

Goethe and the Bimodal Brain

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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.

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