Recognizing

Before engaging in the details, it is useful to get some possible misunderstanding out of the way: It is *not* important whether the two basic modes of brain operation are located in the two hemispheres, see below.

Neurobollocks?

1. McGilchrist employs two **metaphors** for the two different modes of operation of the brain: the Master vs. the Emissary, or the right and left hemisphere. Whether or not the hemisphere metaphors actually coincide with neuroscientific reality, is irrelevant — although it may have been distracting to many people who hence ignore his descriptions as neurobollocks, so I have to address this reservation first (315).

Grim, piqued and emotional denials of brain lateralization keep emphasizing that structures from both the left and right hemisphere are recruited for many mental processes. This is what McGilchrist does not deny but considers possible:

> *"If it could eventually be shown definitively that the two major ways, not just of thinking, but of being in the world, are NOT related to the two cerebral hemispheres, I would be surprised, but not unhappy." (p. 461) and "[I]t seems like a metaphor that might have some literal truth. But if it turns out to be 'just' a metaphor, I will be content. I have a high regard for metaphor. It is how we come to understand the world." (p. 462)*

Despite this, some deniers have to admit (in a well hidden footnote) that *"There's some grain of truth to the left brain/ right brain distinction"* (about spatial reasoning, language, and the Aha moment.)

So why the grim attacks? Is it just pedantism, cantankerous bossiness, or literalistic orthodoxy?

For some, the very idea that there are different modes, may be unsettling. The complacency that there is just one right way (and of course this is mine) may be threatened. Furthermore, the notion of two hemispheres suggests that the two modes are **equitable**, i.e., this threatens the superiority of the "left hemisphere" mode (328).

So, the "Left Brain/Right Brain" myth is a popular target of attacks, for example, it was being attacked twice at the same time in 2014's Edge responses of "What scientific idea is ready for retirement?". What they are really attacking here, is a literalistic (see Wiktionary or Wikipedia) idea that the different kinds of information processing were physically exactly represented by the hemispheres.

2. In detail, these critics do *not* contest that there *are* different modes. (In fact, both Kosslyn, who I very much respect, and Blakemore say a lot of interesting facts about the differences, and furthermore, Kosslyn does so in his exchange with McGilchrist).

So the problem seems to be that we say "the left brain does such and such" instead of "this one mode of operation does …", because this sounds like false science rather than like an approximation, or comparison, like some kind of rhetorical "improper expression" or trope, perhaps like a kind of synecdoche that uses the whole for the part. Perhaps we should only speak of the Master and the Emissary to clearly express that it is just a metaphor (or more precisely, an allegory). It might be more useful to first think of metaphors rather than brain hemispheres and then attribute what we know about the brain hemispheres to explain how they might serve the metaphor. [Thanks to a reviewer for this wording.]

Another example are the notoriously negated learning styles. Again, the simplistic reduction on a basis of modalities (VAK, Visual, Auditory, Kinesthetic) sounds like a fake concretion of something that does not exist.

3. This is where the central metaphor of connectivism (see Wikipedia) comes in: the similarity of neuroconnections which is applied to three levels, from neural, to conceptual, to social/ external: The neural connections show similarities with connections between people and between concepts.

Keith Hamon, in a wonderful post on metaphors vs. models, writes about similar tropes mistaken for models.

He sees the rhizome as a metaphor and explains how viewing it as a model, is a misunderstanding. This quote suggests *who* is most at risk of such misunderstanding:

> "They [two metaphors of love] both say something more or less useful about love, but only the most left-brained, fundamentalist, reductionist critic would say, 'Okay, which is it? Is love a rose or a fish-hook, because it can't be both.'"

Literalistic thinking that dismisses each hunch of similarity until it is scientifically evidenced, takes many ideas as a futile attempt of reductionist explanation of things that only exist in folk psychology or even only in pop science (295).

I think the role of these metaphors is similar to a "convenient fiction" (as Stephen calls infinity here), which may some day become unnecessary, but this has not happened yet. In the meantime, it is useful to replace some metaphors by "better" ones that are already farther down on the way towards the neuro level. I mean, if we have only an imprecise idea such as the constructivist idea of "concept" which is just posited like a homunculus, then we might well benefit if we, at least, look a bit closer to how it might actually operate, by using McGilchrist's metaphors. (Unless, of course, this approximation is mistaken for neuroscientific evidence.) (315)

The research cited identifies three parts of the brain, two of which nicely match what McGilchrist says about his "Master" (an Imagination Network, a Salience Network) and the third (an Executive Attention Network) aligns with the "Emissary" (see below). The scientists call their work a "first approximation". Is this true? Isn't the idea of different modes of the brain a much older **approximation**, that has been around in the pre-scientific experience of real life, in knowledge of human nature, and wordly wisdom, for long? (328)

So, how are the Master and his Emissary supposed to operate?

Emissary

Of the two basic modes of brain operation, this is the one that is focused on isolated, fixed, static, abstracted, decontextualized items to be grasped, collapsed and wrapped into nested boxes (294).

4. Of all these attributes, the most central one seems to be the fixing or isolating for referral; fixing in a temporal sense, and isolating (which is perhaps less obvious) in a spatial and conceptual sense.

McGilchrist introduces the *fixing* characteristics of the brain's "Emissary" mode here:

> "If all things flow, and one can never step into the same river twice — Heraclitus's phrase is, I believe, a brilliant evocation of the core reality of the right hemisphere's world " (316) … " nothing can be ever known" (p. 30)

The most plausible description of the Emissary is that it deals with **fixed** results of experiences:

> "[W]e 'experience' our experience in a special way: a 're-presented' version of it, containing now static, separable, bounded, but essentially fragmented entities, grouped into classes, on which predictions can be based. This kind of attention isolates, fixes and makes each thing explicit by bringing it under the spotlight of attention. (p. 30)

For me, this brilliantly expresses how knowledge "feels" once it is known (315). All news is first processed by one of the two modes. But once it is recognized, it "feels" totally different because then it is stored by the other mode. Let's first apply the idea to *normal* knowledge i.e. ordinary, mundane, everyday knowledge at our disposal, like, for example "Paris is the capital of France". This is an example for the vast majority of knowledge of the ordinary kind, which McGilchrist would call *fixed*. (Marx would perhaps call it coagulated or congealed; and Mittelstrass' "knowledge to our disposal" = "Verfuegungswissen", also comes to mind). That sort of knowledge is what feels like "propositions filled into the brain" (310).

The idea of fixing and isolating for referral, also matches the expectations that we have of a **word**: That it targets a fixed object of intention, referral, "tracing" (as Deleuze and Guattari would put it), that a word, if aptly used, aims at its target like the sighting telescope of a marksman, zooming and focussing by narrowing the scope of view like a funnel (316).

5. The motivation for the fixing, isolating, referring to, and focussing on, a target of attention, is probably an **intention**, a goal, which may be as primordial as the desire to get food, or it may be more sophisticated and involve tool usage. Certainly it involves what is being identified as: The Executive Attention Network (328).

Regarding the "left hemisphere (LH)" mode (the Emissary), it is certainly useful to think of the capsulated entity that fulfills a task. a goal or a subgoal, much like a subroutine in a computer, or an emissary. Tool use is the essence of the other (LH) mode that focusses and pursues intentions (323).

Tool use is also associated with 'getting' : McGilchrist speaks of "*the narrow focus on getting and using*" (258). The grasping right hand is the very first tool, and the left hemisphere hosts most language activities in a brain region that is directly next to the regions controlling the right hand, for **grasping**, in both the physical and figurative sense (316).

6. Grasping and capturing, in turn, is often associated with packaging and **wrapping** or bundling: This is a feature of one of the two fundamental "modes of operation" of our brain ([288](#)), which also helps with isolating, encapsulating and referencing. When we are pursuing **nested** goals and subgoals, it occurs iteratively, and we get nested containers.

The hierarchy of nested boxes or nested subgoals can be thought of as a **tree** (of course, an upside-down tree, but this is common in any filesystem explorer). So when Deleuze & Guattari say

> "It is odd how the tree has dominated Western reality and all of Western thought, from botany to biology and anatomy, but also gnosiology, theology, ontology, all of philosophy" (p. 18)

this is again quite compatible ([294](#)). Of course, there is the inherent problem of such nested hierarchies, that they lure us into premature pigeon-holing ([327](#)), since, as we have seen above, the 're-presented' experience contains separable, bounded, but essentially fragmented entities, grouped into classes.

The metaphor of the nested logical containers of computer folders in a file system, suggests that we can imagine the emissary mode's isolating, encapsulating and referencing as the sort of **collapsing** that file explorers do ("-", which means the reverse of "+", expanding). At least for me, this idea makes it easier to think about the 'representation' taking place:

In the LH mode, you focus on *one* item (like a grip or handle) that represents *many* collapsed items ([323](#)). But the image of collapsing is not requisite for understanding the representation.

7. The fixed and isolated products of the emissary mode can be thought of as representations: abstract **representations** of our experiences, or of our mental content such as our own awareness, our own cognition, our own understanding ([299](#)). Abstract ideas such as: *representations* that "stand for" concepts, and *propositions* "encoding" knowledge. And the desire for creating "stand-in"s, for fixing/ collapsing/ wrapping our ideas and experiences, is not driven by some abstract theory. Rather, it comes from one of two basic modes of brain operations ([318](#)).

8. **Abstractions**, and the capability of abstract thinking, have proven so useful that nobody dared to question their value for explaining knowledge creation and learning ([318](#)). Indirect approaches that involve a 'detour' via abstract concepts, rather than directly addressing a single concrete problem, promise to solve *multiple* problems, including future problems that are yet unconceivable. Similarly like other generalizations, abstractions promise a universal validity.

For me, most interesting is what Downes [says](#) about abstractions.

> "It is often asked of me: if there are no universal principles or generalizations, then what are those statements that look like universal principles or generalizations? In response, I say that they are abstractions.
>
> But then, continue my questioners, aren't abstractions themselves idealizations based on evidence? And my response is, no, abstractions (and therefore universals and generalizations) are not created by inference *from a set of empirical data. They are created from* subtractions *from empirical data (sometimes even one piece of data)."* ([318](#))

Sometimes I wonder if it is really useful to glorify the abstract, as it is often done, in a radical, literal, narrow (well: abstract) sense, or if we are conflating it with other forms of generalizations or indirections, such as patterns or metaphors.

OK, a concept or an idea is unsatisfactory if it applies to only **one** single concrete situation. But do we want it to apply to *multiple* concrete situations or to **none** ? Abstract = "drawn away" from worldly affairs, suggests "none". Metaphor, by contrast, connects two concrete, embodied things and shows a common, general pattern of how they are related.

I was lucky to have a math teacher in 1965 who emphasized this power of *general* applicability to us 7th-graders, while others were trying to curry favor with us by pretending immediate relevance of their discipline, or by drumming their pale abstract symbols into us until they would become as familiar as if they were concrete. This is, IMHO, a false tangibility, and does more harm than benefit. And in particular, the *tangible* assessment results, and the intimidating concreteness of grades, distract very much from abstract thinking. ([278](#))

If metaphor was seen as abstraction, there would be many questions: Is the metaphor that bridges two domains (or often two senses), really **withdrawn**, removed, abstracted from the two domains, is it no longer grounded in any of them? Or is still grounded in *both* of the domains or senses? In none of the contexts or in both of the contexts? Is a mixture possible? One could argue that this is also the difference between abstraction (none) and generalization (both) — and perhaps that it is the reason why so many pupils have issues with the great generalizations of mathematical thinking: because they perceive them as only abstract and applicable to nothing rather than to *many* cases. In the case study by Williams et al., however, abstraction was approached via multi-modality and cross-modality generalizations, such that, in the end, totally abstract (modality-*free*) concepts were easier to bear? ([324](#))

Abstractions can be seen as a kind of zooming out, and hence it is non-trivial how to do the cartographic generalizations, without getting lost in over-simplifying [abstractions](#) that just *sub*tract some points ([320](#)).

McGilchrist's example of a bird summarizes the emissary operational mode best: this mode is employed when a bird picks a seed among grit or pebbles, with narrow focus on the known. We humans brought to perfection this narrow focus on the known, by wrapping and collapsing it into abstract representations ([299](#)).

The 'Master'

9. The other half of the game, i.e. the "master" mode of operation, is IMHO best illustrated by McGilchrist's account of an animal's *"need for open attention, as wide as possible, to guard against a possible predator that requires some doing."* (p. 25). (Imagine here a picture of an owl among branches.)

If I imagine the **backdrop** of dark twigs and branches in the twilight, and our perfected ability to recognize the salient appearance of the predator hidden among the twigs, I am reminded of many characteristics of *tacit* knowledge (such as the large "backdrop" of experience of the organic chemist whom Stephen mentions), and of wholistic, *multipoint* vision (such as the binocular sight of an owl who recognizes in the darkness what a single eye would never alone identify).

> *"[W]e experience — the live, complex, embodied, world of individual, always unique beings, forever in flux, a net of interdependencies, forming and reforming wholes, a world with which we are deeply connected." (p. 30)*

I included another quotation because I hope that these multiple different accounts may add up to a picture of the "Master" hemisphere as rich and live as the one that the quote describes. I can only hope that this succeeds because, after all, this live picture can never really be transmitted by words, rather, it must be recognized by the reader themselves (315).

In the 'right hemisphere' mode, you are facing a multitude of *many* tesserae of a mosaic picture, but they appear as *one* whole of statistical normality until a deviant one, or **salient** one, stands out and becomes "recognised" (323).

The concept of "salience" is such a powerful idea which may explain a lot of what makes an expert: It is not an accumulation of propositional facts in the expert's brain, but rather, his or her performance in recognizing what is salient, for example in a disease pattern and anamnesis of a patient.

> *"The idea of recognising what is salient seems to fit with Stephen Downes recent talk in Istanbul about The Future of Educational Media – http://www.downes.ca/presentation/376 where he talks about assessment being a recognition process not a standards-based process."* (Jenny Mackness) (328)

An expert of such-and-such is *recognized* by the way how he looks at his such-and-such, and how he *recognizes* salient patterns against a backdrop of "normal" patterns, based on his huge statistcal "database" memory of normal constellations in his field. (299)

Pattern recognition relies very much on our ability to find salient, outstanding objects among a backdrop full of statistically familiar objects. And as far as I have understood McGilchrist, it employs much right hemisphere integration instead of left hemisphere abstractions (278).

To me, this kind of recognition nicely matches how McGilchrist describes one of the two operational modes of the brain: When an animal has to notice a predator, who may be hidden among dark twigs in the twilight, it employs a broad vigilant attention and immediately recognizes the new situation (299).

10. The idea of a pattern on a backdrop or a mosaic, inevitably connotes the idea of some laminar, 2- or 3-dimensional perception. such as the visual 'rich' picture, and in particular its spatial base.

Often, the **spatial** layout activates the mode of brain operation that McGilchrist calls the Master, and that Sousanis characterizes as *all-at-once* instead of *sequential* (327).

It seems that spatial concepts are significantly overrepresented among those that have inspired many more new words.

I would speculate that the role of the broad picture, of looking about, watching, demonstrating and imitating, was very important for the emerging language. That is, even though language is regarded as a "left-brain" activity, it is deeply anchored in the visual modality, and the words were transferred to other modalities, and even to abstract notions, by means of synesthesia and metaphor (321).

In particular, regarding prepositions, I was surprised how many of our most important prepositions have their origins in spatial notions.

Having just read about synesthesia, I was amazed about how much our ancestors applied their visual and kinesthetic experience of **space** to all sorts of other things, while they created a wealth of new meanings of these little prepositions.

Most prominently, many spatial words were equally applied to temporal relationships, then to movement (space + time), then to intention, but this is just the start; the prolific process of adding ever more synesthetic and figurative senses, is not finished yet ([316](#)). Prepositions can express all kinds of relationships.

Keith Hamon argues that *"The preposition does not signify something other than its coupling,"* ([316](#))

11. The power of the spatial, laminar, visual perception becomes clearer when we look at one affordance that is fostered by this simultaneous mode: It makes it easier to perceive connections and relationships than sequential access. And this is not limited to hierarchical connections (between separable, bounded, fragmented entities), which could be examined one at a time) but allows for complex connection *networks*. This brings us to Connectivism which favors connections over nodes.

The connections of Downes' [explanation](#) of connectivism *"are not (for example) conceptual connections in a concept map."* If I choose concepts that are neatly defined and trivially connected through hierarchical connections, such as animal, cat, dog, spaniel — such arborescent tree connections just help overrating the nodes. By contrast, a mixture of thick and thin, close and distant connections among both well-defined and ambiguous terms, does help me to imagine how the parts of the picture are not merely composed or summed up, but recognized as a whole — because the connections are more important than the single parts, and the parts are not separately understandable without the connections ([304](#)).

12. What the 'master' mode enables, is a different kind of knowledge. It is the kind of knowing that other languages translate into "kennen", "connaître", "conocer", etc., not the kind: "know that" = "wissen", "savoir", "saber" etc. — see [McGilchrist](#), 2011, p. 96.) ([284](#)). McGilchrist writes about the two meanings of "knowing" (German/ French [“wissen”](#)/ [“savoir”](#) vs. [“kennen”/ “connaître”](#)):

> *"[W]e come to know in the sense of 'cognise' (*wissen*) something only by recognising (*erkennen*) something we already knew (*kennen*)." (p. 97)* ([318](#)).

The latter kind is the kind of knowing that 'knowing a family member' feels like (we recognize a familiar face from many tiny features), or how an expert knows a familiar, normal state of affairs as opposed to a salient extraordinary state.

It is not the kind of knowledge that can be looked up, but what should be already in one's head. I think the difference is between *searching* something on a knowledge map, and *browsing* the map: If I only need to find a certain point, or a certain line, on the knowledge map, then I can look it up. But if I want my own *Rich* Picture, I need my map in my own brain.

Clearly, the searching is associated with what McGilchrist calls the "Emissary" mode, while browsing applies the mode of the "Master". For finding patterns in large mosaics of experience, or in entire *sets* of relationships, I need the browse mode. Even for non-fuzzy problem solving, I need to "look around" in my solution "space" ([320](#)).

Recognition

13. In his [this presentation](#), Downes speaks of patterns (of recognition) that *"layer over each other"* (11:20) and of clusters (in competency graphs) where data *"overlaps"* (53:30). So we can see ever more clearly how this networked explanation differs from constructivist building blocks and from hierarchical organisation ([315](#)).

I try to understand what "recognition" means, what makes "recognizing" different from just seeing the single parts. How is it that the parts of the picture are not merely composed or summed up, but recognized as a whole? The idea to be recognized is not constructed from building blocks that consist of universal magic black boxes. Rather, some smaller patterns might get merged into diverse subset combinations, and before recognition can occur, we probably need to have been immersed into the experience of many of these subsets of smaller patterns. Each smaller pattern can be misinterpreted as a building block, as long as the emphasis is on the hierarchical part-whole relationship, i.e. on the items, instead of the connections *between* the smaller patterns ([304](#)).

Another, complementary account of the parts and the whole can be found in Sousanis' book "Unflattening": it argues that the eye is "dancing and darting", i.e. by its saccadic motion (palpation by means of the gaze) it captures only small fragments at a time, and it is our imagination that needs to combine them into vision. It quotes R. Arnheim *"To see is to see in relation."* Other explanations draw on rather optical phenomena, like the distance of our eyes, and the refraction at the contact of two media, that yield different but related images. In particular, they remind me of the binocularity that enables [an owl](#) to recognize in the darkness what a single eye would never alone identify ([332](#)).

14. I think that knowledge as recognition is easier to understand when we consider McGilchrist's two modes. All news is first processed by one of them. But once it is recognized, it "feels" totally different because then it is stored by the other mode. At the very moment it is recognized, it becomes knowledge, and then the term *recognizing* makes seemingly no more sense for it. Similarly, all the notions of gradual, slow emergence of such patterns, or of "seeing" them, makes no more sense for the explicit knowledge now extant. This is, IMHO, why it is so difficult to make sense of the simple process of recognizing. The idea of recognizing is IMHO perfectly plausible when it is applied to knowledge that is *nascent*, either by gradual, slow emergence of patterns, or by just "seeing" these patterns. ([310](#)).

But how can *learning* be explained by recognition? In particular: how can we recognize what we do not already know? The trick is that recognition needs only a *part* of the features of a pattern to see the whole pattern. Recognition then explains the deeper mechanism of learning as not linear/ sequential (not via fixed isolated representations) but as laminar/ all-at-once (multiple connected features of a pattern). Thanks so much Stephen Downes for the idea of recognition ([335](#)).