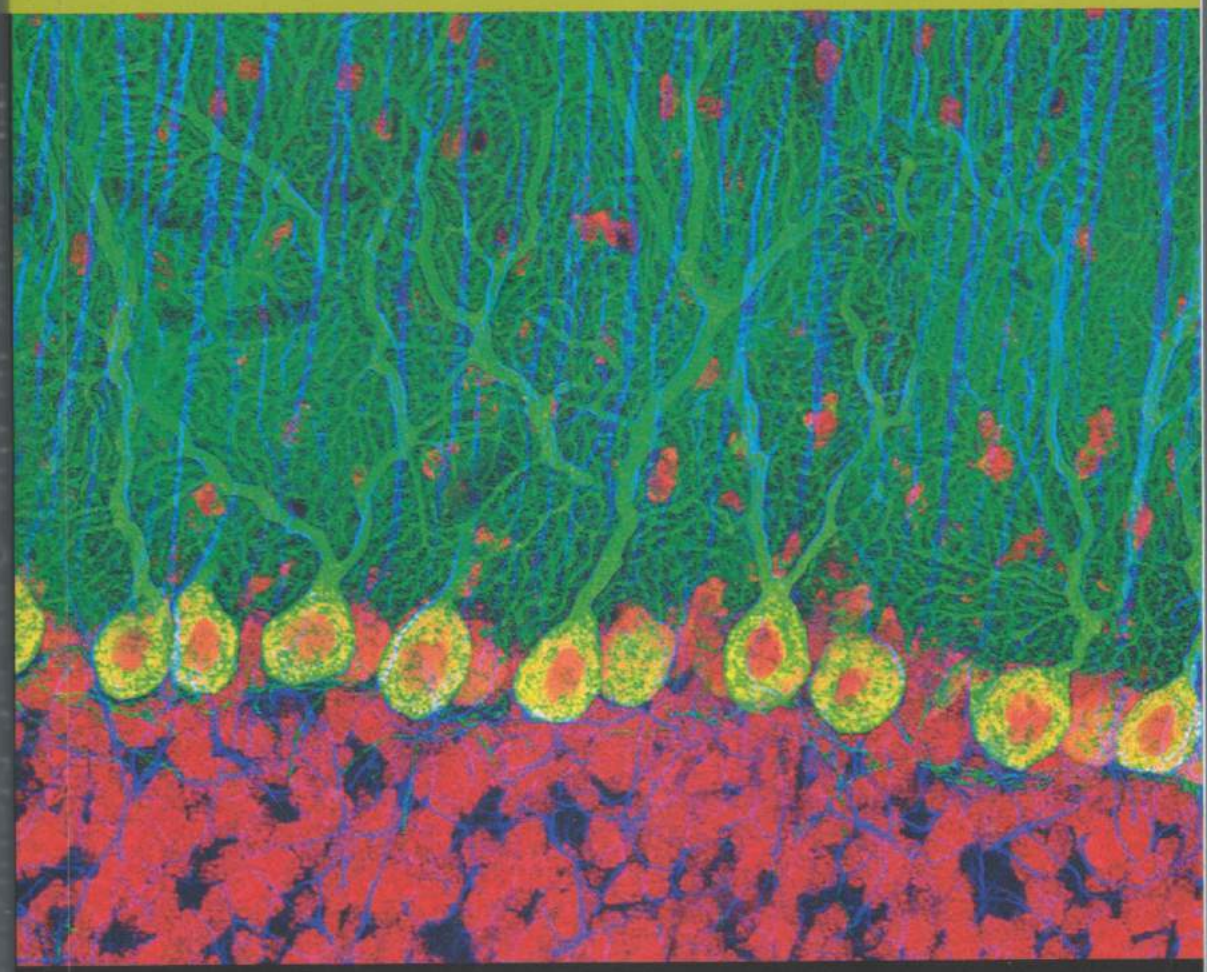

Therapy in the Age of Neuroscience

A Guide for Counsellors and Therapists

Peter Afford

ROUTLEDGE

Chapter 3

One brain, two minds

Introduction

Brains come in two halves. Viewed from above, the divide down the centre may look familiar, and having two of something is a normal aspect of inhabiting a body. But why has evolution opted for two hemispheres rather than one – and might the idea of a divided psyche have something to do with this arrangement?

Psychology can look to nature in exploring this biological divide, following the principle of 'carving nature at its joints'. Simplistic notions about left and right hemispheres abound, while neuroscientists often have surprisingly little to say about them. So my aim here is to present a summary of the current science, and ponder what it might mean in the therapy room. The differences between the hemispheres sheds light on the idea of 'the unconscious', on what happens in trauma and dissociation, on psychological defences and 'repression', and on the mind-body connection. They also raise questions about the relative emphasis we place on the cognitive and affective aspects of therapy.

Science and pop psychology

The whole business of left and right hemispheres has been common currency since striking findings from research into split-brain patients, who've had the connections between their hemispheres surgically cut, became apparent in the 1960s. Pop psychology latched onto these findings and invented a series of over-simplifications that are more wrong than right, such as logical left hemispheres versus emotional right hemispheres, and people being either left-brained or right-brained. These ideas diverted attention from a complex and evolving scientific picture, and amount to the sort of false dichotomies that appeal to one side of the brain – the left.

Many books by the world's leading neuroscientists scarcely mention this striking anatomical feature of the brain. Is it because the subject becomes personal as you wonder about your own hemispheres? Or because, as Gazzaniga admits, to accept that "*two* minds are coexisting in one cranium, is almost not comprehensible" (2016: 114)? It defies our personal experience.

Whatever the reason, this is a topic with great psychological potential, so it gets a chapter of its own.

Happily, the subject has been transformed with the publication of Iain McGilchrist's *The Master and His Emissary*, a scholarly tome that pulls together a huge number of research articles into a comprehensive account of the two sides of the brain (2009). McGilchrist, a psychiatrist and all-round scholar, has done us a great service with this book, and it's time we got our heads around what it reveals.

The experience of having two hemispheres

Let's first get a feel for the difference between the hemispheres and their respective contributions to our experience. According to McGilchrist, the left hemisphere focuses attention on whatever is foreground, while the right maintains 'global' attention to the background of the world around us and the world within us, the inner life of the body (2009).[1] Our focused attention is more in our awareness than our global attention, hence our tendency to look at everything, including this subject, from a left hemisphere perspective. We're inherently biased.

As you read, your left hemisphere focuses attention on the text, but if someone moves in your peripheral vision, your right hemisphere may divert your attention. Left concentrates on the detail of what you're reading, while right gets the general drift and maps your felt experience, liking it or disliking it, while keeping your heart rate and breathing adjusted for reading. Your felt experience may intrude on your focused attention at some point, as may a pang of hunger from your body.

Nature has organised the complementary contributions of the hemispheres so well that we have no direct sense of having two minds – a good example of binding (Chapter 2). We generally experience ourselves as having one mind, albeit one that moves in and out of different states. There's no experiential exercise you can do that makes the difference between the hemispheres evident. The brain is too tricky for that, and you can't just turn your hemispheres on and off. So we need to reflect on the science in the light of our remembered experience in order to understand it.

I recall a period in my childhood when I *was* aware of having two minds, and I called them 'left' and 'right'. Left was dominant and right was the underdog. I sympathised more with right, but I struggled to let it take the lead. The experience faded as I grew into adolescence – perhaps it just became too familiar to be noticeable.

Two hemispheres are better than one

I recommend using both your hemispheres and resisting the temptation to favour one over the other. Everything we do that's of real value is best

done with both. But sometimes we may inadvertently lean too far towards one or the other, and this phenomenon can lead people into therapy.

At the same time, it helps to be aware that we all come to the subject with a left hemisphere bias. We use focused attention to figure it out, we use conceptual language to discuss it, we immerse ourselves in detail – all of which require heavy input from the left – and we live in a modern world constructed largely by the left hemisphere: scientific concepts, computer systems, always in a hurry. The right hemisphere is something completely different from the left, but left tries to understand it in its own terms. The result is misunderstanding. But when we pause, reflect on our experience and allow our intuition in, we can reduce the bias and see more clearly.

I draw extensively on McGilchrist here, but I also follow a rough consensus amongst other therapists who have written about neuroscience, especially the Californian triumvirate of Schore, Cozolino and Siegel.

The strange business of the hemispheres

This is a curiously problematic subject. There's a large elephant in the neuroscience field here, and it's time it got more attention. If neuroscientists accuse non-scientists of misrepresenting the hemispheres (and they do), it would be reasonable to counter that they themselves have failed to present a comprehensive explanation of this rather major aspect of neuroanatomy. McGilchrist, who's worked in brain research, seems to be the first person to attempt to do this.

What neuroscientists do say about the hemispheres

Although neuroscientists may not have attempted a full explanation of the hemispheric divide, some of the key pieces of the jigsaw puzzle come straight from some well-known scientific mouths.

Roger Sperry was a neuroscientist who won a Nobel prize for his studies of 'split-brain' patients who had undergone surgery to cut the corpus callosum that bridges the hemispheres, in order to control severe epilepsy. With their completely separated hemispheres, it was relatively easy to find out what each one did. Sperry concluded that "each surgically disconnected hemisphere appears to have a mind of its own, but each cut off from, and oblivious to, conscious events in the partner hemisphere" (1985: 14–15). This implies that the rest of us are also endowed with two minds, albeit ones that are *not* separated from each other.

Michael Gazzaniga studied with Sperry and continued the work on split-brain patients. He outlined one of the well-known differences between the hemispheres: left is "chock full of speech and language processes" while right is "able to do some fancy visual tasks" (2016: 114). And he introduced the idea of the 'left hemisphere interpreter' which means this hemisphere:

> has a tendency to grasp the gist of a situation, make an inference that fits in well with the general schema of the event, and toss out anything that does not ... The right hemisphere does not do this. It is totally truthful.
>
> (2016: 152)

It's the truthfulness of the right that we seek in therapy.

Jaak Panksepp, a neuroscientist who coined the phrase 'affective neuroscience', thinks the hemispheres "have such different cognitive and emotional perspectives on the world": the left is the one that generally speaks to others and sometimes lies and constructs "a social masquerade", whereas the right is the one that reveals "deep, intimate emotional secrets" (2005: 302). No wonder the psyche is prone to being divided.

From Damasio, we learn a hugely significant aspect of the right hemisphere: that it's specialised for mapping the inside of the body, the viscera. He says right is dominant for our "integrated body sense" whereby the mapping of inner states is woven together with that of limbs and trunk (1996: 66). This point is fundamental: the right hemisphere is more integrated with the body than the left is. He also says right is dominant for mapping emotional processes which, unsurprisingly, are closely related to body sense. Left maps these things too, but "left hemisphere representations are probably partial and not integrated" (1996: 66). In other words, nature didn't decide to put these functions in one hemisphere and not the other, but during evolution one came to do the job rather more efficiently than the other, so the balance tipped in its favour.

V.S. Ramachandran is a neurologist who treats patients with brain injuries and describes the strange effects that strokes and brain damage can have. He thinks the hemispheres are quite different in nature. Whereas left is "a conformist, largely indifferent to discrepancies", right is "the opposite: highly sensitive to perturbation" (2005: 141). You can see the value of this arrangement: one mind attuned to the flux of inner and outer worlds and therefore inherently unstable, the other able to ride out its partner's ups and downs, shut out information it doesn't need and concentrate on the task in hand.

Ramachandran describes clinical cases that illustrate Damasio's point about the right hemisphere mapping the viscera (2011). Strange things can happen to stroke patients, particularly when the stroke is in this hemisphere, such as denying that their left arm belongs to their body ("that's your arm, doctor!"). The reason for this is that their damaged right hemisphere is no longer registering the signals from the viscera within the arm so, although they can see it, they don't sense it from within.

Elkhonon Goldberg is a neuroscientist known for his work on the frontal lobes. He found that the right hemisphere is linked to "cognitive novelty" and the left to "cognitive routines" (2009: 66), a contrast which

represents a "paradigm shift in our thinking about the two hemispheres" (2009: 270). So when the mind is doing something new or unfamiliar it needs the right in particular, but when doing something familiar and well-rehearsed it leans more to the left. Right's bias for novelty may be because its different regions are more interlinked than those of the left, so that new connections needed for new mental mapping form more quickly on this side.

Some big beasts of neuroscience therefore provide important pieces of the hemispheric jigsaw puzzle. But it's McGilchrist who's put them together to reveal the all-important big picture.

False dichotomies and over-simplifications

The problematic nature of this subject may have something to do with the human love of reducing the complexities of life into pairs of opposites that become false dichotomies. Two hemispheres present low-hanging fruit for this. Perhaps neuroscientists see the trap and steer clear of it, but miss the interesting stuff in the process.

The left hemisphere is often painted as rational, logical and analytical, and the right as emotional, intuitive and creative. There may be a grain of truth here, but the reality is subtler. We need both hemispheres to think rationally, left can be emotional too, but with different emotions, and if you want your intuition and creativity to bear fruit you need your left as well as your right.

Describing people as either left-brained or right-brained is even worse, and tends to imply that thinking and paying attention to detail is bad, whereas following your intuition is good. The truth is that people sometimes prefer one hemisphere over the other for a particular mental task, so it rather depends on what task they're asked to perform (McGilchrist 2013).

The question we should be asking is: what does each hemisphere contribute to a particular experience? If nature prefers two hemispheres to one, it would be reasonable to imagine that their different contributions might be complementary. We might also think in terms of differing 'left-right constellations' for particular experiences. Instead of asking which hemisphere does X and which does Y, we can hypothesise about the role each plays in a particular experience.

McGilchrist's 'master and emissary' thesis

McGilchrist's work makes a contextual understanding of left and right hemispheres possible for the first time. It's full of solid science, but it also contains a big thesis about the development of western culture over millennia, and it's here that it may be most open to criticism. McGilchrist thinks that the world we inhabit today has lurched far into left hemisphere territory with potentially disastrous consequences, the emissary having

forgotten about the master who sent him on his mission. Personally, I find this wider thesis quite convincing, but it's his detailed account of the science of their differences that I draw on here. This is based on some 2,500 research papers and over 20 years of studying the subject. Whatever one's views on the wider thesis, there's no sense in throwing the scientific baby out with the cultural bathwater.

The fact is that McGilchrist has written the most comprehensive account of the hemispheres and the themes that emerge. What I offer here is a summary of a few key points that stand out. The material refers to *The Master and His Emissary* unless otherwise indicated.

The differences between the hemispheres

Let's begin with the neuroanatomy of the hemispheres, and then look at their respective contributions to psychological life. All levels of the brain are lateralised. The anatomical divides are visible above the brainstem, so all other brain areas have a left and a right side. The hemispheres are the 'cerebral hemispheres', i.e. they belong to the cortex (see Figure 3.1).

Why do we have two hemispheres?

I originally assumed we have two hemispheres in order to co-ordinate two legs, arms, eyes and ears. But McGilchrist believes that the need for focused attention to the foreground and global attention to the background lies at the root of our having divided brains (2010).

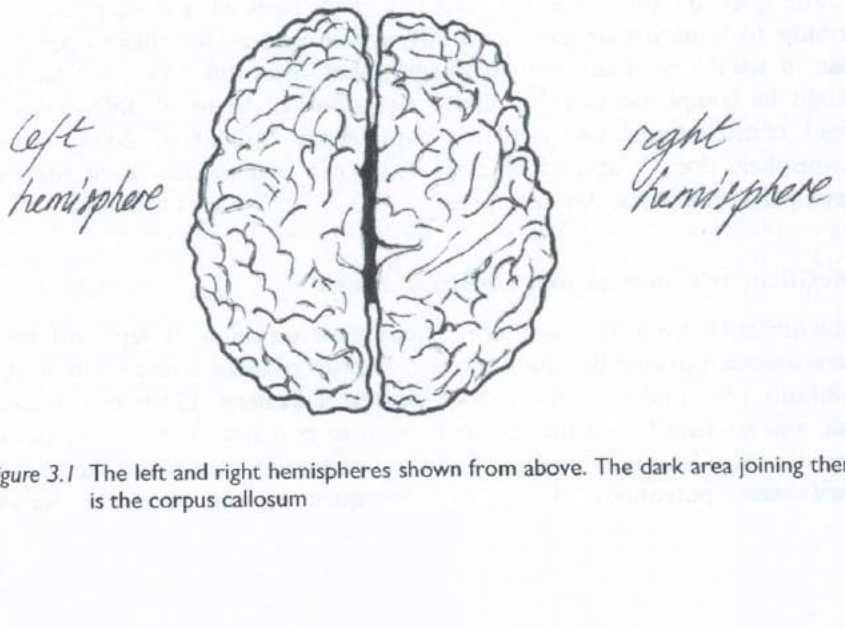

Figure 3.1 The left and right hemispheres shown from above. The dark area joining them is the corpus callosum

Consider a bird pecking in the ground for grains to eat. It focuses attention on the grains to pick them up with its beak, but if it's to stay alive in a competitive world, it must also be alert to predators lest it become someone else's meal. The bird maintains global attention in its peripheral vision so it can change the focus of its attention quickly should danger appear. Having one hemisphere for focused and another for global attention is a neat arrangement, enabling creatures to be predators without becoming prey.

Something similar happens in your brain as you read. Your left hemisphere focuses on words and details while your right hums away in the background ready to spot anything in your surroundings or in your body that needs attention. You may be so engrossed (I hope!) that your left ignores signals from your right, and only later do you realise you're ravenously hungry.

Left-handed people

The picture I'm painting assumes you're right-handed, but what if you're one of the 11% of people who are left-handed? The answer, for our purposes here, is in most cases nothing.

Of left-handed people, 75% follow the same pattern of hemispheric specialisations as right-handed people do, and most of the 25% who don't, simply have the specialisations reversed, which adds up to the same divided brain in the end. A small minority have what are called 'abnormal patterns of lateralisation', and this correlates to some degree with unusual creativity, being on the autistic spectrum, and suffering ADHD and schizophrenia.

Asymmetries

The hemispheres look symmetrical, but nature doesn't do things so tidily. There's a whole raft of small but potentially significant asymmetries between them.

The left hemisphere is wider at the back and extends further backwards, while the right is wider at the front and extends further forward, so that the brain appears slightly twisted about its central axis, as if nature has tweaked it clockwise. The neurochemistry differs on either side, with rather more dopamine (associated with motivation) pathways in the left hemisphere, and rather more noradrenaline (associated with mental energy) ones in the right (Goldberg 2009). There are differences in white matter, the nature of the interconnected pathways in either hemisphere and their connections with subcortical levels, between the hemispheres – all of which are significant as will become clear below. And according to McGilchrist, the relationship between the hemispheres is asymmetrical in that left is "ultimately dependent on" right, because it's the latter that keeps the body attuned to the outer world (2009: 6). We may think we can be permanently

happy in our consciously constructed lives and worlds, but sooner or later reality intrudes in the form of unwanted feelings or other people behaving in ways we don't like.

The right hemisphere has richer connections with subcortical areas

This is because there is more myelination of axons in the right hemisphere, giving faster signalling to and from subcortical areas, and because a stimulus in this hemisphere has more diffuse effects than in the left. Subcortical areas include the limbic system and the HPA axis (Chapter 6) that's involved in triggering stress and anxiety in the body, so that affect and somatic regulation are more its province than the left's.

The differences between the hemispheres' connections with subcortical areas need not be very great for them to have a significant impact. If right is marginally more efficient in linking cortical and subcortical activity, then it will tend to dominate in functions that depend on such linking. Affect regulation is one of these, as we'll see.

The right hemisphere has richer connections with the body

As the subcortex lies between the hemispheres and the body, the richer connections between the right hemisphere and subcortical areas mean that it's also better connected with the body. While each hemisphere controls movement in the limbs on the opposite side of the body, the right is dominant for mapping sensory feedback from the viscera and combining it with other aspects of bodily feedback, making it more body-oriented than the left.

The right hemisphere, subcortex and body could be said to form a 'right brain-body ensemble'. This is where we can sense "I *am* my body". But left is one step removed, like an ivory tower, so we say "I *have* a body", one that's attached. Its relative independence from the body may be a reflection of its dependence on right for news of the internal state of the body – and its ability to suppress that news.

Left is better connected within areas, right is better connected between areas

According to Goldberg:

> the left hemisphere is characterised by a slightly greater reliance on short local pathways than is the right. The opposite is true for the right hemisphere: it has a slightly greater reliance on the long inter-regional pathways than does the left.
>
> (2009: 256)

This is reflected in the greater amount of white matter (longer myelinated axons) in the right, and means there's more connectivity *between* its different regions than in the left. The greater preponderance of local pathways *within* regions in the left may enable greater specialisation of functions based in it.

All this makes the right the more interconnected and 'wholistic' hemisphere, the left the more modular hemisphere.

The significance of these neuroanatomical differences

The left hemisphere seems better set up for specialised functions, the prime example being our language abilities, while the right is better set up for integrated ones, such as keeping the inner world of the body (heart rate, breathing etc.) in sync with what's happening around us. So right might be said to provide the foundation for left's specialist skills.

In McGilchrist's view, the right hemisphere lives to 'get' the whole of a situation, while the left lives to manipulate something or someone in that situation (2015). What a brilliant division of labour! Left wants certainty, so it makes our mind up fast, whereas right opens us up to possibilities. Having a balance of both of these seems like a good idea.

The right hemisphere is where we have a 'felt sense' of the present moment, the wholistic feel for a situation that's rooted in the body. Because the inner state of the body constantly changes, the landscape in this hemisphere is always changing too – right is more open to change than left, and is where psychological change begins.

How the hemispheres work separately and together

How does the neuroanatomy of the hemispheres translate into the way they work? We should start from the premise that both are available to their owner at any time. "Both hemispheres are involved in almost all mental processes, and certainly in all mental states", says McGilchrist (2009: 10), and "both hemispheres take part in virtually all 'functions' to some extent, and in reality both are always engaged" (2009: 93). At the same time, one may be dominant for a particular task. If this sounds paradoxical, that's because it is.

Language, for example, is biased to the left hemisphere, but bringing it alive and animating our speech requires the right. Creativity may depend on right's interconnectedness for fresh impulses to arise, but it requires left's participation for us to manifest something meaningful in the world. Reasoning and imagination likewise need both.

The corpus callosum keeps the hemispheres separate

The two hemispheres are linked via the corpus callosum, a bridge of some "300–800 million fibres connecting topologically similar areas in

either hemisphere", according to McGilchrist (2009: 17). This is a relatively modest number in neural terms, which means that "only 2% of cortical neurons are connected by this tract" (2009: 17). The other 98% fire without direct contact with their partners on the opposite side. This seems a rather delicate arrangement, so that small variations in the way a person's hemispheres are linked may snowball into significant differences in how they integrate over time – with significant psychological results.

There's constant communication across the bridge, happening in milliseconds, to co-ordinate the hemispheres. Yet the signalling also keeps them separate. Although most signalling is excitatory ("please join in"), some is inhibitory ("please shut up"). Furthermore, excitation may itself lead to inhibition, for "stimulation of neurons in one hemisphere commonly results in ... a prolonged inhibitory arousal, in the other, contralateral, hemisphere" (2009: 18). McGilchrist thinks the corpus callosum's main role may be 'functional inhibition' so that one hemisphere can suppress the other. Whilst enabling the hemispheres to be integrated, the corpus callosum, paradoxically, keeps them separate so they don't interfere with each other. Information is shared between them, but the worlds where that information is handled need to be kept apart since left and right process things differently.

The experiences of split-brain patients illustrate what happens when the corpus callosum is cut and the inhibition and separation stop. One man tried to embrace his wife with one arm only for his other arm to push her away, and a woman who reached into her wardrobe to get something to wear with one hand found that her other hand followed it in and picked something she *didn't* want to wear.

'Winner takes all'

Although each hemisphere may be capable of responding to a situation, "at the level of moment to moment activity the hemispheres may operate a 'winner takes all' system", says McGilchrist (2009: 10). This may happen either because one hemisphere is better suited to a task than the other, or because it gets in first due to the signalling time across the corpus callosum (the twinkling of an eye can be long enough in neural terms). This tendency can work very fast, moment by moment. It doesn't mean that one hemisphere will necessarily dominate for long periods of time – both hemispheres are needed for most things we actually do.

So the corpus callosum may differentiate the hemispheres as much as it integrates them. Evolution has led to greater differentiation between them over time – along with more sophisticated functioning in each hemisphere.

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Whilst either hemisphere can inhibit the other, left inhibits right more efficiently than vice versa. If the two hemispheres are in conflict (as with the split-brain patient choosing what to wear), one may simply silence the other, and left does this to right more than vice versa (it was her left hand, controlled by her right hemisphere, that picked what she didn't want to wear). It enables left to focus on its task unimpeded, and evolution may have enhanced its capacity to inhibit right.

For example, if left is focusing on a foreground task, ignoring what arises in right's global attention to what's happening inside and outside can enable it to complete the task. On the other hand, if this happens too often for too long, we may fail to appreciate warning signs from our suffering bodies or our suffering partners and pay the price later on.

The nature of right hemisphere functions may mean that this hemisphere doesn't benefit as much by inhibiting the left. But right *is* prone to overwhelming left with emotional arousal in a way that disrupts left's cognitive functions.

Competition and co-operation

Do the two hemispheres co-operate or do they compete? Goldberg thinks "a competitive relationship exists between the two hemispheres, most likely mediated by the inhibitory pathways of the corpus callosum" (2009: 269). McGilchrist, however, thinks the hemispheres undertake tasks that, while conflicting, are nevertheless complementary. Their very incompatibility can permit something new to arise. Apparent competition may lead ultimately to co-operation – which, after all, requires differences. The functional inhibition enabled by the corpus callosum may actually facilitate this co-operation. Each hemisphere has to remain independent, and to some extent ignorant, of what goes on in its counterpart.

There's a paradox: the hemispheres need to stay separate and yet at the same time co-operate. Nature may have reached a pinnacle in its ability to achieve this in the human brain, yet in doing so it may have set up a large vulnerability to things going awry during neural and psychological development. Emotional wounding and traumatic dissociation are likely to upset the delicate balance of hemispheric co-operation.

Right-left-right to synthesise what both hemispheres know

A significant aspect of McGilchrist's thesis is his assertion that only the right hemisphere can synthesise what both hemispheres know into a useable whole. This point fits with the integrative functions of the right. Its synthesising role may be reflected in the fact that it's the source of fresh

thoughts and feelings. This implies that if left ignores right too much, it may get carried away with repetitive thinking that, while clever, departs from reality. It's often other people who put us right when this happens. The principle for using our brain well then becomes 'right-left-right': start with what arises in the right hemisphere, allow the left to make its specialist contributions, then send the whole lot back to the right for re-integration into the whole.

Problems arise when the left hemisphere cements what it's articulated into place without allowing time and space for the right to digest and integrate it with everything else. For example: clinging onto theoretical edifices without allowing them to be refreshed over time.

The hemispheres' complementary contributions

What do these differences between the hemispheres amount to in our actual experience? Let's examine some contrasting contributions of each hemisphere that combine to create our experience, but which are also prone to becoming detached. Essentially complementary in nature, they can nevertheless lead to conflict. Those belonging to the left can lose sight of those made by the right, and those belonging to the right can derail those of the left.

The thread that runs through them is that the right hemisphere connects us with our bodies, each other and the world, while the left stands aside from the body and separates one person and one thing from another in order to do something with them or it. Right attends to whatever is 'other', with which it's in relationship, while left attends to a world, one step removed from reality, of language and representations in order to grasp something.

The paired contributions that follow are available all the time in our hemispheres. McGilchrist describes their relationship thus: they "are both vital but are fundamentally incompatible" and therefore they need "neurological sequestration from one another" in either hemisphere (2009: 127).

Foreground – background

Because of the separation of focused and global attention between the hemispheres, the left is concerned with the foreground, the right with the background. What's foreground is what's in our awareness that we're engaging with – such as reading words on a page and trying to grasp their meaning. In the background is our peripheral awareness of our surroundings, so that movements or sounds may divert our attention away from the page. Also in the background is our somatic and emotional state, which may also divert our attention at times.

Take speaking, for example. McCrone explains the hemispheres' contributions:

> matching areas on either side of the cortex actually share the job of speaking; the difference is that the left does the 'foreground' tasks, such as drawing together actual sentences and recognising individual words, while the right cortex deals with 'background' jobs, such as putting the emotional colouring into what we say, or making creative associations between words.
>
> (1999: 174)

There's a hint of conscious and unconscious minds here, but the right hemisphere isn't all in the dark. Its contribution comes at the edge of awareness, such that it may or may not enter consciousness, which isn't the same as it being unconscious. We could talk of *more conscious* and *less conscious* processes. Sometimes it suits us to leave right hemisphere things in the background out of awareness, other times we're stuck until we allow them into awareness, so they become foreground.

Explicit – implicit

What's foreground is explicit – we know what it is. What lies in the background is merely implicit – present but unnoticed. If we can deal with a situation by considering only the explicit things, then all well and good. But often we can't, and then life gets more interesting and we must be open to what's implicit.

McGilchrist thinks it is the left hemisphere's job to "render the implicit explicit" so that we can do something with it (2009: 181). It "forces the implicit into explicitness" by proceeding in a sequential manner, and "brings clarity" to something in our experience (2009: 207).

Detail – context

The left hemisphere focuses on the explicit detail in the foreground, while the right takes care of the context that's implicit in the background – which includes our body, the world we inhabit and other people. Returning to the example of speaking, McCrone describes the contributions of left and right thus:

> on one side of the brain we are focusing in close, getting the detail of the grammar and the choice of words just right, but over on the other we are taking the big picture view, managing the overall tone and picking up on any broader nuances of meaning.
>
> (1999: 174)

Left allows us to zoom in on the detail, right allows us to step back and see the big picture.

Neuroscience itself is full of details, but we have the context of our lived experience of our own nervous systems to make them relevant and meaningful. Even neuroscientists are human and have such a context.

Detail and context provide endless scope for discussion and disagreement. You can be sure of your details, but the moment someone changes the context, you can lose the argument. Everything changes. The context includes inconvenient facts, other people's views, and uncertainty, which isn't always to the left hemisphere's liking.

Known – unknown

The left hemisphere's bias for routine and the right's for novelty leads to left contributing what's known and familiar, and right what's unknown and new. The openness of mind required for new experiences starts in the right hemisphere. McGilchrist says "because the right hemisphere sees things as they are, they are constantly new for it" (2009: 80), so it has an affinity "for all that is 'other', new, unknown, uncertain" (2009: 83). Whereas the left likes to put things into familiar categories based on abstraction, often language-based, so its affinity is for "well-worn familiarity, certainty" (2009: 83).

Purpose – vigilance

Our left hemisphere has aims and goals, something it wants to get or achieve, whereas our right takes life and the world as they are. Left can keep us on track of our intentions, right keeps inner and outer worlds together and lets us know if something doesn't feel right. Left wants to get somewhere, right is on the lookout for threats and discrepancies, and may divert us with the unexpected. So some meditation practices involve having no aim so that we can experience just being.

McGilchrist says "the left hemisphere always has 'an end in view', a purpose or use" (2009: 127), whereas "only the right hemisphere can direct attention to what comes to us from the edges of our awareness" (2009: 40). The left hemisphere is "drawn by its expectations", whereas the right is "vigilant for whatever exists 'out there'", so this is the hemisphere that can "bring us something other than what we already know" (2009: 40) – it notices what we might otherwise miss.

Grasping something – sensing the whole

We need focused attention to grasp objects and manipulate them, so this is a left hemisphere job. Think of this as having started in human evolution with our use of tools, and the same principle now applying to our use of words and ideas. But underlying our ability to grasp something lies the

right hemisphere's ability to have a sense of the whole situation and our feeling about it. Our felt sense of how something 'sits' inside helps us find our way around the detail we want to grasp.

We can grasp facts and details until the cows come home, but if we lose touch with our feelings and our sense of how others are reacting to us, we 'lose the plot'. As McGilchrist says, while "the left hemisphere's relationship with the world is one of reaching out to grasp, and therefore to *use* it, the right hemisphere's appears to be one of reaching out – just that" (2009: 127).

Re-presenting – presence

The right hemisphere is present to inner (bodily) and outer (situational) worlds, and is where inner and outer come together in an integrated state of 'presence'. Then the left gets to know about it and 're-presents' the experience, maybe in language and maybe slotting it into a familiar category. Right lives the territory, left maps it.[2] Maps are useful, but we shouldn't mistake them for the territory. McGilchrist thinks these respective contributions are "close to the core of what differentiates the hemispheres" (2009: 50).

Something that happens here is that we may talk about the wonders of 'being present', and then we get caught up in the idea and the words ... and cease to be present. Meditation practices sometimes encourage people to let words and thoughts pass by so they can return to a state of presence.

Categorising – discerning

The right hemisphere identifies individuals, the left recognises categories. The former is based on fine discriminations, the latter on useful classification. McGilchrist says the left hemisphere is "more concerned with abstract categories and types", while the right is "more concerned with the uniqueness and individuality of each existing thing or being" (2009: 51) – and "finer discriminations between things" (2009: 52).

So we recognise faces with our right hemispheres and arrange people into personality types with our left hemispheres. Categorising has the advantage of making sense of complex subjects (such as brain areas), while discerning differences scores on getting it right in particular situations, and noticing when something looks out of place, even if we can't say why.

Certainty – possibility and ambiguity

The left hemisphere, with its categories and representations, is good at tying things down into certainties so that we can get on with what we're doing. It does this even if it gets it wrong, and is prone to confabulating – insisting something is the case even if it clearly isn't. The more open right

hemisphere, able to deal with new situations, is relaxed about mere possibilities and ambiguous situations. When we're stuck, we depend on it to get unstuck. But we may need to be patient, tolerating uncertainty, ambiguity and not-knowing for a while before deciding and acting.

McGilchrist elaborates:

> the left hemisphere needs certainty and needs to be right. The right hemisphere makes it possible to hold several ambiguous possibilities in suspension together without premature closure on one outcome.
>
> (2009: 82)

Left enables us to act quickly and decisively when needed. Right enables us to live with contradictions and nuances, and to avoid getting marooned in "I'm right, you're wrong" positions.

Two minds in the therapy room (times two)

The hemispheres play their respective roles in the therapy room and, by reflecting on the scientific picture, their dynamics sometimes become apparent. The hemispheric model may not explain everything that happens in therapy, but it sheds light on much that does. One reason for this is that it explains how psyche is bound up with the body via the right brain-body ensemble, whilst the more conscious mind in the left hemisphere can become detached from it.

Therapy is much about integrating the hemispheres' different contributions. Left and right integrate naturally as we go through life, except when they don't because of emotional wounds and traumatic experiences that keep them apart. Psychological survival may be enabled by stopping the natural process of integration; it works, up to a point, but there's always a price to pay.

Two hemispheres present for therapy

Jung said there are four people in the room – he was including the anima or animus of both client and therapist (1983).[3] Might this have something to do with there also being four hemispheres in the room? And does the most striking divide in neural architecture have something to do with the divided psyche? Some common psychological polarities probably reflect the hemispheric divide: ego and self, head and heart, mind and body, conscious and unconscious.

The hemispheres work together seamlessly in principle, but brains that present for therapy are likely to be beset by some sort of conflict between them. The client's left hemisphere brings a presenting issue and starts speaking, telling a story and going into details. Sometimes it then asks the

therapist for the answer to the problem – not an entirely unreasonable request! His left hemisphere has run out of solutions. But if all the therapist does is provide an answer, he's unlikely to be any further forward.

His right hemisphere expresses itself in his manner of greeting at the door, his facial expression, body language and style of communicating. Although it may be in the background, it's central to the therapeutic enterprise. It brings his inner life, and is the source of images and forgotten memories. It's also the home of overwhelming emotions, depression, trauma, dissociation and shame.

A hypothesis: right provides the foundation for left. This foundation takes time to become visible, though hints as to its nature may be immediately apparent. It comprises the client's affect regulation, attachment patterns, mind-body connection and inner life. It's prone to fragmentation, and the problems that arise from this are often those that bring people to therapy.

The hemispheres' complementary contributions in the therapy room

Let's go through the left-right contributions outlined above and see how they might apply in the therapy room.

Foreground – background. Presenting issues, story and content may occupy the foreground, and the client may be immersed in them. The therapist, however, needs to have one foot in the background: the feeling 'in the room', the nonverbal communication and so forth. Therapists are trained to be alert to the background and to interrupt the dialogue with observations about it ("this feels like a lot, let's go slowly").

The right hemisphere's broad attention to background factors breaks up the left's focused attention so that something new can arise. Part of the therapist's job is to draw the client's attention to background processes he may not be aware of – feelings, his body, what happens as he relates and communicates.

Explicit – implicit. Client and therapist work together to make explicit what's implicit. The right hemisphere's world of buried feelings, forgotten childhood memories, attachment patterns and so forth needs to become foreground. It emerges little by little – we have to trust the process. The left hemisphere is needed to unpack what emerges so that something new can unfold ("I wonder what this 'feeling negative' really is ..."). McGilchrist says "the left hemisphere cannot deliver anything new direct from 'outside', but it can unfold, or 'unpack', what it's given" by the right (2009: 208).

Detail – context. The content may include any amount of detail, and clients often believe the therapist needs a lot. Fortunately, they both share a context which grows as therapy proceeds. It may include the client's

childhood, his family system, the themes that emerge during therapy, the dynamics of the therapeutic relationship and much more. The therapist's job is to bear all these in mind whilst attending to the detail, and sometimes to encourage the client to do this as well ("this new story feels like what happened in your family"). Contextual factors tend to be biased to the right hemisphere, and bringing them into awareness can stop the left from going around in circles filling the space with details.

Known – unknown. Clients often enter therapy when their left hemispheres have run out of ways to deal with unwanted feelings. Their usual coping mechanisms – such as eating, sleeping, waiting for the problem to go away – are no longer working, and they need the therapist's help to allow something new to unfold from their right hemisphere to shift the problem.

The therapist must guide the client into unfamiliar places so that transformation can happen. Sometimes the support of the therapeutic relationship enables him to express hidden things ("I've never told anyone this"), sometimes buried childhood memories return in the adult mind ("I'd forgotten that happened"), or maybe fresh potential emerges as he loosens up inside ("I didn't realise it's OK to say 'no'").

Purpose – vigilance. Most clients come to therapy with an aim that fuels their engagement. Their left hemisphere focuses attention on it, but sometimes it gets in the way – such as when the client says "Peter, I need you to make me less anxious". If only I could! – but then he would already have found the fix for himself. What I need to do is keep his left hemisphere onside and wait for his right to appear – vigilance. Sooner or later something unexpected for us both arises from the right. The client feels an inner shift and becomes more trusting of therapy, of me ("I found last week's session very useful") and of himself.

Grasping something – sensing the whole situation. I want to grasp what my client is telling me, whilst also sitting back and letting his story wash over me to get a sense of the whole interaction we're having – the coherence (or lack of it) of the story, the underlying patterns in his experience, my own feelings that arise in response. Does listening to him bring me alive or send me to sleep?

When I have a sense of the whole therapeutic situation, my intuition comes alive and I can find my way forward in the dialogue. The nature of our dialogue may help the client to find a sense of coherence in what at first seems confusing to him.

Re-presenting – presence. My client (re)presents his experience, his story and his dilemma in what he says to me. While he does this, I sense his presence in the room with me, his manner of communicating, his patterns of relating. His (re)presentation and presence may seem incongruent to me: he may minimise his difficulties and hope that six sessions will sort them out, whilst leaving me sensing pain, trauma and disturbance. I may reflect

what's implicit, for example, "you're speaking very quickly, you seem to have a lot you want to tell me".

Categorising – discerning differences. The client or the therapist, or maybe both, may find categories to be helpful signposts: attachment styles, character types, enneagram numbers and so forth. At the same time, the therapist can be alert to her sense of the unique individual before her, and encourage him to be discerning ("if we say this about you, does it feel like it fits your experience?").

Certainty – possibility. The client may have fixed beliefs about himself ("I was abused in childhood, I'm not able to have a relationship now"). The therapist can keep an open mind, point out any exceptions to the rule that become apparent, and be explicit about the possibility of change ("maybe one day you'll feel able to manage your emotions sufficiently to allow yourself to get close to someone").

More left-right contrasts in the therapy room

Let's explore some further contrasts in the hemispheric contributions to the therapy process.

Telling a story – telling the story. The client's left hemisphere may tell stories each week, perhaps to fill the space and survive the session. It feels quite different when he trusts the therapist enough to tell *the* story (that needs to be told). This requires both hemispheres, and it starts with autobiographical memory in the right hemisphere. The emotional engagement is felt by both parties.

Rationalising – being rational. The client's left hemisphere may rationalise his behaviour, avoiding a deeper exploration. But he needs both sides of his brain to be rational, which involves marrying thinking with feeling.

Defending – letting go. The client's left hemisphere may defend against uncomfortable experiences anchored in his right – by suppressing emotion, avoiding painful topics, and in extremis denying what he's not ready to face. When he feels safe enough with the therapist, left is able to let go to right, and then a natural healing process begins.

Merely talking about – really feeling it. Left loves to talk about life experiences, especially those for which it thinks the therapist should have a remedy. This may lead nowhere. It's a very different matter to talk about a meaningful experience and really feel it as we do so, left and right co-operating. A common complaint I hear about previous therapies is that "we just talked about my childhood" – something was missing, namely, really feeling it.

Content – process. All the talking about and analysing, even with sophisticated psychoanalytic concepts, may amount to a lot of content and no more, the left hemisphere trapped in the world it's constructed for itself. But somewhere underneath it all there's a process happening in both parties' right hemispheres, and the therapist can point to it ("this must be

important but my mind's getting sleepy – I wonder what's really going on . . .").

Explanations – images and symbols. Both parties' left hemispheres may seek explanations for problems, and a good explanation may be a relief. But at some point therapy needs more than explanations. Images and symbols that arise in the right hemisphere (of either client or therapist) imply inner movement and bring something fresh to reflect on. Simply allowing images to emerge may have a transformative effect – explanation may not even be needed.

Theory – intuition. The left-right divide applies to the therapist as well as the client. Theory is a left hemisphere construction, based (hopefully) on someone's personal experience. Therapists have to draw on both their left hemisphere's store of theories and their right's capacity for intuition – that may lead them in a different direction.

Congruence – incongruence. Congruence (of body and speaking, for example) requires both hemispheres. Incongruence (where the feeling evoked doesn't match the words spoken, for example) is a sign of a conflict between the hemispheres. Bessel van der Kolk, a Boston trauma therapist, puts it beautifully:

> while the left half of the brain does all the talking, the right half of the brain carries the music of experience. It communicates through facial expressions and body language and by making the sounds of love and sorrow: by singing, swearing, crying, dancing or mimicking.
>
> (2014: 44)

Psychological defences and dissociation

The hemispheric model allows us to distinguish defences and dissociation which disrupt the integrated working of the hemispheres in different ways. Defences involve the left hemisphere inhibiting the right's contributions; justifying, intellectualising or simply filling the space with talking suggest it's struggling to stay in control and avoiding letting in the right with its uncomfortable states. Dissociation is centred in the right and involves inner and outer worlds coming apart in traumatic overwhelm, integration turning to fragmentation; the foundation that right provides for both hemispheres crumbles, and neither hemisphere functions effectively.

Simply put, defences may be against unwanted feelings or dissociative collapse – in the latter case, with good reason, for whilst painful feelings are simply painful, the inability to function properly, and the shame that accompanies it, is intolerable. Who would want to go there? Defensiveness and dissociation are intertwined.

Both defences and dissociation require a human relationship to overcome them so that the hemispheres can re-integrate. The therapeutic

relationship has to make painful feelings bearable, and it needs to provide a solid holding when experience fragments and becomes chaotic.

The right hemisphere's vulnerability to dissociation and fragmentation after trauma, and the left's defence against further dissociation, often lie behind whatever brings people to therapy. Clients defend against dissociation for good reason, yet their defensiveness has become an obstacle to living their life more fully. I sometimes hear "I want to take a break from therapy, I need to get on with my life", as if spending one hour a week in my consulting room were preventing them from doing so.

The principle of integration

If the direction of therapy is towards better neural integration, the obstacles to integrated hemispheric working in situations where the client struggles need to be overcome. Hypothesising ... when all goes well enough in childhood, the hemispheres develop in an integrated way that carries into adulthood. But when there's unresolved emotional wounding and trauma while the brain is maturing, the hemispheres may not develop in the integrated way nature intended, and a divided psyche results.

People may come to therapy because their hemispheres are in conflict and so they (or their left hemispheres) don't know how to make them co-operate. They need a human relationship, with its potential to evoke what's missing and enable new integration. Their left hemisphere may be unable to let go to their right's inherent capacity for healing, so they need the therapist's (hopefully better) integrated hemispheric functioning to make it possible for them to do so. Cozolino says, "we teach clients a method by which they can learn to attend to and translate right hemisphere processing into left hemisphere language" (2017: 114).

When therapy works, there's a shift in the relationship between the hemispheres. They co-operate in places where before there was conflict. Once this happens, everything starts to feel different.

Encouraging processes arising in the right hemisphere

Therapists must work with the client's left hemisphere, and we might characterise this as working cognitively. One approach is to teach it to listen to the right and allow it to play its role in his psychological life.

They should also know how to work with the right hemisphere. The transformative processes of therapy arise in the right and then engage the left as well. Many therapeutic interventions point towards the right:

- emotional and bodily awareness
- imagery

- exploring attachment patterns, family systems, transference and countertransference
- dreamwork, drawing, sand trays, movement etc.

But dialogue also engages the right when it's to the point and meaningful, and the advantage of such talking is that it happens seamlessly during the therapeutic process. It involves supporting the client to bear painful feelings, tolerating confusion and uncertainty, and encouraging him to experiment and take risks.

The right hemisphere is where unexpected transformative moments arise, so we must trust our instincts. It's not magic, but it can appear magical to the left hemisphere that's taken by surprise at the completely different nature of the world of the right. Left cannot predict what will come from right, so we should always "expect the unexpected".

Working with the psyche

Therapy involves working with the psyche, which points towards the right hemisphere and the subcortical and somatic processes that underpin it. "The right hemisphere is dominant in treatment", says Schore (2009: 128). It's where the client encounters his vulnerability, his forgotten childhood, his imaginal world and the potential for healing.

Perhaps the right hemisphere *is* the inner world – a world of feelings, somatic sensations, forgotten memories, images, dreams and symbols – where one thing naturally leads to another thanks to its interconnected composition. We tend to live in the more conscious processes of the left, and clients may need help to venture into the very different world of the right.

The right hemisphere is where the client begins to integrate the raw emotional forces within him, where his capacity for intimacy grows, and where he opens up to the transpersonal dimension that transforms his perspective. It's where he encounters his shadow, experiences depression and breakdown, but also where he senses his way forward. If client and therapist can withstand the turmoil and keep the therapeutic dialogue going, then better left-right integration takes care of itself.

In general terms, any movement towards the right hemisphere in therapy is therapeutic, and the more ways we engage with it, the better. There are two riders to this. First, right must also engage with left in the process, for example, in articulating inner experience. Second, this principle is not an absolute. Relying on the same right hemisphere process repeatedly may not help – for example, always inviting an image. The more repetitive an intervention, the more it becomes familiar and therefore lacking the novelty of the right. Beware the trickery of the left! But I would exclude genuinely meaningful dialogue from this observation.

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Conclusion

Nature has carved the brain in two. There must be an evolutionary advantage in having two different minds humming alongside each other, able both to compete and to co-operate. But if things go badly during our neural and psychological development, it's along this divide that we might expect to find clues to the problems that ensue.

The left-right axis provides a model of mind and body that can be empirically researched. To understand it requires learning a little science, appreciating the subtleties of nature's arrangement, and taking time for reflective thinking. If you're careful to avoid simplistic dichotomies, your experience of observing others' brains (maybe even your own) can guide you. I find this model more practical than some models of the psyche that decorate the therapy world; the following chapters will put this to the test. And it has the potential to build bridges between the worlds of therapy and of neuroscience.

I've used a model of two minds for many years that's helped me make sense of people's inner experience. I draw it on the flipchart when teaching focusing workshops, so we have a diagram illustrating how, when we turn our attention within, the body speaks back to us. I call these two minds the 'foreground mind' and the 'background bodymind'. Everything I've learnt about the hemispheres fits with this intuitive model and elaborates on it, so I use these terms as well as refer to the hemispheres.

The left-right model of the divided brain, including the right brain-body ensemble, is a primary point of reference for the topics that follow – starting with the rather important one of human relationships.

Notes

1 McGilchrist also describes the right hemisphere's global attention as 'open' attention (2009).
2 I use 'map' here in a figurative sense rather than the neural 'mapping' sense described in Chapter 2.
3 'Animus' and 'anima' are Jung's terms for the contrasexual aspect of the psyche – the masculine for a woman, the feminine for a man.