theory there is still no general consensus in the scientific community on the interpretation of its formalism, specifically concerning the process of observation - the so-called 'quantum measurement problem'.
It is a generally recognised fact that quantum theory cannot be consistently formulated without explicitly mentioning 'the observer'. This is a major difference with respect to classical physics. In classical physics the role of the observer is, so to speak, transparent: a fully deterministic description of the time evolution of a physical system is possible independently from its being observed. Not so in quantum physics: the quantum state of a system still evolves deterministically, but when use it to predict the outcome of an observation performed on the system an intrinsic element of uncertainty comes in. In quantum physics an act of observation is a truly unpredictable phenomenon. Wolfgang Pauli has called it 'an act of creation': it is not simply acquisition of information about something that was already there.
To move from the purely mathematical reality of the quantum state to the values of actual physical quantities we need the 'measurement postulate', which, given the quantum state, predicts the probability of a given result (e.g., which slit the electron will go through, or where it will hit the screen) for a specified observable. But the measurement postulate

explicitly refers to an observation, and in this sense we could say that mind and matter are not truly separable in quantum physics.
But there is a more literal sense in which quantum physics, while being itself possibly the most abstract form of our understanding of the structure of reality, is calling us back to the awareness of our embodiment.
The core question of the quantum measurement problem is: if the ultimate nature of reality at the microscopic level can be described by a quantum state, in which various values of physical observables coexist with various probabilities (like the electron going through the upper and lower slit at the same time), why does not the same phenomenon show up at the macroscopic level? Why the Geiger counter always appears as either having clicked or not, according to a clear cut Aristotelian, either/or, logic?
Notice that a macroscopic object, a Geiger counter, but also our own body, consists of atoms, which in turn consist of quarks and electrons, so that in principle there is no reason why quantum physics should not apply to it. Although the early Copenhagen interpretation of quantum physics implied some ambiguity in this respect, the consensus in the physics community nowadays is that no doubt it does. Then we are left with only two options: either 1) the measurement process involves some mechanism, at present unknown, that reduces a quantum superposition to the corresponding Aristotelian alternative (the so-called 'collapse of the state vector': the electron going through either the upper or the lower slit), or 2) the Geiger counter (and the observer's brain) really are in a superposition of states, but this fact is hidden from us by some intrinsic feature of the observation process.
As I said, the interpretation of the quantum process of observation is still an open matter. Is there a collapse of the state vector and what is the mechanism behind it? Or is the quantum superposition of states at the macroscopic level hidden, and what is the mechanism that hides it? Opinions differ, and what I will say in this respect reflects the bias of my own work in this field.

Quantum physics and embodiment

It can be shown that the persistence of information plays a crucial role in hiding the quantum superposition that is the end result of a measurement process (Sabbadini, 2006). If the outcome of the measurement process is in some way recorded, if it leaves a trace, the quantum superposition becomes indistinguishable from the corresponding Aristotelian alternative. All predictions are exactly the same. The quantum superposition is in all respects equivalent to (i.e. behaves like) the corresponding Aristotelian alternative.
This fact has an important philosophical consequence. Because all the information we acquire about the world (be it about the inner state of our body or the outer world) is accompanied by the formation of traces: at the very least a trace in the neuronal activity that is going on in our brain - in actuality a lot more than that. This is what 'embodiment' ultimately means: we are embodied consciousness because all our experiences are rooted in a body, all our experiences are associated with bodily happenings. But then the persistence of information argument shows that quantum reality intrinsically eludes our sensory perception. We, as embodied observers, are forever barred from directly experiencing quantum reality.
I should perhaps clarify that. We have powerful, in fact undeniable, evidence of quantum reality. Our two-slit experiment is a clear example of that. But the evidence is indirect: the correlations between various classical Aristotelian states (slits open or closed, Geiger counter clicking or not clicking, blackening or not blackening of the photographic plate) can only be explained by invoking quantum states that are superpositions of yes and no. But we never experience the superpositions themselves. In order to experience them, they should leave no trace - but then we could not experience them.
At a fundamental level therefore quantum physics reminds us that the way we perceive the world is a consequence of our embodiment. At the culmination of our journey into abstraction (science being abstraction par excellence, and physics being the most abstract

of all the physical sciences) we are called back to our embodied nature.
The philosopher Henri Bortoft compared the journey from embodiment to abstraction to the downstream flow of a river, and the phenomenological return to embodied experience to reversing that movement. If we translate the above considerations into Henri's language, we should say that at the end point of our travel downstream we meet a sign pointing us back upstream.
In this sense holding upstream and downstream together is really the challenge our civilisation is presently facing. If we manage that reversal, our journey away from our embodied experience and into abstraction will turn into a circular journey. Or rather into a spiral journey: at the end, we will find ourselves in the same embodied place, but we are not the same, we will carry within us the experience of the whole journey.

Return of the world soul

For ancient and primitive people there was no sharp separation of mind and matter, of subject and world. The 'I' had porous boundaries. Embodiment was in a sense 'enworldment', and soul, or consciousness, was everywhere. We have gradually lost that unified perception: mind has become more and more separate from body - and from world. The world has lost its soul: it has become mere matter, to be manipulated at will. And our manipulation of the world is guided by abstractions: however technically refined, that manipulation is blind in its overall purpose.
But we are after all embodied beings, and 'enworlded' beings. We cannot continue to ignore these realities without facing the consequences of our ignorance. We are at present encountering those consequences in many ways.
Just as we live in a finite body, we live on a finite planet. Fantasies of space travel, of colonising other planets, charming as they might be to our childish mind, are escapes into abstractions and help us to forget about the rotten job we are doing in taking care of this planet. As a young friend of mine commented: should we not start by taking care of this one planet we inhabit? If we are unable to care for this Mother Earth we stand on, what makes us think we would do a better job on Alpha Centauri? It is a characteristic strategy of abstract thinking to attempt to deal with the damage caused by abstraction through further abstraction. The ultimate abstraction of the consumerist society is the 'disposable planet'.
The planet is signalling in many ways that we cannot continue to treat it as dead matter. We need to return to an I-Thou relationship, not an I-it relationship, with Her. We need to return from our fascination with abstraction to our embodied and enworlded reality.
This does not mean that we will throw away all the products of our ingenuity, abandon all science and technology. But our abstract thinking will be balanced by emotional wisdom, by embodied wisdom. There we will find ethical guidance. The merging of abstract skill and emotional wisdom, a balance of the masculine and the feminine, is the key to a sustainable future for our species and for the planet.

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