Can McGilchrist's Neuro-Cortical Hemisphere Hypothesis offer a Naturalistic Account of Heidegger's Critique of the Technological Way of Being?

Submitted by Daniel John Mason, to the University of Exeter as a thesis for the degree of MA by Research in Philosophy (PT), September 2021.

I certify that all material in this thesis which is not my own work has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other university has been acknowledged.

Signature……DM…….

Abstract

In *The Question Concerning Technology,* Martin Heidegger puts forth his critique of the technological way of Being, which he terms *Gestell,* commonly translated as *enframing.* This pre-reflective understanding of the world manifests itself as a world of inter-changeable resources, as Hubert Dreyfus puts it. As the modern understanding of Being, Heidegger thinks it comes alongside a *danger* – that it is considered to be the only way of Being. This is dangerous because it conceals the historical narrative of Being: understandings of it have changed over the course of history. Yet there remains a possible saving from this danger. By understanding that *enframing* is but one way of Being amongst previous ways, we might keep open the possibility that *enframing* does not end up becoming the final one. It is my claim that Heidegger's critique of the technological way of Being, *enframing,* might be able to be understood from a more naturalistic position; the argument that I shall present will be that Iain McGilchrist's Hemisphere Hypothesis might be able to act as a neuro-cortical basis for *enframing*. It is McGilchrist's claim that the two hemispheres of the brain are divided not on a structural or even functional basis, but on an attentional one: they interpret and engage with the world in fundamentally different, yet complementary ways. However, he claims, the left-hemisphere has been able to achieve a kind of dominance over the right, for various complex reasons, which has had the resultant effect of modern society being broadly reflective of its general outlook of the world. I will argue for the claim that the way the left-hemisphere views the world can be broadly construed in terms that are similar to Heidegger's analysis of *enframing,* and that as such it might be that the notion of left-hemisphere dominance could be the basis of *enframing.* I will also argue for the secondary claim, necessarily connected to the first, that if left-hemisphere dominance might be understood as the basis of the danger of *enframing,* then a return to the right-hemisphere, to hemispheric balance, might just be the saving power as Heidegger suggests, which can open up the possibility of a different way of Being.

Contents

Introduction

This project arose from seminars and lectures in philosophical anthropology held by Professor Lenny Moss at the University of Exeter. It was during this time that I first observed similarities between disparate strands of thought that had been included in the course material. This project is an attempt to form some of these observations into a coherent argument, aiming to show the similarities between the work of Iain McGilchrist and Martin Heidegger. In particular focus is the former's concept of left-hemisphere dominance and the latter's notion of *Gestell*, commonly translated into English as *enframing*. My aim is to argue that the similarities between the two make them commensurable in some way. The motivation for this is to see whether our understanding of either can be enriched through this engagement. I intend to tease the similarities out to argue that left-hemisphere dominance might be a basis of *enframing*. Throughout this dissertation I will use the word 'being' in a number of different ways. To ensure that I avoid conflation between senses, I will capitalise as 'Being' whenever I use the word to denote a specific existential sense of the word, wherein, like Heidegger, what is meant is intelligibility.

Broadly speaking this project can be situated within the movement to find a way to make commensurable scientific naturalist enquiry and phenomenological insight, a movement often working under the research programme of 'naturalising phenomenology'. Whilst it is not the purpose of this thesis to address the question of whether phenomenology could, or even should, be made commensurable with naturalistic science, it is worthwhile to situate it within the wider literature. According to Dan Zahavi, this programme aims at trying to bridge the explanatory gap between third-person physiological processes and first-person experiences by bringing to bear the method of phenomenology to account for what the natural sciences have not as yet, namely subjectivity.[2] It appears to be an assumption in the literature that the phenomenon of subjectivity is something to be accounted for and not explained away or conceptually eliminated. Phenomenology, as the study of the structures of subjectivity, is taken to be an explanatory framework and method that might account for what a purely naturalist (physicalist) account

[2] Dan Zahavi, "Phenomenology and the project of naturalization" in *Phenomenology and the Cognitive Sciences,* No. 3 (2004), 331-2.

of mind – as physical phenomenon – cannot; namely the structures of subjectivity. It is seen as a possible augmentation of, rather than competing theory to, naturalism. As Morten Overgaard notes, it is primarily the phenomenology of Edmund Husserl and Maurice Merleau-Ponty that have been used to try and introduce phenomenology to cognitive science.[3] There perhaps lies an inevitable tension between the naturalist approach of cognitive science and the transcendentalist approach of Husserlian phenomenology since, as Overgaard notes, there lie two basic assumptions on the part of phenomenology which are in conflict with naturalism: (1) consciousness is irreducible and the starting point for analysis, and (2) any ontological claims about the fundamental nature of reality are methodologically suspended. This means that any account of mind which eliminates or ontologically reduces mind cannot be accepted by the phenomenologist, since it would eliminate the very justification for engaging with phenomenology in the first place, given that the physicalist account would be sufficient.[4] Therefore, any attempt to bridge naturalist cognitive neuroscience with phenomenology must aim to make them mutually commensurable in some way. David Suarez outlines three mutually non-exclusive attempts to naturalise phenomenology:[5]

a. *Neurophenomenology*; as put forth by Francisco Verela, Evan Thompson, and Antoine Lutz, which attempts to instrumentalise phenomenology as a method to generate first-person data to be correlated with third-person neurophysiological data.
b. *Front-loaded Phenomenology*; as put forth by Shaun Gallagher, which aims at obtaining insight through phenomenological insight guiding scientific experimentation allowing for a mutually constrained refining of the objects cognitive science tries to explain and analysis of lived experience.
c. *Formalised Approaches*; as put forth by Jean Petitot, Jean-Michel Roy, and Jeffrey Yoshimi *et al.* which seeks formal and mathematical tools to model the structure of subjectivity and physical systems, facilitating the

[3] Morten Overgaard, "Rethinking Nature: Phenomenology and a Non-reductionist Cognitive Science" in *Australasian Philosophical Review,* Vol. 2, Issue 2 (2018), 365.
[4] Overgaard, "Rethinking Nature: Phenomenology and a Non-reductionist Cognitive Science", 366.
[5] David Suarez, "A dilemma for Heideggerian cognitive science" in *Phenomenology and the Cogntivie Sciences,* Vol. 16 (2017), 916-8.

connection of phenomenology to the exact sciences by allowing for clear statements of specific hypotheses regarding the relations between the phenomenal and the physical.

Elsewhere, Maxwell Ramstead claims that each of these endorse a form of epistemological and methodological, if not ontological, naturalism; he distinguishes between the three:[6]

I. *Ontological naturalism*: a form of monism where the kind of stuff that makes up all things is natural stuff, therefore making the process of naturalising one of explaining phenomena in terms continuous with the natural sciences.
II. *Methodological naturalism*: the view that philosophical enquiry should employ, or at the least be coherent with, the methods of the natural sciences and their criteria for justification. There are two versions:
    i. *Strong*: claims that philosophy and the natural sciences ought to be in methodological continuity; the former should adopt all the methods and criteria for justification employed by the latter.
    ii. *Weak*: claims that the most adequate method of study of entities is one coherent or continuous with the natural science *if* said entity is a natural one. This allows for autonomy in philosophical method when considering non-natural entities and is only available with a rejection of ontological naturalism, since it allows for the possibility of non-natural entities.
III. *Epistemological naturalism*: claims that the only valid and justified form of knowledge is empirical knowledge, pertaining to natural things and properties, and natural nomological regularities. There are two versions:
    i. *Strong*: for any field to qualify as a scientific one, it must provide empirical knowledge about natural nomological regularities and particulars.
    ii. *Weak*: for any field to qualify as a scientific one, it must provide either empirical knowledge about natural nomological regularities

[6] Maxwell J.D. Ramstead, “Naturalizing what? Varieties of naturalism and transcendental phenomenology” in *Phenomenology and the Cogntivie Sciences,* Vol. 14, Issue 4 (2015), 931-933.

and particulars, or formal knowledge about mathematical entities, structures, and relations.

An endorsement of the ontological claim seems to entail the strong methodological claim, since if all that exists is natural stuff, then any method and criteria for exploring this stuff ought to be in continuity with the natural sciences. It further entails either the strong or the weak epistemological claim, for if all that exists is natural stuff, and the methods most appropriate for investigating that are those of the natural sciences, then the only valid way to form knowledge of it will be via empirical and/or mathematical/formal investigation. Part of the tension in the task of naturalising phenomenology lies in its commitment to the transcendental. Any commitment to the ontological, thus strong methodological, thus strong or weak epistemological claims will ultimately involve capitulating this, reducing transcendental phenomenology to phenomenological psychology.[7] Though Ramstead makes it clear that all three options – (a), (b), and (c) – endorse some form of epistemological and methodological naturalism (which will be strong if they also endorse ontological naturalism), accepting the weaker methodological claim is possible if one rejects ontological naturalism, though leaving open the question of the precise ontological status of subjectivity.[8]

Suarez suggests then that attempts to naturalise phenomenology can be problematic in at least two ways. In a metaphysical sense they either fail to address the ontological implications of transcendental phenomenology, or they reject the transcendental aspect of phenomenology. In a phenomenological sense they either reject scientific naturalism altogether or make their commitments to naturalism trivial. Perhaps then, as Overgaard intimates, one way to make some progress would be to walk away from Husserlian transcendental phenomenology and try another path.[9] Such an alternative could be Heideggerian existential phenomenology; Suarez outlines:

d. *Heideggerian Cognitive Science*; as put forth by Michael Wheeler, grounded in Heidegger's insistence on the worldly existence of subjectivity, thus resulting in a cognitive science which focuses on a

[7] Suarez, "A dilemma for Heideggerian cognitive science", 910-12.
[8] Ramstead, "Naturalizing what? Varieties of naturalism and transcendental phenomenology", 938-9.
[9] Overgaard, "Rethinking Nature: Phenomenology and a Non-reductionist Cognitive Science", 376-6.

> causally complex integration of brain, body, and environment, rather than focusing on Cartesian-inspired representations in the brain.[10]

Crucial to this is what Wheeler terms *minimal naturalism*: wherein what is demanded in the relation between the natural sciences and philosophy (phenomenology) is *only* consistency rather than continuity, thus not necessitating wholesale reductionism (and certainly avoiding eliminativism).[11] This appeals to what he terms "The Muggle Constraint", which (briefly) claims that where there is a clash between philosophy and science, then it is philosophy which must concede and revise or withdraw its claims.[12] Further, Wheeler uses Heidegger's claim that part of the existential structures of human Being involves historicality, by which is meant that human attempts at making sense of the world they find themselves in are not separate from the situated history of human existence. This means that our (scientific) understanding of what is true in any given time has changed and may continue to do so, and that our philosophical analyses ought to change with this. He terms this the domesticated transcendental.[13] With this in mind, it might be possible to therefore consider the possibility of the natural sciences and phenomenology reaching a closer accord, accepting a kind of minimal naturalism which, on a surface level, seems to have similarities to the claim of weak methodological naturalism. It is not the purpose of this dissertation to examine these attempts at naturalising phenomenology. Nor will I carry forth this discussion. It is important to frame my argument within the broader literature within which it can be said to sit, and it will be clear that my project sits in orbit of some of the moves made by Wheeler. At the very least, and in the background, I adopt a minimal naturalist position. This notion of minimal naturalism gives us justification to attempt to bring together the best insights from a broad range of fields, after all as Zahavi notes "there is…a difference between claiming that philosophy and science should cooperate and denying their very difference."[14] The question of whether phenomenology can be naturalised, and which form this takes, is largely suspended for the purposes of this project. Such a question might be worthwhile ground for a broader thesis at a later time. Though

[10] Suarez, "A dilemma for Heideggerian cognitive science", 919-22.
[11] Michael Wheeler, "Science Friction: Phenomenology, Naturalism and Cognitive Science" in *Royal Institute of Philosophy Supplement,* Vol. 72 (July 2013), 154-5.
[12] Wheeler, "Science Friction: Phenomenology, Naturalism and Cognitive Science", 157.
[13] Wheeler, "Science Friction: Phenomenology, Naturalism and Cognitive Science", 158-9.
[14] Zahavi, "Phenomenology and the project of naturalization", 344.

given the subject-matter it is clear that I would favour Wheeler's attempt at it via a Heideggerian cognitive science.

It is clear that attempting to bring together naturalism and phenomenology is challenging, that it may be perfectly possible that it is the case that McGilchrist's naturalistic hypothesis and Heidegger's existential phenomenology are simply incommensurable. Certainly at a surface level this is the case; Heidegger's existential phenomenology bears little resemblance to McGilchrist's broad neuro-scientific and historical analysis. It may be the case that the two simply do not map onto each other. Evidently, I do not think this to be the case. I will be arguing that in some sense they do. This might involve, on some level in a later paper, revising some of Heidegger's philosophical and phenomenological insights and claims in light of work in the natural sciences. In principle the two are not incommensurable. I take McGilchrist to adopt – at the least – a weak methodological claim when it comes to naturalism. As we shall see his prioritising of metaphorical truth and insistence (in his method) on drawing from a panoply of fields, ranging from neuroscience to art history, seems to suggest this. Furthermore, as shall be seen, it may even be the case that the kind of hard-line reductionism and eliminativism that the research programme of naturalising phenomenology tries to avoid might be the result of the misplaced dominance of the left-hemisphere. Alternatively, the kind of analysis that McGilchrist tries to bring to bear, making use of the resources of neuroscience, might itself be a manifestation of Heidegger's notion of *enframing* in the sense that it could be viewed as a reductive account. Given what has been outlined thus far in relation to naturalising phenomenology I think that Wheeler's notion of minimal naturalism allows us to side-step this problem, as we can demand that we revise Heidegger's insights where necessary.

I think it also important to situate this project within an older enterprise than naturalising phenomenology, that of philosophical anthropology, which explores the question of what it means to be human. In doing so it seeks to bring together the insights of the many strands of human intellectual effort, particularly those of the philosophical and scientific communities. This appears to be similar to what the research programme of naturalising phenomenology tries to do, and so could be considered as part of that broader enterprise.

It is important to stress that I will not be assessing the veracity of either Heidegger or McGilchrist's claims. Whether their work is convincing is not the focus of this dissertation. My intention is rather to see whether they might be commensurable in some way. I will include some reflections on whether there are ways to develop the ideas within this project in the conclusion. In order to successfully draw out the similarities, and thus the potential for commensurability, between McGilchrist and Heidegger's work, I must ensure that I take the time to outline their positions. This dissertation will proceed as follows: in Chapter 1 I will outline McGilchrist's Hemisphere Hypothesis, where he develops his concepts of the left and right hemisphere, and consider the role of truth and metaphor in this. Chapter 2 will then pivot to Heidegger and detail my understanding of Heidegger's analysis of *enframing* as the technological way of Being and his critique of this. Finally in Chapter 3 I will use the preceding chapters as a foundation to present my argument that left-hemisphere dominance as McGilchrist conceives it might be a naturalistic basis of *enframing* and that this further entails that the *saving power* which Heidegger thinks is bound within *enframing* as a way of Being has as its basis the right-hemisphere.

1. The Hemisphere Hypothesis

The naturalistic hypothesis offered by McGilchrist, what we might call the 'Hemisphere Hypothesis', results in a particular characterisation of the brain hemispheres based not upon *what* they do, but *how* they do what they do. It rests upon an analysis of a vast amount of data gleaned from numerous studies, experiments, and projects investigating hemispherical functioning, from the point of view of the *attention* the hemispheres pay to the world. McGilchrist's hypothesis could thus be said to have an *attentional basis.* Contra to the common traditional view, often sensationalised, of the brain hemispheres that paint them as dichotomous in their functioning, McGilchrist paints a picture of them wherein they are relatively symbiotic in their general functioning but carry out that functioning in fundamentally different ways. This traditional view of the hemispheres, that their functioning is lateralised, that is each is responsible for fundamentally different areas of brain functioning, has since its inception in the mid C20th and its subsequent caricaturing in popular culture been slowly in decline. Indeed, it seems McGilchrist's attempt in this book is to spur this on, and in some ways rehabilitate the status of what has for decades been seen as the lesser hemisphere, the right-hemisphere. I must preface this and later chapters and make it clear at this point that the sheer scope of his book precludes a complete discussion of both the wider and finer points of his analysis and interpretation, and indeed these are not entirely necessary for the purposes of this project. I will therefore be selective in the content that I pull from his work, so that I can present his position as generously as possible as far as it is relevant to the goals of this project.

This chapter will be sub-divided into 3 sections: (1.1.) will briefly discuss the fable through which he narrates his hypothesis and introduce how he thinks the hemispheres relate to one another, providing a brief sketch of the neurological underpinnings of this characterisation; (1.2.) will close this discussion with McGilchrist's understanding of the relation of the hemispheres to the concepts of truth, music, and metaphor, and summarise his characterisations of the hemispheres, whilst bringing in some supplementary work from Merlin Donald.

1.1. The Neurological Basis of the Hemisphere Hypothesis

McGilchrist's central claim is that whilst function in the brain is not as lateralised as we have thought, the hemispheres are deeply divided in how they *approach and carry out* said functioning. These two ways of doing things manifests as two different kinds of metaphorical 'characters' or 'personalities' – metaphor has an important role for McGilchrist, as we will discover in 1.2. McGilchrist recounts a fable, which he attributes to the philosopher-poet Friedrich Nietzsche, which goes like this:

> *"There was once a wise spiritual master, who was the ruler of a small but prosperous domain, and who was known for his selfless devotion to his people. As his people flourished and grew in number, the bounds of this small domain spread; and with it the need to trust implicitly the emissaries he sent to ensure the safety of its ever more distant parts. It was not just that it was impossible for him personally to order all that needed to be dealt with: as he wisely saw, he needed to keep his distance from, and remain ignorant of, such concerns. And so he nurtured and trained carefully his emissaries, in order that they could be trusted. Eventually, however, his cleverest and most ambitious vizier, the one he most trusted to do his work, began to see himself as the master, and used his position to advance his own wealth and influence. He saw his master's temperance and forbearance as weakness, not wisdom, and on his missions on the master's behalf, adopted his mantle as his own – the emissary became contemptuous of his master. And so it came about that the master was usurped, the people were duped, the domain became a tyranny; and eventually it collapsed in ruins.*[15]

It is not entirely clear where in Nietzsche's published works McGilchrist derives this fable from, in his reference he claims he cannot remember where it is from – I have not been able to find where this is from, it is possible that this is a misattribution. Nevertheless, it provides a narrative to present his claims. In this narrative the right-hemisphere plays the role of 'master', the left-hemisphere playing the part of the 'vizier', the 'emissary'. As we shall see McGilchrist thinks that it is the right-hemisphere that has primacy in the functioning of the brain, the left-hemisphere merely processes what is given by the right. This is because the right-hemisphere is more in touch with reality as it presents itself to the brain,

[15] Iain McGilchrist, *The Master and His Emissary: The Divided Brain and the Making of the Western World* (New Haven: Yale University Press, 2012 [2009]), 14.

whereas the left-hemisphere represents, or as McGilchrist is fond to write 're-presents', this input and unpacks it, before sending it back to the right-hemisphere. The right-hemisphere is integral for the brain to do almost anything well, the left-hemisphere can attempt to rule by itself, but it can do so only in a haphazard way. Elsewhere McGilchrist describes the scene of a surgery to illustrate the importance of the hemispheres working in tandem. The task of surgery is performed best when both the surgeon and the scrub nurse are present and work together; it being hazardous or even impossible if one or the other were absent.[16] This is a point he makes time and again throughout his book, and it is worth dealing with at the onset of our discussion of his work: he thinks *both hemispheres* do important work, and are integral for a balanced and healthy brain (subsequently a balanced and healthy approach to life). When one or the other becomes *dominant* it results in its idiosyncrasies being amplified, and in the case of the left-hemisphere this is incredibly problematic and even dangerous, as we shall see later. Whilst he does claim that the right-hemisphere has a kind of ontological priority to the left (owing to the manner in which it pays *attention* to the world),[17] it is important that they be in balance, indeed he even goes so far to claim that those periods of human civilisational history in which science and culture flourished might be evidence of hemispheric balance.

To think that McGilchrist claims the left-hemisphere is unimportant is to fundamentally misunderstand his position. It is rather the case that he sees a degree of bias in favour of the left-hemisphere in the narrative history of scientific investigation of the hemispheres, denigrating the contribution of the right, and wants to redress the balance. Furthermore, he is committed to his hypothesis being tested against new evidence as it comes to light;[18] so far he thinks this evidence has been in line with his hypothesis.[19] This despite A.C. Grayling's uncertainty, in his review of the initial publishing of the book in 2009, whether the neuroscience supported the conclusions McGilchrist draws.[20] It is worth noting that in the 2019 edition of his book he claimed that his assessment of research conducted since its initial publication has increasingly corroborated his analysis.[21]

[16] McGilchrist, "Preface to the New Expanded Edition" in *The Master and His Emissary,* xv.
[17] McGilchrist, *The Master and His* Emissary, 28.
[18] McGilchrist, *The Master and His* Emissary, 462.
[19] McGilchrist, "Preface to the New Expanded Edition" in *The Master and His Emissary*, xviii.
[20] A. C. Grayling, "In Two Minds: A Review of The Master and His Emissary" in *Literary Review,* December 2009.
[21] McGilchrist, "Preface to the New Expanded Edition" in *The Master and His Emissary*, xviii.

McGilchrist's vast project will require time and *similar scope of reference* to ultimately test its veracity.

Contrary to the traditional narrative relating to the hemispheres, which states that the left-hemisphere is the more dominant and indeed important hemisphere, McGilchrist claims that rather the reverse seems to be true: that the right-hemisphere has primacy. This rehabilitation of the status of the right-hemisphere is one of the central claims and motivations of his book. The reason for this, as far as I can tell, relates to the nature of the right-hemisphere's attention to the world; I will come to this shortly. Before I come to McGilchrist's *attentional basis,* it is important to outline a general picture of the physiological structure of the hemispheres.

The brain is divided into two sides, hemispheres, left and right. The left-hemisphere is considered to be in control of the right side of the body, including the right side of the face, the right eye and the right ear. The right-hemisphere is considered to be in control of, and receive information from, the left side of the body, including the left side of the face, the left eye, and the left ear. Following the anatomist John Hunter, whose work grounded the general axiom in biology that structure indicates function (or at least enables function), McGilchrist points to the asymmetry of the brain as an indication that different functions might be at work. The brain is generally asymmetrical in structure, being wider towards the back on the left-hemisphere and further towards the front on the right-hemisphere (known as the Yakovlevian Torque).[22] We should expect brain structure to be symmetrical if it is no indication of function, since there would be no need for it to be structured in different ways. Communication between the hemispheres is facilitated by the *corpus callosum,* which has an estimated 300-800 million neuronal fibres connecting areas of similarity in the two hemispheres. The primary function of this connective hub is to *inhibit* activation of one of the hemispheres; severing this hub, such as in the case of the famous 'split-brain' patients of the mid-C20th results in, surprisingly, little noticeable effects,[23] aside from the ability of researchers to be able to isolate the hemispheres in their functioning and so glean insight into what they do and how they do it. Furthermore, interhemispheric connections, that is connections between the two

[22] McGilchrist, *The Master and His Emissary,* 22-23.
[23] McGilchrist, *The Master and His Emissary,* 17-19.

hemispheres, seem to decrease relative to brain-size; evolutionary development *appears* to be moving in the direction of disconnecting the hemispheres from each other.[24] Again, it might be supposed that it would be more advantageous for the brain to be more interconnected, though as we shall see there is an advantage in asymmetry.

When compared to the left-hemisphere, the right-hemisphere has a greater degree of white matter – the sheath of myelin that surrounds the axons of neurones in the brain – aiding the transmission of electrical signals, meaning that the right-hemisphere can swiftly transfer information between the *prefrontal cortex* (the area associated with reasoning and emotion, and which makes up approximately 35% of the average human brain mass)[25] and the subcortical areas below (largely responsible for the more sensory functions), and aids intra-connectivity in general.[26] This intra-connectivity manifests in a greatly diffuse manner; its neural networks are spread across the right-hemisphere,[27] and include a greater amount of dendritic overlap between neurons[28] (dendritic branches are the part of a neuron which act as a means of input to the cellular body). The right-hemisphere generally tends to be longer, wider, larger, and heavier than the left-hemisphere, which tends to be wider only towards the back, broader only in the posterior parieto-occipital region,[29] the region that includes incidentally Wernicke's Area, which is generally considered to be the area responsible for the comprehension of spoken and written language. This is a minor, though important point, after all McGilchrist maintains that structure is likely some indication of function, which raises the question: why does the right-hemisphere tend to be structured in this way? It will be clear why he thinks so when we understand how he thinks each hemisphere functions.

I have previously suggested that McGilchrist's hypothesis seems to have an *attentional basis,* by which I mean that his characterisation of the hemispheres – which we will get to in detail soon – appears to initially be based on the kind of attention they pay to the world. The attention that they pay to the world is fundamentally different. The right-hemisphere is more vigilant, concerned with

[24] McGilchrist, *The Master and His Emissary,* 18-19.
[25] McGilchrist, *The Master and His Emissary,* 21.
[26] McGilchrist, *The Master and His Emissary,* 21&42.
[27] McGilchrist, *The Master and His Emissary,* 42.
[28] McGilchrist, *The Master and His Emissary,* 33.
[29] McGilchrist, *The Master and His Emissary,* 32-33.

the environment and the surroundings, with identifying new things, such as predators; it is responsible for *global attention*; whereas the left-hemisphere requires highly selective, focused attention on specific things.[30] Elsewhere he writes about how this manifests in non-human animals, such as birds; the left-hemisphere is responsible for homing in on a small piece of grain or a worm, the right with ensuring the environment is watched for changing circumstances and predators.[31] The left-hemisphere controls the right eye and the right-hemisphere the left eye, but the right-hemisphere is also responsible for peripheral vision – the part of our vision where *new* things tend come into Being for us – regardless of side.[32] The right-hemisphere is, therefore, the hemisphere that tends to experience things first, it tends to also be able to direct our attention to things that are new. Attention, for McGilchrist, has *ontological priority* when compared to other cognitive functions because it is required in the first place for these cognitive functions to happen.[33] The way the evidence and accompanying argumentation is presented can be, and I think must be viewed, through this *attentional* lens; McGilchrist's focus is on *the way* the hemispheres do what they do, not necessarily *what* they do, and as such the focus on attention provides the basis for his characterisation of the hemispheres supported by the evidence he uses. This suggests a temporal hierarchy of attention wherein new things come first into our attention and thus perception with the right-hemisphere, before being processed in further detail by the left-hemisphere.[34] This is what gives rise to the ontological priority; things present themselves to the right-hemisphere *first,* before being 're-presented' and processed by the left-hemisphere.[35] The right-hemisphere seems to be concerned with what we can call "exploratory attention", finding new things, and the left-hemisphere with "grasping attention", focusing on what has already been prioritised (by the right-hemisphere).[36] The right-hemisphere is thus primarily concerned with the world of the senses as it presences, as a *whole,* whereas the left-hemisphere is concerned with the abstract re-presentation of these as the conscious mind, enabling the careful

[30] McGilchrist, *The Master and His Emissary,* 38-39.
[31] McGilchrist, *The Master and His Emissary,* 26.
[32] McGilchrist, *The Master and His Emissary,* 40.
[33] McGilchrist, *The Master and His Emissary,* 28-29.
[34] McGilchrist, *The Master and His Emissary,* 43.
[35] McGilchrist, *The Master and His Emissary,* 43.
[36] McGilchrist, *The Master and His Emissary,* 44.

discrimination of the finer details if necessary, and thus only ever sees *parts.*[37] This accords with the kind of attention McGilchrist claims each hemisphere pays to the world. This also gives the right-hemisphere an affinity with the living, the personal, with things as they actually *are,* the left-hemisphere with an affinity for the non-living, impersonal, with the mechanical.[38]

With a focus on the whole, the living, the personal, the right-hemisphere is the primary hemisphere for the processing of emotions, for empathy. The right frontal lobe is crucial for emotional expression of all emotion apart from anger, which is most associated with left frontal activation (this is possibly due to the key neurotransmitter in the left-hemisphere being dopamine, a key neurotransmitter for feelings of reward,[39] which has more widely distributed networks in the left-hemisphere).[40] The right-hemisphere, via the right frontal pole, is more closely connected to the limbic system, which regulates the body's level of arousal, and alongside the right frontotemporal cortex which controls inhibition of emotional arousal, suggests that the right-hemisphere is dominant when it comes to handling emotion.[41] This further manifests in the disparity between how the hemispheres pay attention to faces. The left-hemisphere tends to read emotions by interpreting the lower part of the face, the right-hemisphere the face as a whole, but particularly the eyes.[42] The focus of the left-hemisphere on the lower part of the face, the mouth, might be related to its preponderance for language, *especially for symbol.* In being able to read eyes, the right-hemisphere can better ascertain what it is that others are thinking and feeling.[43] This suggests something else integral for the characterisation of the right-hemisphere: its preponderance for what is subtle and implicit.

Traditionally it is thought that the left-hemisphere is the more language-dominant, rational part of the brain. This only seems to be true for what can be called linear reasoning, that proceeds in sequence, that is explicit (and highly focused).[44] However, McGilchrist claims the evidence suggests that problem-solving in general (including mathematical and scientific reasoning) are more reliant on the

[37] McGilchrist, *The Master and His Emissary,* 46-49.
[38] McGilchrist, *The Master and His Emissary,* 54-56.
[39] McGilchrist, *The Master and His Emissary,* 32-33.
[40] McGilchrist, *The Master and His Emissary,* 53.
[41] McGilchrist, *The Master and His Emissary,* 58-59.
[42] McGilchrist, *The Master and His Emissary,* 59-60.
[43] McGilchrist, *The Master and His Emissary,* 57-58.
[44] McGilchrist, *The Master and His Emissary,* 64.

right-hemisphere, not just because it is the hemisphere that tends to be more active[45] but also because of the kind of attention required when undergoing reasoning in general; it tends to be implicit, rely on inference and deduction, requiring intuition, up to the point that this is approximate – any move towards explicit rendering of reasoning or precision leads one towards left-hemisphere activation.[46] The left-hemisphere is indeed more involved with language, at least as far as an extensive vocabulary, complex syntax, and its representation of things that are familiar to us is concerned; that is, where things are re-presented as signs.[47] The right-hemisphere does tend to be more visuospatial than the left, which accords with its more primordial role as the originator of experience. Yet McGilchrist highlights the neurological nature of sign-language as an indication as to how this might not be so clear-cut; it is in fact left-hemisphere mediated, not right-hemisphere, despite being based in visuospatial gesture, with left-hemisphere damage in deaf patients causing disruption to their ability to use sign-language.[48] This suggests that the left-hemisphere's role in language is more related to its nature as *symbol,* and the rules that govern it, rather than its particular verbal or written nature. Indeed the right-hemisphere is greatly involved in language, in recognising words, utilising vocabulary, understanding the emotional content of language and how to receive it; "it can construe intelligently what others mean, determining from intonation, and from pragmatics".[49] The right-hemisphere is thus important for understanding humour, irony, sarcasm, poetry and anything else that might have a non-literal meaning. It also thus provides the basis for our understanding of metaphor. This is a key issue for McGilchrist, who writes: "the importance of metaphor is that it *underlies all forms of understanding whatsoever,* science and philosophy no less than poetry and art."[50]

Given its central role in whatever is implicit and emotional, it might be no surprise that the right-hemisphere plays such a role in our experience of music and time. Firstly, the right-hemisphere tends to have a greater working memory, being able to access more information and hold it for longer due to its reliance on networks

[45] McGilchrist, *The Master and His Emissary,* 64-65.
[46] McGilchrist, *The Master and His Emissary,* 65-66.
[47] McGilchrist, *The Master and His Emissary,* 70.
[48] McGilchrist, *The Master and His Emissary,* 70-72.
[49] McGilchrist, *The Master and His Emissary,* 70-72.
[50] McGilchrist, *The Master and His Emissary,* 71.

of noradrenergic neurones that do not fatigue like other neurones.[51] It also tends to be more associated with episodic memory, which deals with personal past events, thus memories that are more emotional in nature, whereas the left-hemisphere tends to have more involvement in more impersonal memory categorisation.[52] This aids the right-hemisphere's experience of time as a flow, whereas the left-hemisphere seeks to break it up, divide it, reduce it, so that it can be measured, it tends to construe time in the sense of an abstract re-presented series of discrete events.[53] Music, as something that not only happens in time, but relies on timing in order to happen at all, is right-hemisphere dominant; song is associated with right-hemisphere activation, despite speech largely being something the left-hemisphere activates for.[54] The meaning derived from music depends entirely on the whole, entirely on the *relationships* between notes and silence, with each note deriving its meaning or having said meaning changed depending on its context.[55] Our awareness of music comes from how it connects to us emotionally, its features leading to physiological changes in our body such as changes in breathing, heart rate, blood pressure or temperature, inducing sweating, tear-formation, or making hairs stand up.[56] Music connects to us, and connects us, in a wholly bodily way, in a way specially suited for the right-hemisphere. Thus McGilchrist suggests that music is the 'language' of the right-hemisphere.[57] This leads us to the next section, and a more detailed discussion of this notion.

[51] McGilchrist, *The Master and His Emissary,* 42-43.
[52] McGilchrist, *The Master and His Emissary,* 54.
[53] McGilchrist, *The Master and His Emissary,* 76-77.
[54] McGilchrist, *The Master and His Emissary,* 74.
[55] McGilchrist, *The Master and His Emissary,* 72-73.
[56] McGilchrist, *The Master and His Emissary,* 73.
[57] McGilchrist, *The Master and His Emissary,* 73.

1.2. Language, Truth, and Metaphor in the Hemisphere Hypothesis

The previous section finished with an explication of the importance of music to the right-hemisphere because McGilchrist claims that it precedes language, that even language evolves out of our capacity for music. This is a controversial claim to make (and he acknowledges as such), because it is not at all obvious just how the development of language *from* music rather than music being a by-product of language would be "evolutionarily advantageous".[58] I intend to outline this claim before suggesting an augmentation of it *viz*. Merlin Donald which I think grounds it in a more powerful analysis; McGilchrist points towards the rootedness of language in the body through music, I think Donald can help strengthen the claim that language is rooted in the body through his understanding of mimesis. This discussion is necessary because it will aid my eventual pivot towards discussing the nature of truth and how it relate to the hemispheres, in particular the notion of metaphorical truth and how it is grounded in the right-hemisphere.

McGilchrist observes that when children are first developing language they develop the musical aspects first: intonation and rhythm being two key musical aspects, after which comes syntax and vocabulary; indeed infants prefer talk that perhaps exaggerates prosody, so-called 'baby talk'.[59] That the right-hemisphere develops largely before the first – as we have already covered – aids the suggestion that there is a musical nature to language which first develops, rooted in our relying on "aspects of right-hemisphere holistic processing capable of making fine discriminations in global patterns and having little to do with the analytic processing of language by the left hemisphere."[60] Pointing to a principle that "ontogeny recapitulates phylogeny", that is the claim that the way infants develop suggest in some ways the manner in which the species may have evolved, to put it incredibly simply, he claims that this suggests that music developed before language, further pointing to the presence of musical capabilities in other nonhuman animals such as birds.[61] If it is actually the case, or the evidence does tend to support this claim, then this is a crucial part of

[58] McGilchrist, *The Master and His Emissary,* 103-104.
[59] McGilchrist, *The Master and His Emissary,* 103.
[60] McGilchrist, *The Master and His Emissary,* 103.
[61] McGilchrist, *The Master and His Emissary,* 103.

McGilchrist's overall argument. This is because it allows him to root what is generally considered to be the crowning function of the left-hemisphere – language – in the general functioning of the right-hemisphere, in music. As he notes, it allows for an explanation as to why "poetry evolved *before* prose", and why early poetry was sung rather than spoken.[62] As we have already suggested, music connects us to others, both other human beings and other things in the world, it activates a range of physiological reactions, regulated in consultation with the right-hemisphere, and in its connecting of human beings aids social cohesion – at least, as McGilchrist notes, in traditional societies where the performance of music plays a central role in culture.[63]

If language truly did originate in music, then we must presume that our ancestors were able to achieve relatively similar functions with music as the species later did with music. Indeed, we can see that many non-human animals communicate in some rudimentary ways using intonation or other auditory musical aspects. We can think of whale-song or bird-song as an example of this, or even cats which tend to primarily 'meow' at their human owners as a way of communicating particular information, the pitch and intonation of the noise changing as to indicate meaning. McGilchrist points to evidence that tribes in the Amazon basin can communicate without the need of vowels and consonants as the prosodic aspects of their language is so strong they can "sing, hum or whistle conversations."[64] Interestingly the research, by Daniel Everett, points to a "striking absence of…forms of precision quantification in Pirahã semantics and culture".[65] Given what McGilchrist is suggesting about the left-hemisphere and how it views the world, its penchant for certainty and precision, it is interesting that the Pirahã language should both be incredibly reliant on prosody *and* lack the many concepts of precise quantification. Communication does not seem to *require* language, that is exactly unless the function of communication is the communication of information rather than social connection. The communication of information would require precision, perhaps even standardisation in time, it would require the involvement of the left-hemisphere and the development of a shared lexicon and syntax; a language. Even if communication is possible without

[62] McGilchrist, *The Master and His Emissary,* 105.
[63] McGilchrist, *The Master and His Emissary,* 104.
[64] McGilchrist, *The Master and His Emissary,* 106.
[65] Daniel L. Everett, "Cultural Constraints on Grammar and Cognition in Pirahã" in *Current Anthropology,* Vol. 46, No. 4 (August-October 2005), 622.

language, is thought possible without it? McGilchrist thinks it abundantly clear that it is. We are not conscious – do not use internalised words – when carrying out most mental processes, precisely because they are unconscious; we interpret the world without using words. Most imagination, artistic creativity, intuitive problem solving, and spirituality do not require the internalised use of language, quite often they "require us to transcend language, at least language in the accepted sense of referential code."[66] Language in the sense of referential code is the left-hemisphere's kind of language; it is a making explicit, a categorisation, a bequeathing of certainty and fixing static of a thing perceived in flux. The left-hemisphere cannot understand meaning unless it is through the rubric of a lexicon, furthermore this meaning is mediated not by itself, but by the right-hemisphere[67] (certainly if it is implicit or non-literal). Patients that suffer a left-hemisphere stroke are still able to carry out sophisticated thought-processes, despite not being able to communicate this through highly cultured language.[68] If language is not necessary for communication nor for thinking, it raises the question why it evolved in the first place. McGilchrist thinks it has something to do with the general functioning of the left-hemisphere and how it tends to do things. However, I think we can fine-tune McGilchrist's narrative here with reference to the work of Merlin Donald on the evolution of language.

In *A Mind So Rare,* Donald provides a means for further understanding how language might ultimately be rooted in the body and avoiding what he terms the "isolated mind" bias which he claims much cognitive science suffers from – namely, the assumption that the best way to study the mind is to do so in isolation by studying just *one* mind, which neglects the broader and greater claim that he argues for: that culture plays a key role in the consciousness of its members, and "distributes cognitive activity across many brains…dominat[ing] the minds of its members."[69] This culture is founded on what Donald terms our "hybrid" minds; half-analogic directly connected to the world, half-symbolic directly connected to culture.[70] Of interest to my purposes is his understanding of mimesis, which he later summarises as:

[66] McGilchrist, *The Master and His Emissary,* 107.
[67] McGilchrist, *The Master and His Emissary,* 108.
[68] McGilchrist, *The Master and His Emissary,* 109.
[69] Merlin Donald, *A Mind So Rare* (New York: WW Norton & Company, 2002), 149-50.
[70] Donald, *A Mind So Rare,* 157.

> *"a performance that reflects the perceived event structure of the world…[with] three behavioural manifestations: (1) rehearsal of skill, in which the actor imagines and reproduces previous performances with a view to improving them; (2) mime, in which patterns of action, usually of others, are reproduced…; and (3) nonlinguistic gesture, where an action communicates an intention through resemblance…The contents of mimetic acts are observable by others…enabling members of a group to share knowledge, feelings, customs, skills and goals"*[71]

This allows for the structuring of actions which is necessary to learn skills, resulting in the emergence of a "collective web of conventional, expressive non-verbal actions"[72] based in implicit references: that one thing refers to something else.[73] The mimetic network of early *hominid* societies acted as a web of meaning connecting many brains together in something called culture.[74] Language is rooted here in mimesis in that its evolution involved "voco[-]mimesis", the gradual intermingling of intended non-linguistic gesture, mime, skill rehearsal, and vocalisations, thus finding its ultimate root in the body, though being able to support narrative.[75] These vocalisations take on the meaning intended by gesture and supplant them as they can allow for greater specificity, and the subsuming of these increasingly sophisticated vocalisations into a shared cultural narrative. Donald uses skill-development as an example:

> *"But at the start of this process, archaic hominids would have never have heard anything like a word or a sentence and would have been driven only to clarify the existing mimetic scenarios with which they had dealt with for millennia. For example, when teaching toolmaking techniques, teachers might have first disambiguated the weak points in their pedagogical scenario by using visual emphasis and prosodic cues to direct their pupil's attention to what they were doing…But during the transition to language, those prosodic cues would have become more precise, and the teachers would then have employed specific gestures to label…which stage to rehearse or which striking method to use in edge sharpening. Such utterances…would have been difficult for a modern observer to classify…as nouns, verbs, and adjectives."*[76]

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[71] Merlin Donald, "Mimesis Theory Re-Examined, Twenty Years after the Fact" in *Evolution of Mind, Brain, and Culture,* ed. Gary Hatfield and Holly Pittman (Philadelphia: University of Pennsylvania Press, 2013), 169.
[72] Donald, *A Mind So Rare,* 265-9.
[73] Donald, *A Mind So Rare,* 262-265.
[74] Donald, "Mimesis Theory Re-Examined, Twenty Years after the Fact", 169-70.
[75] Donald, *A Mind So Rare,* 291.
[76] Donald, *A Mind So Rare,* 292-3.

The evolution of these vocalisations into narrative may have occurred through mimetic skill development: embodied tasks of distinct chains of action alongside vocalisations were eventually stringed together in orders that came to resemble rudimentary grammars, making sense in the emergent narratives of skill-development. As this ability was shared it took on new forms in the distributed network of culture. Once we have reached the point of narrative, "our worlds become virtualised".[77] Language and the culture in which it is rooted begins to be something alongside the world as lived-in. For Donald, this is the basis for human oral culture which blooms into stories of myth binding groups together and by its very nature is not static, it changes and evolves as needs arise and groups meet, generating many variations of mythic civilisations.[78] With the emergence of written text and visual art, examples of what Donald calls "symbolic technologies" [79] which allow for a release from a brain's biological memory systems; mimetic and mythic cultures have to rely on individuals memorising episodic actions or oral narratives, whereas symbolic technologies allow for the storing of cultural memory externally of the body in culture.[80] Donald's work can strengthen McGilchrist's claim that language is rooted in music by ultimately rooting it in the body. I think it is fair to conclude that there is no major distinction between claiming the origin of language to be in music or in mimesis; the distinction collapses.

I have only dealt very briefly with Donald's work, only where I think it is relevant to the purposes of this chapter, but I think a more sustained engagement with his work with reference to McGilchrist's hypothesis might be fruitful. Particularly a deeper investigation of how language is rooted in the body and this notion of symbolic technologies, investigating in particular whether the English language lends itself more naturally to either hemisphere's view of the world (and of course ways in which it doesn't). Not necessarily in the vein of a Herderian[81] understanding of language as expressive of a particular group, or deterministic *à*

[77] Donald, *A Mind So Rare,* 295.
[78] Donald, *A Mind So Rare,* 296-8
[79] Donald, *A Mind So Rare,* 305-7.
[80] Donald, *A Mind So Rare,* 306.
[81] Johann Gottfried Herder, "Essay on the Origin of Language" in *Two Essays on the Origin of Language,* trans. John H. Moran and Alexander Gode (Chicago: Chicago University Press, 1966 [1891]), 48-50.

la the common understanding of what is called the Sapir-Whorf Hypothesis,[82] but rather more along the lines of this notion of a symbolic technology. Linguist David Crystal notes that "English…has a remarkable range, flexibility, and adaptability".[83] By 2002 Crystal estimated that 1.5 billion people – 1 quarter of the world's population at the time – spoke English either as a first (400 million), second (400 million), or foreign language (700 million).[84] When we consider language as a kind of symbolic technology, we might ask whether particular languages lend themselves more to the expression of either hemisphere's attentional perspective – is there something about the English language that has made it particularly flexible and adaptable, as Crystal put it, that makes it an effective symbolic technology? Inevitably put like that it is a simplistic picture, but if we take Donald's notion of language as a symbolic technology seriously then as a language spoken the world over by a significant portion of the world population further linguistic, sociological, and anthropological research could prove insightful.

Returning to McGilchrist, both hemispheres are involved with language, albeit in different ways. Whilst most syntax and vocabulary are mostly located in the left-hemisphere, the ability to understand the meaning, tone, emotional significance in its context – metaphor, humour, irony – these are generally reliant on the right-hemisphere.[85] Despite this it is still the left-hemisphere that is 'in control' of language and the conscious use of it. Remarkably, the areas in the left-hemisphere associated with language, the only area in which it is structurally larger than the right, also has within it the areas responsible for the left-hemisphere's control of the right hand, the hand which historically we have tended to be culturally dominant in and used to make tools.[86] The left-hemisphere appears to utilise a similar area of the brain to both control the *literal* grasping and subsequent manipulation of things in the environment and the – ironically, metaphorical – grasping and subsequent manipulation of words and concepts in the mind. I have already mentioned McGilchrist's observation that sign-language, alongside verbal and written language, is largely activated in the left-hemisphere.

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[82] Al-Sheikh Hussain, Basel, "The Sapir-Whorf Hypothesis Today" in *Theory and Pracitce in Language Studies,* Vol.2, No.3 (March, 2012); 642-6.
[83] David Crystal, *The English Language: A Guided Tour of the Language* (London: Penguin, 2002 [1988]), 42.
[84] Crystal, *The English Language: A Guided Tour of the Language,* 1-10.
[85] McGilchrist, *The Master and His Emissary,* 99.
[86] McGilchrist, *The Master and His Emissary,* 100.

There seems to be an important relationship between the hands and the left-hemisphere. McGilchrist suggests that this relationship is not just a neurobiological one, not just a matter of the two functions being coded in the same (or similar) areas of the brain; it has a more intuitive relationship too. He points to our use of phrases such as '*grasping* ideas', '*putting our finger* on it', or '*pinning* it down'[87] – all have to do with making a thought/concept/idea more precise or clear, and all involve an image of a hand interacting with something. It has to do with manipulation; the chief manner through which we manipulate the world is through the creation of and use of tools. The proto-neurophenomenologist Erwin Straus noted it was strange not to call the hand an organ, since the word originally meant tool[88] (he references Aristotle, quoting that the hand is the "tool of tools"[89]). Straus goes on in the same work to provide the phenomenological insight that the usage of the hand implies a sense of possession (of the hand), a sense of 'mine', which depends on, i.e. results from, a condition of necessary inner distance, "a remoteness experienced in spite of the proximity of contact."[90] This distance occurs in perception, not geometrical space,[91] which is to say it might occur initially in the right-hemisphere as the presencing of a thing through the sensation of touch, before being handled – hand-led – by the hands operated primarily by the left-hemisphere. Reinforcing this interpretation, Straus not long after writes:

> *"The role of distance is not limited to the hand as a sensory organ. It also dominates manual expression, communication, and contact. Distance is ambivalent. Sometimes we want to preserve it; sometimes we want to eliminate it. The hand is instrumental in both cases. When our equilibrium is out of balance or disturbed, the hand grasps out for a hold. In darkness it functions as scout and sentry, warning against collision and searching for contact. Sometimes no hold is found, no contact is made. Searching hands stretch into the empty void. It is as if emptiness were localised in our hands. Indeed, only the empty hand, like the beggar's hand, can receive. Emptiness is the condition by which our hands can be filled. Only because of remoteness can it make contact."*[92]

[87] McGilchrist, *The Master and His Emissary,* 111-112.
[88] Erwin Straus, "The Upright Posture" in *The Psychiatric Quarterly,* Vol. 26 (1952), 543-544.
[89] Aristotle, *De Anima,* trans. W.D. Ross (Oxford: Oxford University Press, 2020 [1961]) 139-40, 432a.
[90] Straus, "The Upright Posture", 545-7.
[91] Straus, "The Upright Posture", 545-7.
[92] Straus, "The Upright Posture", 543-8.

A degree of openness is necessary to make contact with the world around us; hands bunched into a fist are no good for receiving the world, a brain too narrowly focused is no good for perceiving the world. The right-hemisphere is thus the initial mediator of the sensory perceptions received through the body – this we already know – such perceptions are re-presented in the left-hemisphere, which given the distance it is able to put between subject and object – that is, it is able to detach itself from the immediate perception – allows it then to *manipulate*, because for the first time the 'mine', the 'me', is separate from the thing grasped. This appears to be corroborated by the evidence collated by McGilchrist: "exploratory, rather than grasping, motions of the hand activate the right superior parietal cortex, *even when the hand that is doing the exploring is the right hand."*[93] Whilst it might seem that the notion of necessary distance is a function of the frontal lobes, and as suggested earlier, primarily the right frontal lobe, it may also be made possible by the manner in which the brain as a whole integrates its perceptions; in that they move from the right-hemisphere, to then be re-presented in the left-hemisphere, before returning to the right-hemisphere. This is another key claim made by McGilchrist, that whatever is sent from the right-hemisphere to the left-hemisphere, must ultimately return to the right; a biological instantiation of Hegelian dialectics.[94] The interaction with the world of the hands, initially exploratory but manipulative once familiar with the things it grasps, leads these perceptions from the right-hemisphere to the left to be re-presented, and in doing so, in the process of becoming familiar, a distance arises between the thing itself and the thing perceiving it – the re-presentation itself is perhaps this distancing. This necessary distance – necessary because of neurological processes – enables the left-hemisphere to then shine its narrow focus on the thing being grasped and instruct the hands to begin to make use of it. It is perhaps no coincidence that the etymology of manipulation can be traced back to the Latin *manus,* meaning 'hand', and *plere,* 'to fill'. Manipulation arises when the hand is full, when it has grasped something, after the left-hemisphere has been able to re-present the initial perceptions of the right-hemisphere and created the necessary distance between perceiver and percept. The notion of 'mine' arises, the notion of possession, and with possession the breaking down into parts a once-whole thing in order to be made use of, manipulated. The nature of the left-

[93] McGilchrist, *The Master and His Emissary,* 113.
[94] McGilchrist, *The Master and His Emissary,* 198-207.

hemisphere to manipulate relates to its mode of attention: its narrow focus is what makes manipulation possible. How do the hands and manipulation relate to language?

We have already discussed how both hemispheres are involved in language, and that language is not necessary for communication nor for thinking. We also have some claims from McGilchrist that language originates in music, which is largely an expression of the right-hemisphere's approach to the world, though this narrative can be better enhanced by Donald's contribution helping to originate language in the body. It is now time to interrogate this claim in a little more depth, and to consider further how language relates to manipulation in the vein that I discussed in the previous paragraph. McGilchrist does in fact claim that language is ultimately rooted in the body, since it is "the necessary *context* for all human experience."[95] It seems that even when we listen to music, our brain's motor cortex is activated, which is the area responsible for bodily movement, suggesting music's relationship to movement, to dance, which is a "social, non-purposive" gesture.[96] The gesture of dance can take many forms, expressing a whole variety of different meanings and interpretations and embodying a whole variety of emotions. This is in contrast to the other kind of gesture, the grasping gesture. Grasping is "individualistic and purposive…limited to one modality."[97] In other words, if language is rooted in the body, then it is rooted via gesture. He notes that there is some evidence that even the structure of syntax may be founded on fixed sequences of movement.[98] This is curiously similar to the suggestion from Donald that fixed action patterns in skill development may have been an early framework for structuring vocalisations. What kind of language might be related to grasping? The kind of language that grasps things, that names them and makes them explicit, that categorises and orders things; in other words, what we might call referential language. If purely explicit referential language finds its origin in the left-hemisphere, with its manipulative drive, then it becomes another tool by which it can enact said manipulation. It does this via mapping its environment; naming things, initially, but then ordering them. Such language, resulting from the necessary distance that comes from grasping objects, fixes the

[95] McGilchrist, *The Master and His Emissary,* 118.
[96] McGilchrist, *The Master and His Emissary,* 119.
[97] McGilchrist, *The Master and His Emissary,* 119.
[98] McGilchrist, *The Master and His Emissary,* 119.

world around oneself, isolating the things within the world from their context, turning things in flux to stasis. However, this is not all language is used for. It can be used for implicit, and emotional, connection, more similar to the functioning of music, with its emphasis on contextual connectivity.

The right-hemisphere alone has the capacity to understand metaphor,[99] owing to its preference for the implicit, the unsaid, the hidden meaning. Metaphor plays an incredibly important role according to McGilchrist, in that it is "the *only* way in which understanding can reach outside the system of signs to life itself. It is what links language to life."[100] This is because the referential language of the left-hemisphere removes things from their context, reduces them to signifiers (of the things) within rules-based structures which act like parts of an intricate machine whose only purpose is to convey information and improve one's ability to manipulate the world. McGilchrist traces the etymology of metaphor to the Greek *meta-,* 'across', and *pherein,* 'carry', implying it is something that carries us across some gap,[101] – though I think it best thought of in the sense that it carries us across *to things,* to the world; in carrying us, it suggests that we are in some way receptive to being drawn to something, like the open hands waiting to be filled. Metaphor is not just found in poetry, it is something that permeates our existence; even the notion of trying to 'grasp' an idea is a metaphor. It involves a web of implicit connotations that require context to understand. Of metaphor, McGilchrist writes:

> *"The point of metaphor is to bring together the whole of one thing with the whole of another, so that each is looked at in a different light….You can't pin one down so that it doesn't move, while the other is drawn towards it: they must draw towards each other….Metaphor (subserved by the right hemisphere) comes before denotation (subserved by the left). This is a historical truth, in the sense that denotative language, even philosophical and scientific language, are derived from metaphors founded on immediate experience of the tangible world."*[102]

Whereas the left-hemisphere prefers the simple, explicit meaning of language that exists solely as reference of one thing to another, the right uses metaphor as a way to link language back to the living world, that is the world of the body in

[99] McGilchrist, *The Master and His Emissary,* 115.
[100] McGilchrist, *The Master and His Emissary,* 115.
[101] McGilchrist, *The Master and His Emissary,* 116.
[102] McGilchrist, *The Master and His Emissary,* 117-118.

context with its surroundings. If this characterisation is correct, then we arrive at a distinction between two kinds of conceptions of truth: the left-hemisphere's version where truth is correspondence (to some kind of fact, *in reference*) or the right-hemisphere's version where truth is heuristic, a matter of lived interpretation. We can understand this by considering the nature of the attention that each pays to the world, and the way they try to approach it. The left-hemisphere has a narrow focus of the world, as its role is to pay attention to detail. It grabs things and in doing this it divides the environment into parts. It names things, and in so doing fixes them. Thus for something to be true for the left-hemisphere, it needs to correspond to some part of this system that it has devised, and it can do so in only *one way* that must be certain. The right-hemisphere is concerned for new things, and the general environment one finds oneself in. In such a world, a multiplicity of things is happening, and as such its focus is on integrating them into a coherent whole. It seeks to connect to the world, and others, through this integration. Thus for something to be true it has to in some way become an understanding, it can be *in many ways* and is almost always uncertain. McGilchrist puts it this way:

> *"According to the left hemisphere, understanding is built up from the parts; one starts from one certainty, places another next to it, and advances as if building a wall, from the bottom up. It conceives that there is objective evidence of truth for a part outside the context of the whole it goes to constitute. According to the right hemisphere, understanding is derived from the whole, since it is only in the light of the whole that one can truly understand the nature of the parts….According to the latter vision, that of the right hemisphere, truth is only ever provisional, but that does not mean that one must 'give up the quest or hope of truth itself'."*[103]

Where the left-hemisphere is chiefly concerned with fixity and certainty, its conception of truth must be fixed and certain. Its primary responsibility for denotative language is an extension of this. The right-hemisphere, through metaphor, seeks to integrate, to understand the whole and the context. Through metaphor it ensures that the lifeless, because devoid of context, world of the left-hemisphere returns to the world of context and thus remains grounded and in touch with reality. I think this accords with Donald's overall narrative: symbolic

[103] McGilchrist, *The Master and His Emissary,* 142.

technologies allow the left-hemisphere to engage with a world which by its very nature is a re-presentation; a static virtualisation of the presencing world as given to the right-hemisphere. Written language allows the left-hemisphere to decontextualise thought, to subject it to dissecting analysis; to break it into parts. It allows for certainty – certainty is only possible when things in flux have been made static.

For McGilchrist truth is when each of these tendencies are in balance. Indeed, as we shall see he thinks hemispheric balance to be responsible for the greatest instances of human civilisation and achievement, but balance implies that there can be unbalance, and this he is chiefly concerned about the left-hemisphere's tendency for its own self-referential operation, that it may in our current period of history be dominant, its excesses causing much damage to us. I will return to this notion of hemispheric balance in Chapter 3. Before I proceed, I would like to quote a good summarising passage of the general natures of the hemispheres, so that we might bear it in mind:

> *"The world of the left hemisphere, dependent on denotative language and abstraction, yields clarity and power to manipulate things that are known, fixed, static, isolated, decontextualized, explicit, disembodied, general in nature, but ultimately lifeless. The right hemisphere, by contrast, yields a world of individual, changing, evolving, interconnected, implicit, incarnate, living beings within the context of the lived world, but in the nature of things never fully graspable, always imperfectly known – and to this world it exists in a relationship of care. The knowledge that is mediated by the left hemisphere is knowledge of a closed system. It has the advantage of perfection, but such perfection is bought ultimately at the price of a mechanical rearrangement of the things already known. It can never really 'break out' to know anything new, because its knowledge is of its own representations only."*[104]

Given McGilchrist's characterisations of the hemispheres, I will now take some more time to explore what is meant by metaphor and exactly how it can ground our understanding of the world and thus be in some way related to 'truth'. Broadly speaking, metaphor is a linguistic process by which one thing can be described in the manner of another thereby revealing some kind of understanding. To borrow an example from George Lakoff and Mark Johnson's *Metaphors We Live*

[104] McGilchrist, *The Master and His Emissary,* 174.

By, the metaphor "argument is war" – one that is likely familiar with anyone trained in philosophy – allows for an understanding of the concept of 'argument' such that, were I to explain to someone unfamiliar with argumentation exactly what it is, then I could rely on the connotations and concepts associated with war to explain to them what argument is. Arguments have *sides*, *winners*, and *losers;* they rely on *strategy* and *attacking the opposing side's weak points*; we can talk of an argument being *annihilated* by *opponents,* and so on.[105] Such understanding relies not on representation – there is nothing in argument which is *literally war* - but rather on metaphor, on implicit understanding of the associations between things. As noted previously the etymology of the word *metaphor* leads us to the meaning of 'carry across'; metaphor carries us across to new understanding. As noted already it is the right-hemisphere which is primarily involved with metaphor and the processing of implied meaning, whereas the left-hemisphere is more interested in explicit meaning, truth as representation.

Metaphors can be much more than explaining one concept in terms of another with the goal of understanding. As Lakoff and Johnson explain, there are also orientational metaphors, which take the form of spatial comparisons: up-down, in-out, deep-shallow, to list a few. These also involve an implicit value-judgement. For instance, if I say 'I am feeling *up* today', I imply I am feeling *happy,* rather than 'I am feeling *down* today' if I am sad. Both come with an implicit value-judgment of up=good, down=bad.[106] Curiously, they note that the *rational* is *up* and the *emotional* is *down*; such as, "the discussion *fell to the emotional level* but I *raised* it back *up to the rational* plane."[107] These two examples are curious, not least because they root our understanding in spatial – therefore bodily – matters, but more so because of the manner that the hemispheres correspond to these. Broadly speaking, the left-hemisphere tends to be more optimistic and prone to *mania,* whereas the right-hemisphere tends to be more pessimistic and prone to *depression.*[108] Is there some implicit judgement here on the value of emotion and sadness that suggests a bias of the left-hemisphere? Nevertheless, these two kinds of metaphor both involve comparative relations between things, and it is

[105] George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: Chicago University Press, 2003 [1980]), 4.
[106] Lakoff and Johnson, *Metaphors We Live By,* 14-16.
[107] Lakoff and Johnson, *Metaphors We Live By*, 17.
[108] McGilchrist, *The Master and His Emissary,* 62-64.

this focus on the betweenness of things in the world that the right-hemisphere takes.

Whilst they detail other types of metaphors, I will discuss one final type: ontological metaphors. These allow us to pick out discrete parts of our experience. When I see a black cat I perceive all manner of perceptions – the colour, the smell, the noises it makes – in a unified manner such that I perceive this thing, a black cat. The existence of this thing – its life journey – is a process of coming-to-be, living, and death. Yet it is perceived as a distinct and discrete thing, an object with properties that may change over time. In a sense, this black cat is an ontological metaphor for not just the process of this thing's existence, but also our encounters with, our perceptions of, it. Whilst it is strange to think of things such as black cats as processes, as our everyday perception is of a cohering, static object, we also use ontological metaphors for more obvious processes. Take for example that of the mind. Lakoff and Johnson give the example of "the mind is a machine", whereby we say things like "my mind just isn't *operating* today" and "I'm a *little rusty* today".[109] Here the mind is metaphorically described as machine, and spoken about as such, and in doing so, given our familiarity with machines in our everyday lives, we come to understand what a person who speaks like this means. In doing so, we pick out a discrete element of reality and reify it. We label it and begin to understand it as a discrete thing. Furthermore, in this specific example, we come to understand the thing in a particular way, thereby opening up possibilities: if the mind is a machine, and understood as such, then it can be *upgraded,* it can be *replaced* when it breaks down, and if we take the metaphor a little further, and consider the mind as *software* to the *hardware* of the brain, then we make possible the (currently) science-fiction idea that the mind can be *downloaded,* and stored in a cloud, only to be *uploaded* into another piece of hardware such as a newly-grown biological body or a robotic replacement. Only when the mind is understood metaphorically as a machine can these become possibilities. Whether they are physical possibilities remain to be seen. If they do become possible then that doesn't 'prove' that the mind *really is* a machine – such an understanding is far too literal, but rather that the possibility of *downloading* minds cannot occur until the metaphor "the mind is a machine" is sufficiently dominant so as to spur

[109] Lakoff and Johnson, *Metaphors We Live By,* 25-28.

experiment and development aiming for said goal. This is crucial for it means that metaphors underly and delimit the things we think possible in the world. This is not to say that metaphors simply *are* truth – truth as correspondence, 'mere' fact, is still important – but rather to say that metaphorical truth is the other side of the coin. Truth is much more than just correspondence; it also involves interpretation of context.

This chapter has laid the foundation for the naturalist side of the project. Having established McGilchrist's understanding of brain-hemisphere relations and the importance of metaphorical truth, I can proceed to establish the basis for the phenomenological side, Heidegger's understanding and critique of the technological way of Being. Only when both of these side have been outlined in relative isolation can I attempt to bring them together, as I do in Chapter 3.

2. Heidegger and Gestell

For a moment I will move away from McGilchrist's neuroscientific narrative, and seek to establish the other side of this project. The important foundations of this and the previous chapter will allow me to make my argument in Chapter 3 and bring the two seemingly disparate sides together. As suggested in the Introduction, the reason for this is that it is important to get a clear view of the two positions that I am seeking to try and bring together.

Heidegger claims that pre-reflective understandings of Being have changed throughout the course of history, beginning primordially with the ancient Greeks and reaching a catastrophic state in our current time in the form of *Gestell*. 'Being' is used in an existential sense of intelligibility. By pre-reflective understandings of Being I refer to interpretations of human existence, in other words the different ways in which human beings have throughout history understood themselves in relation to truth, meaning, and the world they find themselves in. This is in the spirit of what I noted Wheeler as emphasising in the Introduction: historicality. It is hoped that the 'pre-reflective' part of this phrase avoids an understanding which places too much emphasis on this being a rational and representational process. It is not my intention to navigate what is known as Heidegger's History of Being, that is his metanarrative of the ways that metaphysics has changed since its inception in Ancient Greece. This is primarily due to the goal of this project: I am attempting to ascertain whether it is possible to provide a naturalistic account of Heidegger's critique of the technological way of Being. As such, to engage more broadly with his intellectual *corpus* – his *gesamtausgabe* – would be to extend myself far outside the scope of what I ought to be accomplishing with this project. That would be a goal for further research.

Before I outline the chapter I would like to make one thing clear: Heidegger's language and tone when examining the intellectual tradition is totalising in that he sees sweeping forces at play throughout European history and society as a whole, and his opinion of the movement of this history is undoubtedly negative. His characterisation of modern science is contentious and disagreeable in that it doesn't necessarily hold for every instantiation of it. My explanation will take this tone in order to try and faithfully put across his position. Despite this, I do not think his characterisation of modern science as grounded in *enframing* is *fait de*

accompli. Whether it holds for all instantiations of modern science from biology to theoretical physics is of course a contentious issue. It is perhaps more plausible that Heidegger has identified a strong tendency in modern science, or certain applications of it, and certainly one that does not have to by necessity retain a hold forever.

This chapter will be divided into two sections: (2.1.) will examine Heidegger's conception of truth, and use that to aid an analysis of his notion of *enframing,* relying on a close reading of *The Question Concerning Technology*; (2.2.) will then examine his claims relating to the origin of *enframing*; to ascertain how the technological way of Being comes to be inaugurated first in the subject-object metaphysics in *The Age of the World Picture,* and then the maturing of this metaphysics in *enframing.*

2.1. Truth and the Technological Way of Being

Heidegger's understanding draws on that of an ancient Greek word *alētheia*, meaning truth.[110] For Heidegger, and the Greek sense he wishes to evoke, this is not truth in the traditional sense of correspondence, the sense that would evolve post-Parmenides with Plato. Rather, it is *truth as unconcealment.* Truth as a revealing of what was concealed. Don Ihde explains that this notion of truth involves a clearing "within which [beings] take the shapes they assume…never simply *given:* they appear or come to presence in some definite way".[111] It involves a process of concealing and revealing. Thus, as he also explains, something being *correct* is true only in a limited sense, "with respect to some aspect or part of a larger whole" it is "limited or inadequate…characterised by some partial truth…[covering] over the…more basic truth that founds it."[112] In *The Question Concerning Technology, Heidegger* arrives at this notion of truth after discussing an account of the creation of artefacts and of natural growth, of Greek *technē* and *phusis* respectively. These two words, he argues, suggest a *bringing-forth* of something into presence, into Being as such. He writes:

> *"Bringing-forth, indeed, gathers within itself the four modes of occasioning – causality – and rules them throughout. Within its domain belong end and means as well as instrumentality. Instrumentality is considered to be the fundamental characteristic of technology. If we inquire step by step into what technology, represented as means, actually is, then we shall arrive at revealing. The possibility of all productive manufacturing lies in revealing. Technology is therefore no mere means. Technology is a way of revealing If we give heed to this, then another whole realm for the essence of technology will open itself up to us. It is the realm of revealing, i.e., of truth."*[113]

The bringing-forth of something into presence, the unconcealing of something concealed, is truth as such. What does this mean? Heidegger indeed notes that it is not a conception of truth we are familiar with, as we often associate truth with

[110] F.E. Peters, *Greek Philosophical Terms: A Historical Lexicon* (New York: New York University Press, 1967), 16-17.
[111] Don Ihde, "Heidegger's Philosophy of Technology" in *Heidegger's Technologies: Postphenomenological Perspectives* (New York: Fordham University Press, 2010), 30-31.
[112] Ihde, "Heidegger's Philosophy of Technology", 30.
[113] Martin Heidegger, "The Question Concerning Technology" in *Basic Writings,* ed. David Farrell Krell (Abindgon: Routledge, 2008 [1954]), 222.

correct correspondence to representation,[114] a definition that can trace its lineage back at least to Plato.[115][116] This conception of truth suggests something deeper than mere correspondence. That red may correspond with apple is certainly correct, and so when we say "that apple is red" we are stating something true if indeed the apple is red, but this sense of truth is more like *correctness.* Certainly it is correct to say that the apple is red if indeed it is red, but what does this have to do with truth? The kind of truth as revealing that Heidegger, on the back of the Greeks, is trying to get at is more like the kind of truth we might associate with an instantiation of a way of life or a particular view of the world. It is related to the manner in which individuals and groups understand themselves and their place in the world, and certainly relates to the kind of artefacts they produce and the manner this takes. For Heidegger, "technology is a mode of revealing…[it] comes to presence in the realm where revealing and unconcealment take place, where *alētheia,* truth, happens."[117] Revealing, as the verb suggests, is a happening, it is a process, not some static correctness of corresponding fact (at least, not *just* that). Technology as a mode of revealing, means technology as a way of coming to truth – what kind of truth? Here Heidegger needs to distinguish between what can be called earlier *handicraft* technology and later (current) *modern* technology, for he senses an important distinction.

He does this via two of the Greek terms mentioned previously, *phusis* and *technē.* As far as Heidegger is concerned they are both aspects of *bringing-forth,* albeit in different ways. *Phusis* (or *physis*[118]*),* the Greek word for nature suggests a *bringing-forth* that is spontaneous, resulting from itself, as a flower's growth can be captured via camera and sped up to seem like it is almost rushing outwards from itself. This was how nature appeared to the Greeks. *Technē*, the Greek word for craft, skill, and art, suggests a *bringing-forth* that requires the hand of another, in reality something that is *brought*-forth, not of its own accord. Thus the creation of a vase is an act of *technē*, the growth of the human who made the vase an act of *phusis*.

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[114] Heidegger, "The Question Concerning Technology", 222.
[115] Plato, "Cratylus" in *Dialogues of Plato: Translated into English, with Analyses and Introduction*, ed. and trans. by Benjamin Jowett (Cambridge: Cambridge University Press, 2010), 654-655, 385.
[116] Plato, "Sophist" in *Theaetetus and Sophist,* ed. and trans. by Christopher Rowe (Cambridge: Cambridge University Press, 2015),168-9, 263a-e.
[117] Heidegger, "The Question Concerning Technology", 223.
[118] Peters, *Greek Philosophical Terms: A Historical Lexicon*, 158-160.

He gives an account of four causes that are involved in *bringing-forth* an artefact, the material, formal, final, and efficient causes,[119] an account of causation that can be traced back to Aristotle.[120] Through a characteristically etymological analysis, Heidegger traces the word *cause* to the latin *causa* through to the Greek *aiton,* meaning culpability, responsibility,[121] or "that to which something else is indebted".[122]This sense of responsibility is crucial to understanding what *bringing-forth* means, that is it suggests an interconnectivity between its relations. Heidegger gives an example to clarify:

> *"Silver is that out of which the silver chalice is made. As this matter (hyle), it is co-responsible for the chalice. The chalice is indebted to, i.e., owes thanks to, the silver for that of which it consists. But the sacrificial vessel is indebted not only to the silver. As a chalice, that which is indebted to the silver appears in the aspect of a chalice, and not in that of a brooch or a ring. Thus the sacred vessel is at the same time indebted to the aspect (eidos) of chaliceness. Both the silver into which the aspect is admitted as chalice and the aspect in which the silver appears are in their respective ways co-responsible for the sacrificial vessel."*[123]

The thing that is brought forth owes its existence to the four causes that allowed it to come forth, and in coming forth it is brought into presence (into Being). This *bringing-forth* is known in Greek as *poiēsis,*[124] to act, to make (as it relates to art).[125] The two forms of *poiēsis, phusis* and *technē,* are so because in the former the act of *bringing-forth* arises from itself and in the latter the act arises in another, often an artisan or craftsman. *Phusis* can, for Heidegger, account for all that is in the natural world in the sense of Spinozan *natura naturans* – nature naturing; coming from itself with no non-natural influence, as opposed to *natura naturata* – nature natured; being part of the causal chain.[126] *Technē,* the etymological origin for technology – via *technikon,* that which belongs to *technē*[127] – relates to artistic

[119] Heidegger, "The Question Concerning Technology", 219-220.
[120] G.E.R. Lloyd, *Aristotle: The Growth and Structure of His Thought,* (Cambridge: Cambridge University Press, 1968), 57-62.
[121] F.E. Peters, *Greek Philosophical Terms: A Historical Lexicon*, 16.
[122] Heidegger, "The Question Concerning Technology", 219.
[123] Heidegger, "The Question Concerning Technology", 220.
[124] Heidegger, "The Question Concerning Technology", 221.
[125] Peters, *Greek Philosophical Terms: A Historical Lexicon*, 162.
[126] Baruch Spinoza, *Ethics,* trans. Edwin Curley (London: Penguin, 1996 [1677]), Part 1, Prop. 29, 20-21.
[127] Heidegger, "The Question Concerning Technology", 222.

skill or craftsmanship; it is the domain of *technology.* Thus, technology is a bringing together of the four causes in the presencing of a thing.

Before we begin to understand what the essence of modern technology is, we must understand a little context in relation to commonly-held beliefs regarding technology in general. Heidegger grapples with two common definitions of technology, which I think are worthy of some reflections before outlining how he moves beyond them, and why that allows for a deeper understanding of technology. These are the *anthropological* and *instrumental* definitions. The anthropological definition states that *technology is a human activity*, whereas the instrumental definition states that *technology is a means to an end.*[128] Heidegger does not deny that these are *correct,* indeed he suggests it is incredulous that anyone could ever suggest they are not, but he claims that something can be correct whilst not revealing the essence of a thing, the truth of it.[129] This can be understood in Ihde's terms, which I began this chapter with, wherein something which is *correct* is only a partial truth concealing something fundamental. We can also understand this principle in straightforward terms by considering an example such as the *Gettier Cases,* in which Edmund Gettier pointed out that knowledge defined as a true belief with justification cannot be a sufficient definition for knowledge given that one can have a justified true belief arrived at by pure chance.[130] Gettier threw into doubt a commitment about knowledge stretching back to Plato.[131] One can have the correct answer to a question without actually understanding anything to do with the topic at all; something can be correct whilst having no bearing on the *essence* of the thing in question. This notion of essence is the substance of the opening of *The Question Concerning Technology.* We must understand why Heidegger thinks these definitions correct but not revealing essence of technology. Relying on a Platonic commitment, that the *essence* of a tree is not to be found in any given tree, he claims that "the essence of technology is by no means anything technological", that "according to ancient doctrine, the essence of a thing is considered to be *what* the thing is."[132] In the same way that the essence of the tree will be something that underpins all trees and makes them

[128] Heidegger, "The Question Concerning Technology", 218.
[129] Heidegger, "The Question Concerning Technology", 218.
[130] Edmund Gettier, "Is Justified True Belief Knowledge?" in *Analysis* (Vol.23, No.6, June 1963), 121-123.
[131] Plato, "Theaetetus" in *Theaetetus and Sophist,* ed. and trans. by Christopher Rowe (Cambridge: Cambridge University Press, 2015), 83-98, 201a-210a.
[132] Heidegger, "The Question Concerning Technology", 217-218.

tree *qua* tree, Heidegger is looking for that which underpins technology, that which it *is* at its deepest level, not simply how it seems to function (as instrumentality) nor how it seems to come about (as a result of human activity). Heidegger's analysis of *phusis* and *technē,* as instances of *poiēsis*, suggests that earlier handicraft technology, at least, is an example of bringing-forth out of concealment, that is of revealing, *alētheia;* technology, then, "is a mode of revealing."[133] However, Heidegger thinks modern technology is different kind of revealing. He writes:

> *"It is said that modern technology is something incomparably different from all earlier technologies because it is based on modern physics as an exact science. Meanwhile, we have come to understand more clearly that the reverse holds true as well: modern physics, as experimental, is dependent upon technical apparatus and upon progress in the building of apparatus. The establishing of this mutual relationship between technology and physics is correct. But it remains a merely historiological establishing of facts and says nothing about that in which this mutual relationship is grounded."*[134]

Modern technology seems to exhibit its essence more clearly than handicraft technology; to stand in contrast to the natural world in a more drastic way; to lean more onto the instrumentality definition than the anthropological definition in the sense that it seems altogether more utilitarian. What exactly is the technological way of Being which is revealed here?

> *"It too is a revealing…[a]nd yet, the revealing that holds sway throughout modern technology does not unfold into a bringing-forth in the sense of poiēsis. The revealing that rules in modern technology is a challenging, which puts to nature the unreasonable demand that it supply energy which can be extracted and stored as such…which sets upon nature. It sets upon it in the sense of challenging it"*[135]

Rather than bringing-forth, which suggests a kind of benevolent relationship, modern technology sets upon nature, in a way that a mugger might set upon their victim, and in so doing challenges nature to reveal itself. This is why Heidegger uses the examples he does, of industry hauling ore and coal from the earth; agriculture tearing crops from the soil; and the Rhine River having its form and

[133] Heidegger, "The Question Concerning Technology", 223.
[134] Heidegger, "The Question Concerning Technology", 223.
[135] Heidegger, "The Question Concerning Technology", 223.

contents incarcerated by the dam, in contrast to the peasant working with the land in the cultivation of a field, or a bridge spanning the river becoming part of it.[136] These two contra-examples suggest a more communal, symbiotic relationship at work. The question certainly, and legitimately, arises whether there really is any difference between these examples – are they not all examples of human exploitation of nature for some ends? I don't think Heidegger would deny that, if pressed, but the issue is about the *kind* of exploitation at work. Naturally in a symbiotic relationship there exists exploitation, but the exploitation is mutually beneficial. The relationship between modern technology and nature seems to be more parasitic, of modern technology seizing whatever it can from nature, no matter the consequence for nature. Ihde suggests that modern technology "allows the secret grounds of technology as enframing to emerge more clearly…what was long latent and originary to be made more explicit."[137] It allows us to begin the process of understanding the essence of technology, to realise that it is nothing technological. Heidegger continues:

> *"The revealing that rules throughout modern technology has the character of a setting-upon, in the sense of challenging-forth. Such challenging happens in that the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is in turn distributed, and what is distributed is switched about ever anew. Unlocking, transforming, storing, distributing, and switching about are ways of revealing. But the revealing never simply comes to an end. Neither does it run off into the indeterminate. The revealing reveals to itself its own manifoldly interlocking paths, through regulating their course. This regulating itself is, for its part, everywhere secured. Regulating and securing even become the chief characteristics of the revealing that challenges."*[138]

Modern technology engages itself in a never-ending web of setting-upon nature to obtain from it anything of use and does so in a manner in which it is constantly ensuring it is in *control,* via the regulating and securing of nature and the resources it extracts, stores, and distributes. Heidegger claims that all that is unconcealed is ordered in the sense of "standing-reserve".[139] *Standing-reserve* means having things ordered to be on call to use. It means to no longer think of

[136] Heidegger, "The Question Concerning Technology", 223-224.
[137] Ihde, "Heidegger's Philosophy of Technology", 35.
[138] Heidegger, "The Question Concerning Technology", 224-225.
[139] Heidegger, "The Question Concerning Technology", 225.

the things ordered as objects, or indeed things at all, but only the means to reach certain ends. We see here then a certain degree of instrumentality. Yet Heidegger thinks this is something we cannot escape, that "when man, investigating, observing, pursues nature as an area of his own conceiving, he has already been claimed by a way of revealing that challenges him to approach nature as an object of research, until even the object disappears into the objectlessness of standing-reserve".[140] This term is supposed to express something more essential than 'stock',[141] though it is not entirely clear how on the face of things this is the case. What do we mean by stock? We can consider the shelves of a store whereupon there lie things to be bought and sold, and these things sit there waiting to be used. To some extent this is what Heidegger means. However, he claims that "whatever stands by in the sense of standing-reserve no longer stand over against us as object", elaborating that an airliner on a runway conceals itself in relation to what and how it is; it is ordered to ensure transportation,[142] and in so doing subsumes itself as object into function.

He seems to be suggesting that in any given approach to nature, the world around us, we will work out ways to make use of it, and by this process work out that certain things can do certain things, for instance trees can be felled to make planks to make houses, and this will involve an inescapable degree of ordering and making standing-reserve things in nature, but that in doing so these things will disappear to us as objects. Planks are no longer dead slices of living beings, but shapes to hammer together to construct a living-space for human contexts. In the very act of obtaining them, their Being disappears. They become resource to be stored and distributed. This seems to happen by itself, it does not seem to be something humans consciously decide to do. Heidegger names this a "self-revealing",[143] and he names the self-revealing of standing-reserve "Ge-stell", often translated as *enframing.*[144] He writes:

> *"Enframing means the gathering together of the setting-upon that sets upon man, i.e., challenges him forth, to reveal the actual, in the mode of ordering, as standing-reserve. Enframing means the*

[140] Heidegger, "The Question Concerning Technology", 226.
[141] Heidegger, "The Question Concerning Technology", 225.
[142] Heidegger, "The Question Concerning Technology", 225.
[143] Heidegger, "The Question Concerning Technology", 227.
[144] Heidegger, "The Question Concerning Technology", 227.

> *way of revealing that holds sway in the essence of modern technology and that is itself nothing technological."*[145]

Enframing is thus the essence of modern technology. It is not the summation of the many examples of technology, nor is it the activity of such technology, nor is it either simple means-ends reasoning. It is a particular, and peculiar, way that the world is revealed to human beings, but not the only way of revealing. As a kind of revealing, it is therefore related just as *poiēsis* is, to *alētheia.* As the Modern way of Being, it is how we understand and relate to the world in our time. However, Heidegger has already made a distinction between *handicraft* and *modern* technology, and in specifying the essence of *modern* technology being *enframing* he presumably thinks it not to be the essence of earlier *handicraft* technology, therefore there must be something *peculiar* about *enframing*. It must be something different, something altogether more recent. *Destining* is a word he uses to describe "the sending that gathers, that firsts starts man upon a way of revealing".[146] It suggests, I think, a particular explicit manifestation of a way of looking at the world, or revealing, to use Heidegger's terminology. However, that the Greek and Modern ages had different ways of Being suggests that *enframing* is not the only way of revealing, and need not be the only way; that truth, unconcealment, is multifarious. I will now move to understand the origin of *enframing*, and how Heidegger thinks it is related to modern science in particular.

[145] Heidegger, "The Question Concerning Technology", 227.
[146] Heidegger, "The Question Concerning Technology", 230.

2.2. Sketching an Origin for the Technological Way of Being

How then does Heidegger think *enframing* comes to be the sole revealing of Being? He gives a clue in *The Question Concerning Technology:*

> *"The modern physical theory of nature prepares the way not simply for technology but for the essence of modern technology…Modern physics is the herald of enframing, a herald whose provenance is still unknown. The essence of modern technology has for a long time been concealed, even where power machinery has been invented, where electrical technology is in full swing, and where atomic technology is well under way."*[147]

That last sentence is key, for it suggests that even whilst using modern technology, *even whilst researching and developing it,* we do not understand its essence. This is what Heidegger is trying to uncover, and he claims he has found it in the notion of *enframing.* This singular notion, as the revealing of Being that currently holds sway, i.e. the current and dominant manner in which human beings pre-reflectively understand the world, can be found to increasingly underlie the way human beings understand themselves and the world around them. It is however more than a dominant intellectual framework, it is something altogether more fundamental, primordial, the *very way* that human beings in this era of history *understand themselves and their relation to the world*, even in their everyday lives. This is a bold claim. To understand it, we need to understand just how modern physics is the herald of *enframing.* Earlier he writes:

> *"Man's ordering attitude and behaviour display themselves first in the rise of modern physics as an exact science. Modern science's way of representing pursues and entraps nature as a calculable coherence of forces. [P]hysics…sets nature up to exhibit itself as a coherence of forces calculable in advance, it orders its experiments precisely for the purpose of asking whether and how nature reports itself when set up in this way."*[148]

Modern technology is thus made possible by the supposition that nature is fundamentally orderable and calculable, *but* the essence of modern technology is at work in the development of modern science. Given then that nature is

[147] Heidegger, "The Question Concerning Technology", 228.
[148] Heidegger, "The Question Concerning Technology", 228.

orderable and calculable, the science that will be best suited to its explanation would be one that can be *exact* in its calculations. It can be put another way: modern technology is the practical and physical manifestation of the manner of thinking which underlies modern science – the essence of the two is the same: *enframing.* This is why, chronologically, the physical manifestations come after the theoretical manifestations, and yet *almost paradoxically* the nature of the former somehow underpins the latter. Many people today observe that *modern science has been responsible for the never-before-seen expansion of technological development in the history of the species.* Heidegger is inviting us to think deeper than such a surface-level observation, to try to understand the nature of the link between modern science and technology; precisely what has made modern science so effective? For Heidegger, it has to do with the essence they share, *enframing.* To answer this question, we must first return to the question at the beginning of this section: how does Heidegger think *enframing,* as the technological way of Being, comes to be the dominant understanding?

Since the essence of modern technology is *enframing,* and this essence is also at work in the essence of modern science, we must understand how this is the case, how *enframing* originates and operates in modern science and comes to be the sole way of Being in the world. We must understand how modern science conducts itself and orients itself towards the world that it seeks to investigate. In *The Age of the World Picture* Heidegger gives us his conception of modern science, what it is for modern science to *be* science, what it is that it essentially constitutes and does. What characterises modern science is its nature *as research*. This research takes the form of knowing as a procedure of mapping out in advance the area to be investigated and the objects contained therein. [149]

Research, as the mapping in advance and delimiting of a field of enquiry, provides the basis upon which modern science investigates and interprets the world. This happening *in advance* has to do with modern science's essential characteristic of being mathematical. This essential characteristic of being mathematical is not solely that modern science makes use of mathematics, numbers, but that it is mathematical "in a deeper sense".[150] Its use of numbers allows it to have the

[149] Martin Heidegger, "Age of the World Picture" in *Off The Beaten Track* (Cambridge: Cambridge University Press [1938]), 59.
[150] Heidegger, "Age of the World Picture", 59.

characteristic of *exactness* it was previously said to have, but this is something unique to it. Greek science, according to Heidegger, never aimed at exactness because "it neither could be, nor needed to be".[151] This is due to modern science's nature as mathematical; "it makes use, in a remarkable way, of a specific kind of mathematics. But it is only able to proceed mathematically because, in a deeper sense, it is already mathematical."[152] When we think of the word 'mathematical' we tend to think of the numerical, but Heidegger does not associate *just* the numerical with the mathematical, in fact he thinks it just one manifestation of it. To understand what he means here, we must understand his translation of the Greek *ta mathēmata,* "that which, in his observation of beings and interaction with things, man knows in advance"; we know in advance the corporealness of bodies, animality of animals, and humanness of human beings, but we also know the numericity of numbers.[153] We know in advance that when we see three objects that there *are three* objects, and so as with technology, Heidegger claims that the essence of the mathematical is by no means the numerical;[154] that *numbers are an instantiation of the mathematical,* rather than the other way round. Let us try to understand Heidegger's conception of the Greek understanding of the mathematical, so that we can understand why it is that he calls modern science mathematical. For Heidegger, the numerical does not exhaust or even reach the full meaning of the mathematical, derived as it is from the Greek term for learning, *mathēsis.*[155] Rather this is a category of which numbers are only a part, and denotes in general learning, as a kind of grasping and appropriating; not in the sense of collecting, but in the sense of knowing in advance such as the bodily nature of the body, plant-like nature of the plant, and the thingness of a thing.[156]

Mathēsis, the learning, i.e. knowing in advance, of things, comes to take the form only of mathematics because numbers are its most familiar instantiation;[157] it becomes "thus the fundamental presupposition of the knowledge of things" and

[151] Heidegger, "Age of the World Picture", 58.
[152] Heidegger, "Age of the World Picture", 59.
[153] Heidegger, "Age of the World Picture", 59.
[154] Heidegger, "Age of the World Picture", 59.
[155] Martin Heidegger, "Modern Science, Metaphysics, and Mathematics" in *Basic Writings,* ed. David Farrell Krell (Abindgon: Routledge, 2008 [1962]), 189-191.
[156] Heidegger, "Modern Science, Metaphysics, and Mathematics", 190.
[157] Heidegger, "Modern Science, Metaphysics, and Mathematics", 192.

following Plato it comes to be the presupposition of academic work.[158] Thus physics, as the most explicitly mathematical of the natural sciences, is the earliest of them to arise and acts as the normative measure of them; this mathematical form means that "through it and for it…something is specified in advance as that which is already known."[159] That which is already known, which provides the measure and basis of research in physics, as mathematics, is nature defined as "the closed system of spatio-temporally related units of mass".[160] Only when this, alongside other prior specifications such as "motion is change of place[;][n]o motion or direction of motion takes precedence over any other[;] every place is equal to every other…"[161] – to name but a few – is understood in advance can research take place, can physics as mathematics explain nature. In other words, it is *precisely because* physics as mathematics has pre-supposed that nature is in such a way that it can make any investigation of it in accordance with that way possible; that the world is fundamentally calculable and so can be calculated *about.* Furthermore, it is exact precisely because that is the way that it relates to the region of research that it has mapped out in advance, not because it necessarily calculates precisely; other sciences by contrast, any that deal with the living world and living things, cannot be and must remain inexact, for that is how they are bound to their domain of research. Any reduction of the living to the domain of the non-living, i.e. physics and mathematics, can be done, but does great damage to the things being investigated.[162] It is worth clarifying, as Lee Braver does, that for Heidegger "[t]he significant feature of modernity is less the content of [the] mathematical than the stance we take towards it. We want to create and control our way of thinking, which in turn determines reality, thus achieving autonomy."[163] Which is to say, what is significant here is not that modern science has as its basis mathematics, but that it determines in advance that the world is orderable and thus can be explained via calculation.

It is because of these presuppositions that modern science, and the research that it conducts, seeks out exactness as the measure of success, and indeed it finds itself to be very successful precisely because it has already determined in

[158] Heidegger, "Modern Science, Metaphysics, and Mathematics", 192.
[159]Heidegger, "Age of the World Picture", 59.
[160] Heidegger, "Age of the World Picture", 60.
[161] Heidegger, "Age of the World Picture", 60.
[162] Heidegger, "Age of the World Picture", 60.
[163] Lee Braver, *Heidegger's Later Writings* (London: Continuum, 2009), 81.

advance that the world can be described in an exact way. This reduction of things, living things, to motion, to number, to calculation, results in their reduction to mechanism, to non-living machine. This success then becomes a drive to apply this standard as *the normative epistemological measure* to other areas, to biology, psychology, and the humanities. As such 'hard' science comes to be seen as that science which is predominated by calculation, 'proper' science comes to be seen as physics. How exactly does the success of the research of modern science come to be seen as success? What grounds are there for it to be seen as the normative measure of other sciences? The calculable basis of modern science allows it to establish *certain* and *exact* facts, made objective by their fixing into (natural) law; "only from the perspective of rule and law do facts become clear as what they are".[164]

Modern science then proceeds to investigate the natural world, interpreted as mechanism, via experimentation leading to explanation. [165] The conditions of these experiments are "accomplished with reference to the ground-plan of the sphere of objects" and "mastered, in advance, by calculation."[166] Thus modern science is able to explain the natural world, interpreted in advance as calculable, and to do so in an *exact* way. This does not mean that every attempt at explanation will be right/correct, will result in truth (as correspondence) or exactness; there can and are attempts at investigation that fail. Nevertheless, even those that fail conform in some way to the ground-plan, the presuppositions, of the field of enquiry they seek to investigate. The outlining of differing domains of investigation, and the research programmes that pursue the objects contained therein, result in a necessary specialisation of the sciences, so that each become their own sphere of interest, resulting in a "constant activity".[167] Owing to this characteristic of research, its constant activity, there is the necessity for the institutionalizing of each science, this takes the form of the collecting of the results of experiments and the utilisation of these results to open up new avenues of research.[168]

[164] Heidegger, "Age of the World Picture", 61.
[165] Heidegger, "Age of the World Picture", 61.
[166] Heidegger, "Age of the World Picture", 61.
[167] Heidegger, "Age of the World Picture", 62.
[168] Heidegger, "Age of the World Picture", 62.

There arises then the *institution* of science, as a methodology, that is a methodology that takes as its presupposition that the world is calculable, and thus seeks to investigate the world via experiment. [169] This results in the objectification of beings in research and the precedence of the methodology over the objectified; it results in an appropriate level of "coherence and unity" but "produces…a human being of another stamp".[170] The scholar is replaced by the researcher, who "no longer needs a library" and is "constantly on the move" negotiating and collecting information at conferences[171] (at this point knowledge becomes information); the researcher is in all senses "the technologist", deriving any sense of value and worth in the eyes of the modern age from this.[172] This conception of knowledge as research reduces all things to objects of representation, represented in forms of calculation. [173] Heidegger levies the charge at Descartes, that it is with his metaphysics that for the first time "[B]eing is defined as the objectness of representation, and truth as the certainty of representation" which is able to accomplish a "setting-before", representing, "aimed at bringing each being before it in a way that the man who calculates can be sure…certain…of the being".[174] Descartes' placing of the *subject* at the heart of his metaphysics, and disconnecting this subject from its body and the outside world in the process, brings all the world around the subject, including the subject's body, into view as object. An object that is fundamentally calculable and thus open to *exact* measurement via the experimentation of a scientific method that has determined its calculability in advance. In becoming subject, man makes himself the "referential centre of beings as such",[175] that is, the ground upon which the Being of all other beings gets its understanding from; man is placed at the *centre of all value,* becomes *the measure of all value.* The world becomes a picture making sense only from the perspective of the subject; this is indeed a key characteristic of the modern era, that it begins as the *age of the world picture.*

In his book *Galileo's Error,* Phillip Goff provides an argument as to why modern science cannot explain consciousness, resting on an explication of Galileo Galilei – widely considered to be the father of modern science – that he never *intended*

[169] Heidegger, "Age of the World Picture", 62.
[170] Heidegger, "Age of the World Picture", 62.
[171] Heidegger, "Age of the World Picture", 62.
[172] Heidegger, "Age of the World Picture", 62.
[173] Heidegger, "Age of the World Picture", 66.
[174] Heidegger, "Age of the World Picture", 66.
[175] Heidegger, "Age of the World Picture", 67.

his ‘new science’ to explain it.[176] His argumentation as to and discussion of consciousness is not relevant to my purposes here, but what is interesting is that it is Galileo, in the 17th century, who helps lay the mathematical foundations for modern science, and he does so roughly contemporaneous to René Descartes’ meditations on epistemology and metaphysics and important advances in mathematics; together they help set the course of the proceeding centuries. Galileo realised that the sensory qualities of the world – and I think we could probably add the normative qualities, indeed any qualitative aspects at all – could not be made sense of with mathematics, and if mathematics could not describe the entirety of nature, it would not be a very good tool for providing *certainty* about the world. His solution was to strip these qualities from the objects themselves – a red apple was no longer really red in itself – leaving material objects to be described by size, shape, location, and motion, and open to mathematical description and explanation.[177] Where mathematics could describe the ‘real’ and objective world, the qualities were perceived only by a subject; no longer existing in the object, they existed in the soul of the perceiver.[178] This would be further developed by John Locke, and the empiricists that followed him, in his account of primary and secondary qualities which made the case that the only aspects integral to physical objects were those aspects similar to Galileo: size, shape, location, and motion (to name a few). Sensory qualities, of smell, vision, and taste for instance, were existed only in the mind of the perceiver.[179] This dualistic world, a dichotomy of ‘matter’ and ‘soul’, would be further evidenced in Descartes’ philosophical quest for certainty. He famously doubted all but the very thing that he could not, that he was a thing that thinks; he doubted the external world, and even the body. That he could not doubt that he was a thing that thought – a mind – meant that the only certainty he could have was that he was this mind.[180] His body became separate, removed from the ethereal mind that was seen to inhabit it. Cartesian Dualism separated mind from matter in metaphysical terms just as Galileo had separated quality from matter in physical terms. We can thus see in the 17th century a move towards a de-vitalisation of the world: the removal of

[176] Phillip Goff. *Galileo’s Error: Foundations for a New Science of Consciousness* (London: Penguin Random House, 2019), 20-21.
[177] Goff, *Galileo’s Error,* 16-17.
[178] Goff, *Galileo’s Error,* 17-18.
[179] John Locke, *An Essay Concerning Human Understanding* (Cambridge: Hackett, 1996 [1689]), 47-56.
[180] René Descartes, *Meditations on First Philosophy* (London: Penguin Classics, 1998), 23-30.

quality. The world becomes mechanical, fixed, capable of being described with exactness and thus certainty. Despite this, the naturalistic philosophers of the Renaissance "regarded nature as something divine…[seeking] to explain the behaviour of things as an effect of their mathematical structure"[181] to quote R.G. Collingwood in his book *The Idea of Nature*; who himself noted that Galileo declared "that the book of nature is a book written by God in the language of mathematics."[182] Despite the move towards a view of the world increasingly understood from the perspective of the left-hemisphere, there remained an element of implicit mystery, of the right-hemisphere. I think this is what Heidegger is describing when he talks of the Cartesian subject-object metaphysics, that it acts as the inauguration of the modern world's technological way of Being which leads, eventually, to *enframing.*

We find then that when the world becomes picture, and it is so uniquely in the modern world,[183] that all reference, all value, all importance, is placed in the subject which is ostensibly the human being.[184] Decisions are made on the basis of primarily how they affect human beings. For instance, the climate crisis becomes a challenge for *humanity's* survival, for the way of life currently lived by *humanity,* for the *modern age;* but it holds for less apocalyptic decisions: the landscapes of urban and sub-urban living areas are moulded and modelled by human beings with human goals in mind, often mere aesthetic goals, rather than perhaps the supporting of local eco-systems. In contrast to the modern age's representing, Heidegger claims the Greek's way of Being relied on *apprehension,* that is, being a *receiver* of beings rather than a projector; relying as Heidegger does on a translation of Parmenides: *the apprehension of beings belongs to Being since it is from Being that it is demanded and determined.*[185] The age of the Greeks cannot experience the world as picture because the Greeks do not place themselves at the centre of it as subject, because they are "exposed to all of its divisive confusion",[186] that is, exposed to the whimsy of a world not under their control and dominion. Might it be that, far from the Greek gods being anthropomorphic explanations for natural occurrences, and thus figurative, they

[181] R.G. Collingwood, *The Idea of Nature* (Mansfield: Martine Publishing, 2014 [1945]), 94.
[182] Collingwood, *The Idea of Nature,* 94.
[183] Heidegger, "Age of the World Picture", 68.
[184] Heidegger, "Age of the World Picture", 67-8.
[185] Heidegger, "Age of the World Picture", 68.
[186] Heidegger, "Age of the World Picture", 68.

are literal manifestations of how the Greeks viewed their precarious place in the cosmos – at the whim of The Fates and The Gods? It is only with Plato that being is defined as *eidos,* appearance or view. It is with Plato that the inception of the age of the world picture is made. Now we must finalise Heidegger's thoughts on the world picture, and end this section with an examination of his views on the *origins of the origin of modern science,* that is on his views of metaphysics.

> *"The fundamental event of modernity is the conquest of the world as picture. Within this, man fights for the position in which he can be that being who gives to every being the measure and draws up the guidelines. Because this position secures, organises, and articulates itself as world view, the decisive unfolding of the modern relationship to beings becomes a confrontation of world views…according to its meaning humanity sets in motion, with respect to everything, the unlimited process of calculation, planning, and breeding. Science as research is the indispensable form taken by this self-establishment in the world…"*[187]

Modern science is then the method by which humanity as subject explains the world, interpreted in advance as it is as that which is fundamentally explainable by modern science. Its research is carried out via experimentation requiring the continual development, via research, of modern technology. The essence of both modern science and modern technology is *enframing*, which arises not out of the discipline of mathematics but that which underpins it, ***mathēsis,*** the general way of understanding and relating to the world as fundamentally determinable in advance. It is necessary at this point to refer to the work of Hubert Dreyfus, who provides a crucial distinction which ensures that the revealing of Being in terms of subject-object ontology can be understood as something distinct from *enframing* as such.

The revealing of the world as made up of subjects and objects, as exemplified by the metaphysics of Descartes, which Heidegger outlines in *The Age of the World Picture* makes possible the later pre-reflective understanding of the world as orderable resource, as *enframing.* Dreyfus writes:

> *"No more do we have subjects turning nature into an object of exploitation…a modern airliner, understood in its technological essence, is not a tool we use; it is not an object at all, but rather a flexible and efficient cog in the transportation system. Likewise*

[187] Heidegger, "Age of the World Picture", 71.

> *we are not subjects who use the transportation system, but rather we are used by it to fill the planes"*[188]

Whereas the subject-object revealing of Being pre-determines that there are things called subjects, which presumably have minds (i.e. Descartes' mind-body dualism) which then make use of – manipulate – objects, which presumably do not have minds, the revealing of the world as orderable resources dissolves these relations. Everything becomes fundamentally replaceable and interchangeable assuming the system itself can be made more efficient, not for some kind of human goal, but for the sake of efficiency and flexibility themselves.[189] Dreyfus' outlining of this distinction is fundamental because it allows us to understand how Heidegger thinks we can enter into a free relationship with technology; he was no "luddite",[190] he did not advocate abandoning technology, but rather finding a relation to it that did not involve the totalising nature of *enframing.*[191] The establishment of the world as picture, humanity as subject, the world as calculable, allows for and indeed is the *frame* allowing for the setting-upon of nature in the first place. The setting-upon nature and reduction of it to standing-reserve is made possible by the constant activity of modern scientific research, the constant opening up and amassing of experimental results by said research, and thus the reduction of the world, of beings, to calculated quantities. The subject-object metaphysics gives way to *enframing* as such, which represents the latest stage of the technological way of Being.

Thus far I have used *enframing* to refer in English to Heidegger's *Gestell,* but I would like to end this chapter reflecting on the appropriateness of that term. Thomas Sheehan notes that it unfortunately carries imprecise connotations in that it can literally mean 'framework', but that this is not what Heidegger meant; *Gestell* is not some framework in some way holding things together.[192] Sheehan traces the matter to Heidegger's commentary on Aristotle, wherein "Heidegger translates [*morphē]* as *die Gestellung in das Aussehen,* a natural thing's 'placing itself into appearance'".[193] Sheehan's interpretation – and he stresses

[188] Hubert L. Dreyfus, "Nihilism, art, technology, and politics" in *The Cambridge Companion to Heidegger,* ed. Charles Guignon (Cambridge: Cambridge University Press, 1993), 306.
[189] Dreyfus, "Nihilism, art, technology, and politics", 301.
[190] Dreyfus, "Nihilism, art, technology, and politics", 304.
[191] Dreyfus, "Nihilism, art, technology, and politics", 305.
[192] Thomas Sheehan, *Making Sense of Heidegger: A Paradigm Shift* (London: Rowman and Littlefield International, 2015), 257.
[193] Sheehan, *Making Sense of Heidegger: A Paradigm Shift*, 258.

interpretation – of *Gestell* ends up being that it is a "particular dispensation that is imposed on us today and that compels us to posit and treat nature and people in terms of *extractable resources…*the Being of things is now their ability to be turned into products for use and enjoyment."[194] Alongside Dreyfus' understanding of *Gestell* as an endless activity of optimising for its own sake, we can see how he then describes *Gestell* as a practice that becomes a "totalizing" practice "levelling our understanding of [B]eing", that is, flattening the marginal practices as Dreyfus calls them (other ways of Being).[195] The English word *enframing* does not quite capture that, at least not in a straightforward manner. *To enframe,* place within a frame, would perhaps lend itself more to the metaphysics of *The Age of the World Picture.* Though I think perhaps there is some sense in which enframing *does* capture the sense of activity which both Sheehan and Dreyfus emphasise in their understanding of *Gestell,* in that it expresses the sense of placing something within a framework. Just as we place a picture in a frame and thus transform it from object to display piece, to be at our beck and call when we wish to reminisce, so too does *Gestell* reduce objects to standing-reserve. It was important to briefly reflect on the precision of the translation, but I think it broadly precise enough given the clarifications of Dreyfus and Sheehan that I can continue to use it for the remainder of this project. Having established what *enframing* is I will now move to understand it in relation to McGilchrist's Hemisphere Hypothesis, and thus present my primary thesis in the next chapter. I will also move to reflect a little more broadly on Heidegger's notions of the clearing and earth and world, which will deepen the engagement with McGilchrist.

[194] Sheehan, *Making Sense of Heidegger: A Paradigm Shift*, 258.
[195] Dreyfus, "Nihilism, art, technology, and politics", 304-5.

3. A Naturalistic Account of the Technological Way of Being

In Chapter 1 I detailed Iain McGilchrist's Hemisphere Hypothesis, that the two brain-hemispheres have different ways of attending to the world. I explained McGilchrist's neurobiological basis for this hypothesis and examined how this hypothesis deals with the concept of truth, namely in two different ways: the left-hemisphere has a preference for explicit truth as re-presentation of things in the world and the right-hemisphere has a preference for implicit truth related to context and the environment, to that which is hidden in primordial presentation of things in the world. I also brought some insight from Merlin Donald to bear in order to strengthen McGilchrist's rooting of language in the body. In Chapter 2 I sketched Martin Heidegger's conception of truth in relation to his concept of *enframing,* after which I traced a possible origin of *enframing* in the notion of *mathēsis,* the knowing in advance, and via Dreyfus and Sheehan clarified my understanding of what *enframing* is. In this chapter I will present my primary thesis, that McGilchrist's Hemisphere Hypothesis might offer a possible way of understanding Heidegger's critique of the technological way of Being from a naturalistic standpoint, that it might offer a naturalistic account.

This chapter will be divided into two sections: (3.1.) will present my primary thesis, that McGilchrist's notion of left-hemisphere dominance might offer a naturalistic account of the danger that Heidegger is concerned about with *enframing;* (3.2.) will then move to focus on a necessarily conjoined claim, that the saving power that Heidegger suspects lies within the technological way of Being might be accounted for by a return to the primacy of the right-hemisphere and its world of implicit understanding. I will also here discuss some further parallels with the Hemisphere Hypothesis with Heidegger's notion of the clearing and oppositional tension between earth and world.

3.1. The Danger of the Left-hemisphere

Earlier, in Chapter 1, I outlined McGilchrist's understanding of an intelligibility heuristic, namely that he thinks that understanding moves from right-hemisphere prehension to left-hemisphere explication of experience back to right-hemisphere synthesis. This process is the way that things become intelligible as such, that is it is the biological process through which we make sense of the world. Heidegger's notion of the clearing is remarkably similar to this. As Braver outlines, the clearing is the space of intelligibility where "beings show themselves…up in particular ways".[196] Sheehan elucidates:

> *"We can see that there is a two-sidedness about the clearing: it remains hidden while disclosing things as meaningful…[it is] intrinsically unknowable, if 'knowing' means discerning the reason for something…[t]he open space that makes possible the distinguishing-and-synthesizing whereby we understand things as meaningfully present is not available to the discursive intellect."*[197]

As the space in which beings are understood as one thing and not another, the clearing is the space where things become meaningful as such; that space where ways of Being become manifest. Since the right-hemisphere has ontological priority, in the sense that it is in touch with reality to begin with, it may be that it makes implicit pre-reflective understanding of the world that it encounters. This then is made explicit by the left-hemisphere, but in doing so conceals something: that the given encounter with beings can happen at all. In making explicit, the left-hemisphere fixes beings as *some thing,* thereby making them one thing and not another, concealing the very fact that they might be somehow otherwise. Only returning to the right-hemisphere for synthesis and re-integration with the lived context can return us to any sense of *unconcealment,* that is truth as Heidegger understands it. As Braver puts it:

> *"Being is spelled out here in terms of the clearing or unconcealment of beings…[w]e almost never notice this most basic of facts – that we are aware at all – which Heidegger calls standing in the clearing…because it is so simple…we focus on*

[196] Braver, *Heidegger's Later Writings,* 120.
[197] Sheehan, *Making Sense of Heidegger: A Paradigm Shift,* 226-7.

> *the items in front of us rather than on the fact that they are or that we can encounter them."*[198]

The clearing is then that space wherein ways of Being first become understood – if the left and right hemisphere can be mapped onto this at all, then it would suggest that the clearing is that space *wherein the two hemispheres interact* in constant necessary tension. As far as *enframing* goes, as one way of Being – the technological way of Being – it is a revealing, an implicit right-hemisphere understanding, which subsequently conceals the clearing itself – it becomes stuck at the left-hemisphere stage of explicit understanding. This, I think, is why Heidegger notices a danger with *enframing,* and why McGilchrist is concerned with left-hemisphere dominance: they threaten any other understanding of Being, the right-hemisphere synthesis of explicit understanding back into lived experience. I will now dwell on this a bit further to drive home my thesis that left-hemisphere dominance might act as a naturalistic account of the technological way of Being.

The modern world becomes, for McGilchrist, the time wherein the "hall of mirrors", the left-hemisphere's construction of an external world that reflects its natural tendencies.[199] It begins to seek to explain how the world works in a way that conforms to its character: as orderable, quantifiable, and manipulable. This allows it to have great efficacy. Its success is there in its inception; it is no coincidence that it is good at explaining the universe via calculation if that universe is conceived of *in advance* as *fundamentally calculable.* This success leads to its proliferation; it encourages itself and congratulates itself in its success. Eventually, given its narrow-focused nature, it comes to think that the world is solely as it has already pre-conceived – after all, it would not be so successful if that was not the case. It is therefore (pre)-confirmed that it is orderable. Value, inherent or implicit meaning, consciousness – the divine even – all dissipate since they do not fit within the system. This is where a danger arises, that the left-hemisphere gets lost in the world it has constructed for itself, the hall of mirrors. It begins to think that this is the only possible way of thinking about and understanding the world, it blocks the possibility that there could be other ways. This situation is able to arise perhaps because of the development of symbolic

[198] Braver, *Heidegger's Later Writings,* 48-49.
[199] McGilchrist, *The Master and His Emissary,* 388.

technologies, where narrative and culture is stored outside of biological limitations and made (fairly) directly available to later generations. Over time this gradually results in a culture that comes to be more reflective of the left-hemisphere's view of the world, it is more self-referential, which in turn requires a greater dependency on the left-hemisphere in order to navigate. We can perhaps understand this via Donald's thoughts on brain plasiticity: "[b]rains are often made to appear as static entities…[b]ut it would be closer to the truth to say that brains and minds are born as a bagful of possibilities in a sea of chaos."[200] Brains and minds, like groups and cultures, are in constant motion, abuzz with never-ending activity. The plasticity of the brain – its ability to flexibly reorganise itself in reaction to the environment – suggests that culture can influence brain-structure, and presumably this can be reflected at the cultural level. Donald evidences the kind of reorganisation that occurs in the process of becoming literate; at the individual level one has to acquire a level of neural organisation that is "completely absent from anyone who lacks literacy training";[201] at the group level this enables greater complexities of symbolic technology, entirely dependent upon and referential to itself.[202] Donald characterises human brains as "super-plastic" in that they are able to "generate new options are a rapid rate, in fractions of a single lifetime."[203] Perhaps the increasing levels of left-hemisphere dominance that McGilchrist observes are resultant from a culture increasingly built upon symbolic technology, after all it would appear that this kind of technology would be where the left-hemisphere would thrive: in that it is an ever-more self-referential virtualisation (re-presentation) of the world as it presences itself to us, one that allows for *certainty* and *manipulation* on a level hitherto unobtainable.

Symbolic technologies are not static things – languages evolve, artistic practices change – neither are brains. Not in the sense that they are literally constantly re-organising, in a dramatic sense, just rather that small changes occur here and there depending upon the environment (culture), both on an individual and a group level. This means that despite McGilchrist's claim that the left-hemisphere is currently dominant, it does not have to remain so. It does mean, however, given

[200] Donald, *A Mind So Rare,* 206-7.
[201] Donald, *A Mind So Rare,* 302.
[202] Donald, *A Mind So Rare,* 304.
[203] Donald, *A Mind So Rare,* 210.

the dominance of the left-hemisphere in our culture, that any attempt to bring about a movement towards any kind of hemispheric balance will require changes to the symbolic technologies which are a part of it. To put this another way: it will require an emphasis on the kinds of things that the right-hemisphere grounds, namely metaphor; art and poetry are therefore things we might pursue to instigate this change. We may see then a process of an ever-increasing shift towards the left-hemisphere's dominance; the brain, being fundamentally plastic in nature, would be in a process of ever-shifting development, oscillating between differences in degrees of hemispheric dominance. This brings us to a key claim of McGilchrist's: that the tension between the left-hemisphere and the right-hemisphere's way of attending to the world is what results in the flowering of civilisation, that this is best when there is a kind of hemispheric balance,[204] which seems to be in peril in our modern age.

In *The Question Concerning Technology,* Heidegger describes *enframing* as a "challenging-forth" of nature, with the demand that it be orderable as "standing-reserve".[205] In other words, it seeks to set upon nature, to investigate it, and in so doing demarcate it into categories and from this order leave it hanging around, as some 'fact' that has been discovered which can then lead to further investigations. Elsewhere, in *The Age of the World Picture,* he characterises the nature of modern science as research; that it involves opening up a region of investigation, and that this process requires a "ground-plan" projected in advance[206], in other words a pre-determining of the nature of the things which it intends to investigate. I have already summarised the manner in which science investigates the world according to Heidegger (see Chapter 2), but it is the exact manner in which this process is described that is most important right now. I wish to orient this to *enframing,* for as Dreyfus explains, the subject-object metaphysics of *The Age of the World Picture* leads to *enframing* as the dominant – the technological – way of Being.[207] Science determines in advance the region which it is to investigate, it then demarcates its boundaries and determines its investigative objects. The pre-reflective understanding that things can be determined to be one thing and not another, fixed as the subjects or objects that

[204] McGilchrist, *The Master and His* Emissary, 262.
[205] Heidegger, "The Question Concerning Technology", 229.
[206] Heidegger, "Age of the World Picture", 59.
[207] Dreyfus, "Nihilism, art, technology, and politics", 306-7.

they are and understood in advance as such allows for the possibility of certainty and fixity. Once these are established, it becomes possible to order things, and in this ordering the objects themselves become subsumed for further purposes; they become standing-reserve. No longer objects as such, they become merely what they can be used for, and thus collapse into pure considerations of efficiency. The world of subjects and objects that show up given the understanding of the world in *The Age of the World Picture* makes possible the entering of a locale and subsequent transformation of it to the needs of pre-determined goals reducing all the natural processes to fixed and determined objects, which are then collected and stored, to be made use of by subjects. However in this process the objects being manipulated come to be collected and stored – they are on hand as standing-reserve; they become resources. Objects – the coal taken from the ground in mining – lose their sense of being distinct objects in this process, they become interchangeable; subjects too dissipate into the system – worker, managers, and executives are all replaceable. As Dreyfus points out, "[w]e thus become part of a system that no one directs but that moves towards the total mobilization…of all beings, even us."[208] The technological way of Being that *enframing* represents the height of is thus summarised as a totalising tendency towards constant activity reflected in flexibility and efficiency at every level and for their own sakes. Since there are increasingly fewer subjects there are increasingly fewer subjectively determined goals. Rather than an age of a world-picture, we enter into some kind of age of the world-system.

When considering this characterisation of *enframing,* of the technological way of Being, we can see the similarities to McGilchrist's characterisation of the left-hemisphere. Through the process of grasping through the hands, the left-hemisphere (which is primarily responsible for control of the hands, as previously noted) grasps things – its' narrow-focus fixes them as the things that they are. This is aided via another sense with a primary role for the left-hemisphere: vision. As fixed objects, these things can be put to use in tasks, through which the things themselves – as previously fixed objects – become subsumed into the task in the sense of being at the beck-and-call of the task itself. For Heidegger, the truly problematic nature only really surfaces as he points out a danger, *the danger,* of

[208] Dreyfus, "Nihilism, art, technology, and politics", 306.

enframing: it takes itself to be the sole way of interpreting Being.[209] It is so dominating, so totalising, so effective, and humanity increasingly impressed by this, that it seems as though there is no other way to possibly think about the world; *this is the way the world must be after all.* Humanity forgets that *enframing* is just a "claim", just one way of understanding Being.[210] It may be a very effective understanding of Being, but certainly not the sole possible one. Worse still, whilst thinking that we have unique insight into the way in which the world truly is, we ourselves become challenged-forth and ordered; we become standing-reserve – we ourselves are subsumed into the task. Left-hemisphere dominance as *enframing* brings with it the idea that it represents *the danger.* Not only can these two notions be construed in a similar manner, but chronologically they also line up. *Enframing* is, for Heidegger, the current manifestation of the technological way of Being; the left-hemisphere's dominance is, for McGilchrist, something that characterises our current and historically-recent culture. To drive home this point I think Braver unknowingly describes well this way that the left-hemisphere makes explicit the implicit understanding of the right-hemisphere and in the process of doing so there is a loss of understanding. He is not at all referring to McGilchrist's thesis – he is in this section discussing Heidegger's opposing notions of earth and world and how they work in the process of truth:

> *"[W]e can measure a stone's weight and explain it in terms of gravitational pull, and yet this determination somehow covers over or misses the immediate experience of heaviness, how it feels pressing down on our hand. In revealing meaningful features, such explanations of brute facts of the world simultaneously conceal our more immediate contact with things. Definitions dissolve raw 'qualia' in favour of concepts. Ultimately, heat 'is' just motion because it can be scientifically reduced to this, but the experience of hotness is fundamentally different from movement. To understand the stone in scientific terms is precisely to lose our raw experience of heavy stony rock; the 'feel' or 'look' of a colour, its 'greenness', evaporates when considered as a wavelength. These kinds of explanations correlate a phenomenon with terms and idea alien to its integral character, thus diluting or entirely eclipsing what it is like. Earth 'causes every merely calculating importunity upon it to turn into a destruction."*[211]

We see then, in this opposition of earth and world – which is something I will highlight in the next section – this sense of two forces at work in the process of

[209] Heidegger, "The Question Concerning Technology", 231-232.
[210] Heidegger, "The Question Concerning Technology", 232.
[211] Braver, *Heidegger's Later Writings,* 51.

intelligibility. Braver's explanation would not be out of place as an explanation of how the left-hemisphere makes explicit the implicit metaphorical understanding of the right-hemisphere. That which cannot be made fixed and certain within the pre-conceived understanding of the world as orderable and explainable is excised. Again, there is a parallel with Heidegger's understanding of the emergence of the technological way of Being as outlined in Chapter 2. The left-hemisphere's way of attending to the world, as understood by McGilchrist, seems a remarkably good candidate for any kind of naturalised account of Heidegger's notion of the technological way of Being.

Of course, our brains are structured between two hemispheres, very different in the way that they attend to the world, so what about the right-hemisphere? Admittedly, I think the parallels are easier to draw when considering left-hemisphere dominance and the danger of *enframing.* There is not a clear parallel concept to the right-hemisphere, but that doesn't mean that there is not anything that can be reconstructed to serve as such. It is worth noting, however, that the goal of this project has been to establish the possibility that we might gain insights to Heidegger's philosophy by considering in the light of a naturalistic account, that the danger of *enframing* could correspond with McGilchrist's characterisation of left-hemisphere dominance. I will now intimate towards the adjacent point, one that comes along necessarily. As the kind of creatures that we are, possessing typically two brain hemispheres, I am (and McGilchrist is) not arguing that the left-hemisphere, or indeed anything that might be ascribed to it, is fundamentally problematic, but rather that it has overstepped its boundary, its tendencies have become too strong. Heidegger's analysis of *enframing* does not allow for such nuance. Fundamentally, *enframing* comes to be seen as a failure in need of a remedy. Rather than a failure requiring remedy, we should see it as an over-emphasis requiring correction. The difference between the two is crucial. The former suggests something to be overcome, the latter an imbalance to be re-oriented. Left-hemisphere dominance, *enframing,* and the persistence nevertheless of the right-hemisphere has allowed for the possibility of our modern way of living, with all its wonders, and constitutes a great deal of who and what we are – but it is dangerous because it threatens to block out any other way of attending to the world.

Thus, *enframing* seems possible to be construed as having its basis in the dominance of the left-hemisphere, which is not inherently problematic, as it has allowed for the creation of the modern world in which we live, but it does bring along with it a danger. If this claim holds, and I think it is strong enough that it does, then we might also find attempting to gain insight into other aspects of Heidegger's philosophy via a comparison with this naturalistic account fruitful. I can now finish this project with an intimation towards the next logical step in this process: if left-hemisphere dominance is analogous to the danger of *enframing*, then the right-hemisphere will be involved with *the saving power.* I will now suggest that the redressing of the imbalance in favour of the left-hemisphere, a return to hemispheric balance by imploring the right-hemisphere, is analogous to Heidegger's notion of the saving power which rescues us from the danger of *enframing.*

3.2. The Saving Power of the Right-hemisphere

Towards the end of *The Question Concerning Technology,* Heidegger offers some hope to his bleak analysis. He refers to the poet Friedrich Hölderlin's *Patmos,* that where danger is a saving power grows.[212] If *enframing* culminates in the danger of the closing off of the possibility of other ways of Being, then perhaps there lies within this danger a chance at rescue. Why must this be? Heidegger seems to think that even the danger of *enframing* is not so ubiquitous that it can block any alternative ways; whilst it is powerful it is not insurmountable. This task requires time and preparation. We must now understand how it is that this saving power, whatever it might be, takes root.[213] *Enframing* is a way of revealing that challenges-forth, unlike *poiēsis,* which is a way of revealing that brings-forth. The distinction might be understood by considering the difference between *forcing* something to reach a goal and *letting* it reach a goal. Whilst *enframing* is certainly related to *poiēsis* via *technē* (see Chapter 2.1.), it itself "blocks *poiēsis".*[214] It does this because it endures, but not as essence in the usual understanding of the word, i.e. as the Latin *essentia* or Greek *eidos* – *enframing* is not the essence of technology in the sense ordained by Plato and carried forth by all metaphysicians hence. Rather *enframing*, as a mode of revealing, i.e. a manner in which Being is interpreted, propriates – it gathers together – and like all modes of revealing *is granted* to humanity. This is important to note, because for Heidegger it seems as though the process of interpreting Being is emphatically *not* one within which humanity has any autonomy. These ways are granted to us through the process of history. Thus whilst *enframing* certainly is dangerous, it is also just another way of Being. It is dangerous because it challenges-forth, rather than brings-forth, truth. It sets upon things and shakes them about until the secrets of the thing are revealed. This attitude – I will use this word because I think it evokes a sense of power within this phenomena – results in a blocking of *poiēsis,* in other words, a blocking of the possibility of things being brought-forth in the manner understood by the Greeks: *physis* or *technē*. It is by being involved in this process that humanity partakes in the

[212] Heidegger, "The Question Concerning Technology", 232.
[213] Heidegger, "The Question Concerning Technology", 233.
[214] Heidegger, "The Question Concerning Technology", 234.

"propriative event of truth",[215] the clearing from which a particular way of Being comes. How then is the saving power able to take root? Since *enframing* is just one way of Being, one mode of revealing – albeit a dangerous one – it retains some connection to the overall process of receiving a way of Being. It is the process of granting *as such* that is the saving power. I think this is in the sense that it is this process which allows for *change* in the pre-reflective understanding of Being. Heidegger implores us to "begin to pay heed to the essence of technology",[216] to *enframing,* so that we might recognise it for what it is and make preparation for the saving power. If the saving power is the process of granting [a different way of Being], then we need a way of getting ourselves to this point. Heidegger suggests we pay heed to the essence of technology, and not merely fawn over its wonders, and if we do this and consider previous ways of Being, we will see the beginnings of a path out of the danger of *enframing.*[217]

At the end of *The Question Concerning Technology,* Heidegger then returns to the Greeks' way of Being as *poiēsis;* "there was a time when it was not technology alone that bore the name of *technē.*"[218] For the Greeks, art also bore this name, being ultimately an instantiation of *poiēsis.* Art illuminated the divine; it was a revealing that brought-forth truth. So, once again invoking Hölderlin, this time *Der Ister*: "…poetically man dwells on this earth."[219] It is the poetical that pervades all art and as such provides the way in which truth can be said to propriate. But what is art for Heidegger? It is *poiēsis*, an act of *alētheia* – the revealing of the unrevealed. Art is fundamentally poetry, it is metaphor; it reveals to us the hiddenness of the world and is thus an act of truth.

In *The Origin of the Work of Art,* Heidegger discusses the nature of art. I will summarise the points he makes about art that are relevant for our purposes; there is no need to discuss the details of his aesthetics. Art is a site for truth, *alētheia*, unconcealment; it involves "strife" – a sense of tension – between what Heidegger calls *earth* and *world*; between presencing medium and the context depicted. Janae Sholtz explains that "[t]he clearing resulting from the strife lets this oppositional relation itself appear, bringing earth and world…as this space of

[215] Heidegger, "The Question Concerning Technology", 235.
[216] Heidegger, "The Question Concerning Technology", 235.
[217] Heidegger, "The Question Concerning Technology", 236.
[218] Heidegger, "The Question Concerning Technology", 237.
[219] Heidegger, "The Question Concerning Technology", 237.

active tension…a *happening,* an event".[220] Important for our purposes is Heidegger's claim that art acts as a site for the event of truth. For Heidegger, art is a process of revelation, of unconcealment; it is a gathering of medium and context (i.e. what is depicted; meaning) that, through the process of bringing these together, reveals some truth, some kind of understanding of Being. Braver explains the distinction as:

> *"[e]arth is defined in opposition to, but also in necessary relation to, world. World is described in terms of opening and intelligibility…whereas earth is closing, concealing, and inexplicable…virtually…defined as the indefinable, that which resists getting fixed within a system of significance."*[221]

With the unconcealment of some understanding comes the necessary concealment of another.[222] Take his favoured example of the peasant's shoes depicted by Van Gogh: they reveal to us the truth of, the manner in which, the peasant lives. They provide us with insight into their life, their history, but more than that the artwork itself reveals to us the possibility of differing ways of Being. It reminds us of the possibility of being open to these different ways. As a depiction of a particular understanding of Being, and thus an unconcealment of this possibility, it also conceals some truth – namely other possible understandings of Being! The painting of the peasant's shoes conceals the possibility which is unconcealed in a Greek temple. The temple, another example used by Heidegger, is of course created from many differing materials but it becomes a temple only because the particular arrangement of these materials act as the site of some kind of unconcealment: of a particular way of Being. When Heidegger says "[b]y means of the temple, the god is present in the temple", he is therefore suggesting that it is only through this world-disclosing act of unconcealment that the spirituality of this people, the Greeks, shines through.[223] This necessary opposition of earth and world bears a striking resemblance to McGilchrist's characterisation of the right-hemisphere as that which receives and makes initial sense of given experience and the left-hemisphere which makes this

[220] Janae Sholtz, "Heidegger on Art and Ontology" in *The Invention of a People: Heidegger and Deleuze on Art and the Political.* (Edinburgh: Edinburgh University Press, 2015); 101.

[221] Braver, *Heidegger's Later Writings,* 51.
[222] Martin Heidegger, "The Origin of the Work of Art" in *Basic Writings,* ed. David Farrell Krell (Abingdon: Routledge, 2008 [1960]), 119-20.
[223] Heidegger, "The Origin of the Work of Art", 106-7.

explicit and understood – a kind of necessary tension creating the conditions of intelligibility.

As a created work, art is a fixing of truth.[224] Of course this phrase really means: a revelation (unconcealment) of some way of Being. When art is created it fixes a reflection of a way of Being, almost in stasis. When art involves a tension – strife – between earth and world, this understanding of Being can continuously remind us of the openness of Being, i.e. the potential for other understandings of Being; "art is a becoming and a happening of truth."[225] As the letting happen of the unconcealment of the concealed, art is the site of truth; as this process of *alētheia,* art is *poiēsis,* it is poetry in the sense that it opens up and projects a space where truth might propriate. As poetry in essence, art finds its basis in language, but not construed in terms of mere communication: "language alone brings beings as beings into the open for the first time. Where there is no language…there is also no openness of beings."[226] It is through language that we name things, that we open up regions of investigation and research, that we open up the possibility of *alētheia* as such. Yet this is not language construed as communication, rather language as essentially poetry, conceived of as the opening up of the possibility of truth/unconcealment – language as the structure through which we pre-reflectively understand Being. Art acts as the instantiation of poetry. Poetry acts as "the founding of truth", in the sense that it grounds the possibility of it – it acts as the space in which it happens. We can then understand that when, in *The Letter on Humanism,* Heidegger claims that language is the "house of Being"[227], it is through the space of language that Being itself is able to take shape. Heidegger locates an essential founding within the European tradition, "for the first time in Greece".[228] It is with Parmenides that the question is uttered: why are there beings at all instead of nothing? This question becomes the inner truth which Heidegger claims all philosophers hence are really answering.[229] Later Plato would provide answers to this question, *fixing* a possible interpretation of this question that would lay the foundation of Western

[224] Heidegger, "The Origin of the Work of Art", 122.
[225] Heidegger, "The Origin of the Work of Art", 127.
[226] Heidegger, "The Origin of the Work of Art", 128.
[227] Martin Heidegger, "The Letter on Humanism" in *Basic Writings,* ed. David Farrell Krell (Abingdon: Routledge, 2008), 147.
[228] Heidegger, "The Origin of the Work of Art", 130.
[229] Martin Heidegger, *Intro to Metaphysics,* trans. Gregory Fried and Richard Polt (New Haven: Yale University Press, 2000 [1953]), 107.

philosophy, and indeed Western intellectual and scientific pursuit for the next two millennia. In the Middle Ages, Heidegger claims, this foundational understanding comes to be understood as God's creation, and later in the modern era beings become subjects and objects to be manipulated using calculation.[230] This final interpretation forms the basis of *enframing* as the (eventual) dissolution of subject-object understanding and the subsuming of these into the endlessly flexible and optimising system that Dreyfus described, the origins of which can be traced back to ***mathēsis***, as suggested in Chapter 2. We see, then, a historical dimension to Heidegger's work: history is essentially the continuous renewal of ways of Being. Art, being historical, and being poetry, then acts as the historical founding of eras of human history – it is through art, through poetry, that humanity's understanding of Being is able to change. This is of course why *enframing* presents such a danger: it threatens to block any potential renewal, any possibility of an alternative understanding of Being. It fixes truth as one thing and threatens to conceal for all time any other truth. It is worth noting that of course Heidegger is construing art here in a broad sense and is not limiting it to the realm of aesthetics as the study of the beautiful. Art is essentially metaphysical. It is for this reason, perhaps, that in *The Question Concerning Technology,* Heidegger suggests poetry as the saving power of the metaphysics of *enframing,* since poetry (and art) brings to us the question of how to interpret Being as such.

It is through language – as the house of Being – that truth is able to come together, and it is our relation to language which requires a "transformation…which we can neither compel nor concoct" which "does not result from the fabrication of neologisms and novel phrases" but rather comes with time.[231] Though of course, the readiness alluded to earlier in relation to the interview with *Der Spiegel,* would involve some kind of effort to change one's own relation to language, and I think this will involve an engagement with poetry and art. This is because, from the perspective of McGilchrist, it is the right-hemisphere which is primarily involved with the implicit interpretation of context (metaphor) which allows those two things to occur in the first place, but also because these things act as a site for truth in the sense that they are revelations of ways of

[230] Heidegger, "The Origin of the Work of Art", 130-1.
[231] Heidegger, "The Way to Language", 306.

Being. Though I also think there is an important realisation here on Heidegger's part that both on the individual and group level this cannot be forced and must be allowed to take shape (and perhaps nudged). Changing our relationship with Being, aiming to check the excesses of the left-hemisphere, would involve instigating changes in the symbolic technologies which constitute our cultural web relating individual to group.

Given my claim that I have already drawn between left-hemisphere dominance and *enframing*, from this perspective, it seems like no coincidence that Heidegger then invokes the power of poetry to make space for the possibility of different ways of Being. The only way out of the hall of mirrors of the left-hemisphere is the implementation of right-hemisphere thinking – returning to the right-left-right heuristic – to allow earth and world to be in necessary oppositional tension in the opening of the clearing, so that the concealment of the clearing by *enframing* might be undone and a new way of Being – a new relationship to technology – might come about.

Conclusion

I began this project in Chapter 1 examining Iain McGilchrist's Hemisphere Hypothesis, moving from its neurological basis to its conception of truth as it relates to the two hemispheres, whilst also considering how the work of Donald might aid McGilchrist's implicit contention that language is rooted in the body. With the development of symbolic technologies we see the increased virtualisation of culture and truth becomes dualistic: both truth as explicit correspondence as understood by the left-hemisphere, and truth as implicit (metaphorical) interpretation as understood by the right-hemisphere. I then moved to Chapter 2 where I explained one of the key ideas from Heidegger's philosophy: *enframing.* I examined his conception of truth as unconcealment, as revealing, and his claim that Being has been interpreted differently at different points in time: for the Greeks it was bringing-forth, *phusis,* for the Modern technological way of Being it is challenging-forth, first manifesting as subject-object metaphysics, later as *enframing.* I sketched a possible origin of *enframing* – noting as Dreyfus does that it is a maturing of Cartesian subject-object metaphysics – in mathēsis; not mathematics as such, but rather the pre-reflective determining of things as fundamentally knowable in advance. In Chapter 3 I then brought these insights together, with reflections of other notions such as the clearing and the necessary tension between earth and world, to argue that left-hemisphere dominance might act as a basis for what Heidegger critiques as the technological way of Being, the danger that it conceals and forgets the clearing at all. Finally, necessarily connected to that was the claim that a return to the right-hemisphere might constitute the saving power that Heidegger thinks will rescue us from the danger, since it is through the implicit understanding at work within art which acts as a site for truth that new disclosures of Being can occur.

This project has been an attempt to see whether our understanding of some key notions from Heidegger's philosophical work might be enriched by naturalistic understanding, and I have done this by largely relying on the work of Iain McGilchrist. My approach has been integrative. I have attempted to show how theories and ideas vastly different on the surface might be brought together to see if they are commensurable in some way. I think this could anticipate a broader project that seeks to enrich our understanding of key insights from Heidegger's

work by bringing together insights from a range of sources in synthesis with the goal of ultimately illuminating the question: what does it mean to be human? Such a question is of course not at all really dealt with in this project, but it is the overarching question at work. I think that Heidegger's philosophy offers a wellspring of insights into the human condition that can be illuminated and given their proper place when examined alongside the work of other philosophers and academics from other disciplines, especially the sciences broadly construed. This is not an attempt to somehow reduce Heidegger's philosophical analysis to naturalistic explanations, despite whether any of my language might suggest that. Rather, simply it is an attempt to see if the philosophical insights of Heidegger can cooperate with the naturalistic insights of McGilchrist, and I think I have shown that they can.

During the course of this project I have had to constantly temper the scope of my investigation; the expansive and wide-reaching nature of both Heidegger's and McGilchrist's work lends itself naturally to an equally wide-ranging project. Such questions and avenues of research I have had to remove from this project to ensure that it remains focused, though they will no doubt provide a wealth of ideas for considering future research projects. There was a historical dimension to this project that proved to be unable to deal with adequately within what ought to be the narrow scope of an MA thesis. This historical dimension attempted to map Heidegger's analysis of the history of metaphysics alongside McGilchrist's analysis of the influence of the hemispheres in different periods of Western history, referring to the work of Julian Jaynes, Karl Jaspers, and Robert Bellah in particular addition. It proved far too expansive to adequately consider in this project. However, I think language has proved to be the one theme which demands further investigation – how exactly are the hemispheres involved with it and its origin? In what ways does it delimit our understanding of Being? Are particular languages more reflective of either hemisphere, and why? How might language act as a work of art, that is, a site for the revealing of truth?

Ultimately, this thesis sits in line with the research programme of naturalising phenomenology, and in line with Wheeler's work towards a Heideggerian cognitive science in particular. In assuming minimal naturalism and/or weak methodological naturalism I have shown key similarities between McGilchrist's Hemisphere Hypothesis and his claims regarding the apparent dominance of the

left-hemisphere and Heidegger's account of and critique of the technological way of Being. Given the broad nature of the work of both, this thesis is but a preliminary. The concern that McGilchrist's naturalistic account of the brain hemispheres and their neurobiological basis might amount to *enframing* is a fair one, after all he is making explicit a phenomena which is hidden and in some senses mysterious. However, I do not think McGilchrist falls into the kind of hard-line reductionism that one who sees phenomenology and the natural sciences as commensurable would be wary of. Rather, he seems to adopt a weak methodological naturalism, and himself makes reference to many philosophical and theological sources. I think it fair to suggest that his neurobiological account combined with his historical and philosophical analysis bring his work closer to an instantiation of the kind of thought that a brain with balanced hemispheres might engage in. It is also fair to note that I have engaged more with the neurobiological account than I have with his historical and philosophical analysis, and thus there could be more work to do in relation to exploring the similarities between that and Heidegger's historical account of Being. To follow on from this, it would be a good idea to work more specifically on the possibility of a Heideggerian cognitive science, that is, address the question of naturalising phenomenology more directly. This endeavour would be aided by a wider appeal to the conceptual resources on offer from philosophical anthropology, as I have shown at times in this thesis. The question of whether phenomenology could or should be naturalised is one that still stands over this project, but one which, with a broader consideration of Heidegger's philosophical insights, might be tackled in a more extended project.

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