WHAT IS THE HUMAN BEING, AND WHAT IS OUR PLACE IN THE COSMOS?

MAX SCHELER'S *THE HUMAN PLACE IN THE COSMOS* AS A RESPONSE TO TRANSHUMANISM, THE TECHNOLOGICAL SINGULARITY, AND POST-BIOLOGICAL EVOLUTION

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ABSTRACT

In a 1926 essay entitled, '*Mensch und Geschichte*' ('Man and History'), German philosopher Max Scheler (1874-1928) argued that the preeminent and most pressing philosophical task of his era was the issue of Philosophical Anthropology, i.e., the *problem* of the human being. This doctoral thesis aims to show that this issue is a concern that is as relevant now as it was when Scheler was writing. The problematic character of human experience is thus explored in light of the recent and ongoing developments of late-modern technology. Developments that promise a solution to a multitude of human problems – the age-old issue of our biological finitude being paramount amongst them. Such sentiments find their purest contemporary expression within the philosophy of transhumanism and the associated narratives of human enhancement, post-biological evolution, and the concept of the Technological Singularity.

The question of human nature is a perennial issue; human reflection on the human condition is a defining feature of our lived experience. Themes of post-humanity and post-biology have long been explored within the realm of science fiction, now they have become the practical concern of engineers and technologists, Hence, science fiction now deigns to intrude into the realm of science fact. In our time, the idea of post-biological evolution, the design paradigm of NBIC-convergence, and transhumanism – as a philosophy and a cultural movement – all confront and confound traditional notions of human nature. But unlike previous challenges to accepted and established images of the human being, this re-assessment of human nature has a *practical* aspect – for technology now seems poised to finally achieve the age-old aspiration of human control over human nature.

Since there is no single and uncontested definition of the human being, let alone consensus on how to define the post-human, first and foremost we have a question of Philosophical Anthropology: What is the human being and what is our place in the cosmos?

As such, Scheler's Philosophical Anthropology serves as a response to the philosophical challenge of transhumanism and post-biological evolution.

PREFACE

The aim of this thesis is to present a critical reading of Max Scheler's *The Human Place in the Cosmos* (*Die Stellung des Menschen im Kosmos*) as a response to the philosophy of transhumanism and the idea of post-biological evolution. In its most basic form, transhumanism is the attempt to employ technological means to engineer the human being as a biological species, and to engineer the human future – both *theoretically*, as a philosophical construct, and *practically*, as an imminently achievable and inherently desirable post-biological reality. *The Human Place in the Cosmos* was published in the same year of Scheler's death in 1928. It was intended by the author to serve as a condensed summary of some of the most important issues of a 'Philosophical Anthropology', which he was in the process of formulating. My aim is to argue that, not only are Scheler's insights into the human experience relevant today, but also, that his thinking provides a valuable starting point for a much needed non-reductionist account of both the human being and our place in the cosmos. If we are in fact on the cusp of a post-biological future, it seems to me that the question of what the human being is, and how we relate to the world, are questions that require continuous (re)consideration and critical reflection.

In light of this, my aim is to construct a conceptual framework based on Philosophical Anthropology with which to undertake a philosophical investigation into transhumanism and the emerging post-biological paradigm. The focus of my thesis is Scheler's concept of *Geist*, and his evolutionary theory, both of which are the central themes of *The Human Place in the Cosmos* – neither of which were fully developed by the author before his untimely death. My intention is to critically assess and develop Scheler's thought specifically within the context of late-modern technology. I explore how the human being both constructs, and is constructed by its self-image. In our contemporary context, that self-image is a technologically inspired re-imagining of traditional notions of human nature – expressed in terms of control, design, and the overcoming of biological life itself. The investigation and analysis will be undertaken in part through a philosophically engagement with what is known as the Technological Singularity – and the thinker most famously associated with it, Ray Kurzweil.[1]

Scheler begins by positing a single and overarching question that informs the entirety of *The Human Place in the Cosmos* – what is the human being, and what is our place in the cosmos? The overriding issue of human nature and how we relate to the world, also lies at the root of transhumanism and its associated concepts of posthumanity; human technological enhancement; artificial consciousness; the uploading of consciousness into machines; the development of super-intelligent computers; machine learning and artificial intelligence; and the attempt to direct both historical and human evolution beyond biology; etc. Hence, the human/technology relation is the point of contact for an exploration into the nature of technology *and* the nature of the human being. I use Scheler's thought as a way to explore both, and as a result, I assert that the question concerning technology is an issue of Philosophical Anthropology.

At the same time, I engage with the philosophical implications of transhumanism and the idea of post-biological evolution, as a way to develop Scheler's ideas. My aim is to situate his Philosophical Anthropology within the current late-modern context, and to develop aspects of his metaphysics as a way of responding to the philosophical problems that arise from the aspiration to control evolution and transcend biology. Through the exploration

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[1] Ray Kurzweil, 'Augmentation and Transcendence', *IEEE Technology and Society Magazine*, 32: 1, (2013), 5–6 <https://ieeexplore.ieee.org/document/6479429> [accessed 4th January 2022]. Kurzweil does not necessarily self-identify as a transhumanist *per se*, nor see himself committed to the 'Transhumanist Movement'. Nevertheless, he does recognise that the central tenets of the philosophy of transhumanism are also core elements of his Technological Singularity concept, i.e., the transcending or the augmentation of our biological limitations. He also holds that his focus on AI (artificial intelligence) means his understanding of the Technological Singularity has a broader scope than alternative iterations of the concept, i.e., it is essentially concerned with issues beyond the human being. He states: 'My views are certainly consistent with the Transhumanist Movement', and that transhumanism is 'a realistic view of what will happen to our species'.

of the human/technology relation I also set out and lay the groundwork for the possibility of a 'Schelerian' philosophy of technology as a way to think about – in an evolutionary context – the point of contact between biology, technology, and cosmology.[2] In this, I follow the advice of Scheler scholar Dr Susan Gottlöber. Dr Gottlöber – who is my doctoral supervisor and teacher – and the inspiration for my attempt at 'thinking with Scheler, *beyond* Scheler'.[3]

A Note on Translation

There are two editions of the original German *Die Stellung des Menschen im Kosmos*, the first published 1928 (Berlin: Karl-Maria Guth, Reprinted 2016) and the second in 1947 (Munich: Nymphenburger Verlagshandlung, 1947). There are two English translations. *The Human Place in the Cosmos*, translated by Manfred S. Frings, with an introduction by Eugene Kelly (Evanston: Northwestern University Press, 2009); and *Man's Place in Nature,* translated, and with an introduction, by Hans Meyerhoff (Boston: Beacon Press, 1961). Meyerhoff's translation combines both the 1928 and the 1947 editions, while Frings' is a translation of *Die Stellung des Menschen im Kosmos, Gesammelte Werke*, volume 9, *Späte Schriften*, edited by Manfred S. Frings (Bern and Munich: Francke Verlag, 1976) – which is the 1947 edition. Of the two, it is Frings' version that serves as the main English translation which I rely on and employ throughout.

There are two central metaphysical concepts that Scheler employs in *The Human Place in the Cosmos* – *Geist* and *Drang*. *Geist* is usually translated as spirit or mind, and *Drang* as urge, or drive, or impulse, or steam. Scheler scholar Peter Spader says the following

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[2] It should be noted that this thesis is not an attempt at a comprehensive exegesis of Scheler's complete philosophical output. Rather, it takes inspiration from the later 'speculative metaphysics' that Scheler presents in *The Human Place in the Cosmos*; the aim is to assert the relevance of Scheler's thought for contemporary debate and to develop a 'Schelerian' perspective on the idea of post-biological evolution, and the implications of using technology to try and alter the human condition. Scheler serves as a guide through which we can critically explore transhumanism within a paradigm of Philosophical Anthropology. While I do draw on parts of Scheler's earlier thought, and refer also to some of his posthumously published work to support my arguments, the focus is his concept of *Geist* as the defining feature of the human being, and his understanding of how we relate to evolution.

[3] Thanks Susi!

regarding translation of these two terms: to translate *Geist* as 'mind' infers it is too closely linked to the physiology of the brain, and to translate it as 'spirit' runs the risk of making it seem too esoteric. *Drang* is also problematic because the three different possible translations seem to indicate potentially different functional levels or 'levels of development', that term describes. He concludes that 'there is no adequate single-word translation of either'. Spader leaves them untranslated as a result.[4]

I am inclined to do the same, though if I was to offer a translation of *Geist* – which I feel is the more problematic of the two terms – I would use Mind with a capital 'M' to try and capture its essential metaphysical aspect, and the supra-individual nature of it as a primordial aspect of ultimate reality, an aspect that nevertheless underlies our individual minds. Another way to look at it is to describe it in terms of consciousness *per se*, whatever consciousness itself *is* in a metaphysical sense. In a similar way, *Drang* can be understood as Matter with a capital 'M'. It is the base physical-constituent of ultimate reality, it comes in both organic and inorganic form, and while there are clear distinctions between living and inert matter, it is still matter *per se*, *Drang* describes all the necessary spatial and forceful characteristics of whatever material life *is* in a metaphysical sense. The reader can assume, that if either term is employed with the first letter capitalised, then an equivalence is intended in terms of meaning – Mind with *Geist*; Matter with *Drang*.

A Note on Italicisation

In the text Scheler liberally uses italics to indicate emphasis; for all direct quotations from the text, any such italicised emphasis is original, unless otherwise stated.

[4] Peter H. Spader, *Scheler's Ethical Personalism: Its Logic, Development, and Promise* (New York: Fordham University Press, 2002), p. 184.

SCHELER'S PHILOSOPHICAL ANTHROPLOGY AND TRANSHUMANISM: A FIRST INTRODUCTION

Ever since the awakening of my philosophical thinking, the question "what is the human being and what is his place in being?" has occupied me more fundamentally than any other question I have dealt with.

–Max Scheler, The Human Place in the Cosmos. 1928[5]

If it was put to you, to think of the most interesting question that you could ask – what would it be? Why is there something rather than nothing? Is there a God? Is there life after death? What is the nature of consciousness? How does mind emerge from matter? What is Life? Are we alone in the universe? Why do we search for meaning? Does time exist independently of us? What is a thought and how does it relate to the world? Why are we here?

I am sure there are others that I have not included above. My personal response was, how does mind emerge from matter. Beyond my initial answer, and after some further reflection, all of the answers that I come up with seem to have two things in common – thought and existence. It should be of no surprise then, that the central concern of this thesis is a question that refers – via the human being – to both: *What is the human being, and what is our place in the cosmos?*

This question was posed by German philosopher Max Scheler as the opening salvo of a short book which was published in the year before he died in 1928 – *The Human Place in*

[5] Max Scheler, *The Human Place in the Cosmo*s, trans. by Manfred S. Frings (Evanston: Northwestern University Press, 2009), p. 3; Max Scheler, *Man's Place in Nature*, trans. by Hans Meyerhoff (Boston: Beacon Press, 1961), p. 3. Meyerhoff translates this as: 'The questions "What is man?" and "What is man's place in the nature of things?" have occupied me more deeply than any other philosophical question since the first awakening of my philosophical consciousness'.

the Cosmos (*Die Stellung des Menschen im Kosmos*). The subject of the book is self-explanatory from the title, and in it Scheler seeks to address the issue of the 'essence' of the human being in relation to plants and other animals through an investigation into our 'special place' – metaphysically speaking – in the cosmos. Scheler's intention was that it would serve as a summary, and preparatory outline, of his main ideas concerning Philosophical Anthropology – the central issue of which is the *problem* of the human being.

The problem of the human being can be best understood in terms of the fact that we don't *know* who or what we are, and we *know that we don't know*. We do not have a definitive answer to the question of human nature but we are compelled to try and give one. Thus, the problem is generated from a combination of not knowing but wanting to know. All of the answers that I have given above to my initial question, refer in one way or another to this problem of the human being Thus, Scheler's question is an elementary, yet powerful one – unembellished and unadorned yet weighted down with philosophical, scientific, and theological significance.

In light of this, the problem of the human being serves then as a guide for my enquiry into transhumanism. I argue that the subject matter and scope of Scheler's enquiry not only succinctly captures the central concerns of transhumanism, it can also accommodate and help structure the philosophical investigation of the full range of pertinent issues involved. Scheler's question also pertains directly to what I would see as the most important and intractable of philosophical questions – how and why is it that the inert physical matter of the cosmos has given rise to organic life and consciousness?

In the preface to *The Human Place in the Cosmos*, Scheler explicates his enquiry as 'immense'. Hence, his 'attempt to submit an outline of a philosophical anthropology', is one that must be based on the 'widest foundation possible' – such breadth being a necessary condition of a philosophical enquiry which takes it point of departure as the essence of the human being, our relation to other forms of organic life, and our apparently unique metaphysical status.[6] It is both the subject matter and the range of Scheler's gaze that leads me to contend that a critical reading of *The Human Place in the Cosmos* can provide an analytical framework within which transhumanism, and one of its central ideas – the concept of the Technological Singularity – can be studied. As such, an analytical framework based in Philosophical Anthropology is well suited to assess transhumanism as both an influential and growing cultural movement, and as *a philosophy of the human future*. A philosophy that is given expression against a conceptual background which is shaped and given definition by the emerging 'post-biological' paradigm.

In his time, Scheler believed that both the scope and relevance of 'the study of the problem of man's own nature', had reached a historical peak. Although he noted – post-Darwin – that the 'amount of precise knowledge about what we are', and our certainty in the accuracy of any such knowledge, was greater than at any previous historical juncture. It also seemed that – on a metaphysical level – we were more uncertain than ever. Despite this metaphysical uncertainty, Scheler recognised that the endeavour to address the central problem of human identity was nonetheless accompanied by what he described as a new '*courage towards truthfulness*'.[7] The source of this courage lay in the fact that humanity was no longer to be so 'daunted by any possible answer to the question at hand', meaning we could allow ourselves to abandon 'hitherto fully or partial links that had been maintained with theological, philosophical, and scientific traditions'.[8]

As transhumanism is increasingly moving into the mainstream of contemporary consciousness, the above perhaps also describes our current situation. Presented by its proponents as displaying just such a courage toward the truth that Scheler envisions,

[6] Scheler, *The Human Place in the Cosmos*, pp. 5–6.
[7] Scheler, *The Human Place in the Cosmos* p. 4.
[8] Scheler, *The Human Place in the Cosmos* p. 4.

transhumanism certainly doesn't shy away from the 'big questions' and is predicated on re-imagining traditional notions of the human condition.

Transhumanism has many manifestations – as a cultural movement, a worldview, a techno-optimistic life philosophy, a spiritual movement, a political ideology, and as a 'popular, benevolent, rational system of ethics for a scientific age'.[9] It represents a strange mixture of late-modern techno-scientific progressivism, venerated modern rationality, ardent reductionist and materialist ontologies, engineering perspectives and practices, utopian visions and mythologies, data and information-based metaphysics, post-ideological politics, and secular eschatologies which operate as evolutionary meta-narratives – all of which have been developed and articulated within the context of the current neo-Darwinian paradigm.

Despite the fact that – ideologically – the orthodox neo-Darwinian position is characteristically reductive and its worldview is one from which all transcendent notions have been purged, the culture and philosophy of transhumanism is resplendent with the promise of transcendence. Ultimately, it is our finite biological heritage that we will transcend by technological means. Hence, I believe Scheler's statement, 'one can say that in no historical era has the human being become so much of a problem to himself as in ours', is even more relevant today than it was in the early twentieth century.[10] This is due mainly to the increasing intensification of our relationship with technology, and the fact that radically altering human nature is now the explicit object of engineering practices across a multitude of disciplines. The idea of merging machines has become firmly entrenched in our cultural imagination, and developments in late-modern technology mean that our dreams of

[9] Simon Young, *Designer Evolution: A Transhumanist Manifesto* (New York: Prometheus Books, 2006), p. 4. Young establishes three fundamental concerns of the philosophy of transhumanism: What is the nature of the world? What is the nature of the human being? What is the best way to live? This makes it clear from the beginning that the subject matter of transhumanism's philosophical concerns coincides with Scheler's primary objective, as articulated in *The Human Place in the Cosmos*. It allows us to establish that – despite the 'post-human' nature of the transhuman vision – the associated notions of our future expressed in terms of mind uploading; body augmentation and enhancement; the merging of human and machine; and the transition into a post-biological phase of evolution etc., all fall very much within the remit of Philosophical Anthropology.

[10] Scheler, *The Human Place in the Cosmos*, p. 5.

transcendence – hitherto the preserve of religion – now have a *practical* aspect which designate them the preserve of engineers.

Ultimately, across all its manifestations, transhumanism is predicated upon an explicit and open-ended re-imagining – in technological terms – of traditional concepts of human nature. Nurtured and shaped by evolutionary thought, the overarching assumption is that human nature is not 'fixed' and our biological 'limits' can be transcended through the use of technology. Regardless of any 'natural' origins we might have, technological development will eventually provide us with the capacity to direct and 'design', both human evolution and cosmological evolution. This will allow a post-human species – into which we will someday evolve – to ultimately assume full control of our evolutionary destiny, conquer sickness, death, and old age, and spread out beyond the earth and its solar system to colonise the whole universe.

Immediately, it is obvious that the analysis of an endeavour such as this – or any associated philosophy or cultural output – would benefit from as wide a foundation as possible. Hence, I argue that Philosophical Anthropology – as a philosophical paradigm – serves us well. It would also seem clear to me that Scheler's central theme – the human being and our place in the cosmos, is *the* primary concern of transhumanism, i.e., the increasingly intimate nature of the human/machine merger and how this orientates us toward the idea of post-biological evolution.

Where biological evolution and the evolution of technology merge, transhumanism blurs the traditionally assumed line between the natural and the artificial, and envisions technology as a bridge that can close the gap between the organic and the synthetic. Biology is more and more becoming to be understood as the object of engineering disciplines – as a result of this, the human being is apprehended from an *engineering perspective*. This is a perspective from which human nature is viewed according to principles of design, innovation, upgrade, and modification, i.e., as an *engineering problem*. Futurist, inventor, author, and Google's head of engineering Ray Kurzweil embodies this engineering perspective perfectly. Thus, his concept of the Technological Singularity is employed as a vital point of theoretical contact. Drawing all the essential analytic components together in a single concept, at the heart of the *idea* of the Technological Singularity is the question of the human being and our place in the cosmos.

In a broader sense, the logic of Technological Convergence frames the debate about the possibility of a post-biological future. The notion of Technological Convergence is given shape and meaning by the idea of an inevitable historic intersection of natural selection and Moore's Law – a convergence toward a point where it is no longer biology but technology that is the primary vehicle of evolutionary change. Practically speaking, late-modern technologies converge on the site of our biological body, but conceptually it is the *idea* of the human being toward which these technologies converge. Hence, I believe it is best to approach transhumanism in terms of the attempt – both practically *and* conceptually – to design and engineer the human condition. On the most basic of levels, the philosophy of transhumanism strives toward an engineered solution to the long outstanding problem of our 'infinite' minds being trapped in our finite bodies, i.e., its aim is to bring biological life under the control of engineering practices and technological innovation, so that we may transcend the limits our embodiment. As already noted, this is an age-old concern, but one that now has a practical component to it in a way that it never had before. Scheler's point of departure is the 'problematic' nature of the human being. This perspective on human nature also serves well as a starting point for us – I think it aptly describes our post-biological aspirations, and in many ways it is a problem that is even more pronounced in our time than it was in his.[11]

[11] Gunther Gebauer and Christoph Wulf, 'After the "Death of Man": From Philosophical Anthropology to Historical Anthropology', *Iris*: *European Journal of Philosophy and Public Debate*, 1/1 (2009), 171–186 (p. 171).

Of note is how Scheler understands the human being – in a way that other biological species aren't – as *world-open*. We are not tied to, nor immersed wholly in our *environment*. We are not fully integrated and bound by the biological specificity of adaptive physiology – thus, for us, a world is ascribed.[12] Even so, we are not removed from the natural world in some essential sense – i.e., it is a mistake to assume that this world-openness (*Weltoffenheit*) divorces us somehow from the biological realm. In this sense, Scheler pertains that there is an observable 'unity of life' that describes both its vital *and* psychic attributes. Wherever we find life we find psychic life – the implications of this are that all living things are essentially characterised by varying degrees of 'individuality' and 'innerliness'.[13]

According to Scheler, these two attributes develop as part of a dynamic process of *psychic becoming* – a process which begins with *vegetative life*, i.e., plants display individuality, and the 'physiognomy' of an individual plant involves the existence of 'internal' states whose innerliness is expressed externally as an observable indication of the overall condition of the individual plant, i.e., as a display of vigour or listlessness. Despite the fact that vegetive life is characterised by such an innerliness, there is nevertheless no 'reporting back' of stimuli to a 'centre' from which 'appropriate movements of response would then issue'.[14] Such a 'centre' is the preserve of 'higher' life-forms according to Scheler. Life-forms are thus described by Scheler as 'higher' and 'lower' simply in reference to life being hierarchically characterised by emerging levels of complexity and sophistication. These emerging levels of sophistication and complexity are defined by instinct, habit, and intelligence – each level describes a three-fold developmental process which is expressed in

[12] Gebauer and Wulf, 'After the "Death of Man"', p. 172. Defining the core theme of Philosophical Anthropology as: the 'assigning an inescapable dependence on their milieu to animals on the one hand, and world-openness to humans on the other', Gebauer and Wulf trace the influence of Jakob von Uexküll on the development of the paradigm.[12] Von Uexküll's distinction between nonhuman animals' 'dependence on their milieu' (*Umveltgebundenheit*), and human's 'world-openness' (*Weltoffenheit*) is a key concept for all three thinkers and their attempt to define the peculiarities of human nature.
[13] Werner Stark, 'Editor's Introduction', in Max Scheler, *The Nature of Sympathy* (New York: Routledge, 2017), pp. ix–xlii, p. xxv.
[14] Stark, 'Editor's Introduction', p. xxv.

terms of structure, adaptability, and consciousness. At each level, Scheler posits a corresponding behavioural development within which observable responses to stimuli become less pre-determined and less mechanical, i.e., there emerges a 'separation between sensation and reaction'.[15]

This separation is first evident at the second level of psychic becoming – *instinct*. The separation then becomes more pronounced at the third level of psychic becoming – *habitual behaviour* – but at this level, reflexes are still largely 'conditioned' and are 'semi-automatic'.[16] At the fourth level of psychic becoming – *practical intelligence* – responses become further separated from sensations and the organism's centre becomes more 'centralised' and self-contained. This increasing separation of sensory and motor systems also represents an increase in an organism's 'flexibility' and 'pliability', i.e., whereas instinct provides ready-made answers to 'life-problems', habitual behaviour displays variability in terms of the range and type of responses that are possible to any given situation. Hence, if a situation is recurring, a process of trial and error can be initiated and responses can become engrained as a learned habit. This habitual behaviour is surpassed at the level of practical intelligence where novel answers to relevant life-problems can be given in response to new and 'unique' situations – thus it is at this level that *genuine individuality* can be found.[17]

According to Scheler, it is at this level of psychic-becoming that a new principle becomes observable – *Geist*. As a *metaphysical* principle of genuine novelty, *Geist* is observable in the human being. In fact, the human being is defined in and through recourse to *Geist as* a metaphysical principle of – it is *Geist* that is the source of our world-openness, and it is *Geist* that is revealed in and through our detachment from the organic milieu. Thus, our 'metaphysical participation in ultimate reality is twofold' – it is *both* spiritual and vital. The world is in *process*, and as a result of this it is 'always the correlative of some act', thus, it is

[15] Stark, 'Editor's Introduction', p. xxv.
[16] Stark, 'Editor's Introduction', p. xxv.
[17] Stark, 'Editor's Introduction', p. xxv.

constituted in and through the metaphysical interrelation – and mutual interpenetration – of the ontological underpinnings of the spiritual and vital aspects that describe humanity – *Geist* and *Drang*.[18]

Drang and *Geist* are the two primordial phenomenon which describe the nature and character of the Ground of Being (*Grund der Dinge*). They are two complementary, but antagonistic principles, irrevocably twinned and inseparably different – they are co-constitutional, and co-defining through their intrinsic unity of opposition. Metaphysically, both *Geist* and *Drang* are primary principles – they describe the ontological structure of the cosmos, *and* appear in the human being as the capacity for ideation (*Geist*), and the life-force (*Drang*). *Geist* is not reducible to *Drang* or vice versa, and each leads back independently to the Ground of the World/Ground of Being).[19] Thus, *Geist* and *Drang* are both original, primordial ontological constituents of Being itself – they are non-reducible, independent, and oppositional, yet at the same time they are essentially and foundationally connected, in and through what appears as a structural cleft in the ontological make-up of ultimate reality.[20] Scheler describes *Drang* in terms of the process of psychic-becoming, and its development *as* 'psychic-life', within which *Geist* differentiates us from all other organic life, and distinguishes us from other non-human animals.

Thus, it is Scheler's concept of *Geist* around which this investigation turns – first in terms of tits implication for the distinction between human beings and other biological species, and secondly in terms of its metaphysical implications with respect to our place in the world.

Also, it is the *oppositional* nature of the essential relationship between *Geist* and *Drang* that is of importance here. In terms of how human self-consciousness relates to the sphere of vital life, Scheler takes a non-reductive perspective. In doing so, he offers a

[18] Frank Dunlop, *Scheler*, (London: The Claridge Press, 1991), p. 73.
[19] Spader, *Scheler's Ethical Personalism*, p. 184.
[20] Spader, *Scheler's Ethical Personalism*, p. 184.

repudiation of the assumptions that underly ontological Naturalism. The notion of *Geist* that Scheler develops leads him to posit that human culture and spiritual output arise as a result of a re-direction of vital energies through the repression of instinctual forces and life drives – rather than in *service* of them. Human self-consciousness is not reducible to the vital sphere. This position rests on the insight that such a redirection of vital energies represents an act of *sublimation* – one which must have its origin *outside* of the drives rather than be simply reducible to a function of biological life. As such, *Geist* is a phenomenon which allows its bearer to say 'no' to psychic life. For Scheler, it cannot originate in the very drives that serve vital interests if it is to be the source of the 'reorientation' of their energies away from their original vitalistic goals.[21] Accordingly, *Geist* and *Drang*, are bound in essential interaction, one in which *Geist* must re-direct the 'blind' force of *Drang*.

Scheler describes this as *Geist* being initially impotent but possessing 'vision', and *Drang* as without vison, but possessing 'power'. The two principles are bound in an oppositional unity. They are essentially co-dependent – mutually impacting each other in antagonistic interpenetration. Thus, within the interplay between the two, *Geist* becomes 'forceful', and *Drang* becomes 'something'. As well as a description of the metaphysical nature of ultimate reality, this process is one which also occurs in and through the human being as.[22] It is in this sense that Scheler posits the human being as a *microcosm*.

As such, Scheler gives us a metaphysical grounding within which we can assess transhumanism and the notion of post-biological evolution. First and foremost, he offers a challenge to the reductionist tendencies of the transhumanist worldview by asking where we are to locate the root source of the aspiration to transcend biology? In other words, how can the attempt to transcend the limits of biological life *itself* be rooted in the vital sphere that

[21] Eugen Kelly, 'Introduction', in *The Human Place in the Cosmos*, p. xiv. Kelly puts it as such: 'Only what has not emerged from impulsion, only what is opposed to the drive-life and its satisfactions can make possible the unhappy, sick, neurotic, but civilised and culturally productive phenomenon man: and that opposed principle is spirit'.
[22] Spader, *Scheler's Ethical Personalism*, p. 186.

grounds biology? How could such an aspiration be metaphysically reducible to the vital-functions of biology?

At first glance, Scheler's distinction between *Geist* and *Drang* appears to be a form of dualism. While his intention was in fact to side-step the outstanding issue of the mind/body problem, the positing of *two* metaphysical principles has been the source of much controversy since. The question remains whether or not Scheler escapes the dualism problem that has plagued Western philosophy since at least Plato. Has he simply pushed the problem a step back, so that it still remains – stubbornly in tension – as the defining feature of his metaphysics?

Either way, it is the apparent duality between *Geist* and *Drang* that provides the entry point for our investigation into the philosophy of transhumanism. Dualism is a persistent charge that is levelled against transhumanist philosophy – a legacy of its Enlightenment roots. Whereas there is an explicit rejection of 'Cartesian' dualism within transhumanism, the mind/body problem stubbornly remains an unresolved issue. I argue that this is the source of a deep-seated tension around which transhumanism coheres – a tension between reductionism and the aspiration of transcendence. Saying that, the mind/body problem is a problem which persists for philosophy in general, it is not limited to transhumanism – in a sense it *is* the context within which this investigation is carried out. The mind/body problem is an essential part of the conceptual landscape in any talk of consciousness or self-consciousness, and is especially relevant if one aspires to disembody human consciousness and relocate or replicate it in a non-biological substrate.

Hence, Scheler's concept of *Geist* serves us well as a starting point. Regardless of what epistemological or metaphysical reality actually is, we experience the human condition as being foundationally characterised by a *dual-aspect*. The human being is *both* biological and cultural, *both* empirical and transcendent, *both* vital and spiritual, *both* real and ideal.

Thus, the metaphysical cleft between *Geist* and *Drang* runs right through us, giving us definition, and assigning us our place in the cosmos.

It is along these lines that the primary research aim of this thesis is directed. I engage with and develop Scheler's philosophy from *The Human Place in the Cosmos*, as a critical response to the challenges of transhumanism and the idea of post-biological evolution. My goal is to show that his thinking is not only contemporaneously relevant, but also offers us the foundations upon which to build a possible model of a much-needed, *non-reductive* metaphysics within which transhumanism can be situated – something which may prove to be essential as the debate around post-biology heats up. Scheler correctly understands metaphysics as belonging to the 'basic comportment of what it is to be a human being', and how we are compelled to enquire into the absolute – a compulsion which I think is a vital ingredient of the transcendent nature of the philosophy of transhumanism, and the quest for post-biology.[23]

The core concerns of transhumanism are quickly becoming the major issues of our time, and they will only continue to become more and more relevant. The majority of philosophical engagement with it seems to be conducted in terms of ethics, and there is a dearth of critical metaphysical analysis. There is also a dearth of analysis explicitly based in Philosophical Anthropology. Beyond the uncritical assumption that human nature is understood as something that not only strives to overcome itself but – through recourse to that fact alone – is also something that *ought* to be overcome, the issue of what human nature *is*, i.e., *what is the human being*?, seems to be one that is currently neglected within the transhumanist discourse. My research aims to address this, and it is for this reason that I engage with *The Human Place in the Cosmos* as an initial response to the philosophy of

[23] Max Scheler, *The Constitution of the Human Being: From the Posthumous Works, Volumes 11 and 12*, trans. by, John Cutting (Milwaukee: Marquette University Press, 2008), p. 18.

transhumanism – metaphysics provides the grounding for Philosophical Anthropology, and Philosophical Anthropology provides the grounds for ethics.

My argument is this: Scheler's questioning into the nature of the human being and our place in the cosmos is a profound and important inquiry. It lies at the heart of transhumanist philosophy where it is perceived in explicitly technological terms. Thus, the promise of late-modern technology is the potential of a radical and post-biological answer to that question – an engineering response, which challenges all traditional notions of human nature. In one respect, transhumanism is correct in this. The question needs to be addressed with specific reference to our technology. Technology has deep symbolic and physical importance for us, and its inclusion in any attempt to answer Scheler's question is vital. Technology has shaped us and defined us, since we first used the crudest of stone tools to extend our capacities and to substitute for our lack of instinct. It has huge existential and anthropological significance, and – as we are continuously finding out – the human/technology is perhaps more intimate and essential then we know.

Technical artifacts are the products of human material engagement, As the products of *intentional* fabrication, they are recognisable in terms of their intended function, i.e., what they were *designed* for. This mark of design is the mark of the human being – design implies mind. Hence, there is something of us *in* our technical artifacts. We leave our mark in our material production. A mark of intention, of anticipation, and of foresight and planning – a mark of our minds. Thus, technical artifacts also display a *dual-aspect* – they are both physical and intentional, both *real* and *ideal*. It is for this reason that an anthropological perspective on technology is needed. As we will see, the nature of the human/technology relation itself will play a central and defining role in what follows.

There are two ways into Scheler's Philosophical Anthropology and metaphysics: through *The Problems of a Sociology of Knowledge*; and through *Cognition and Work: A*

Study Concerning the Value and Limits of the Pragmatic Motifs in the Cognition of the World.[24] My route is through *The Problems of a Sociology of Knowledge*, and my aim is to develop Scheler's concept of an existing historical and metaphysical interplay between *Realfaktoren* (real factors) and *Idealfaktoren* (ideal factors). I do this toward three separate but connected ends 1: To lay the groundwork for a Schelerian philosophy of technology 2: To develop a framework within which to assess the philosophy of transhumanism, the idea of the Technological Singularity, and the concept of post-biological evolution 3: To construct the foundations of a non-reductive metaphysics, based on an understanding of evolution as a cosmological, biological, and a technological process that is constituted by the interpenetration of inert matter, organic life, and consciousness, i.e., the interplay between real and ideal factors. Reductionism is the dominant – and mostly unchallenged – metaphysical perspective of the scientific worldview. A reassessment is called for, in terms of its assumed status as *the* scientific orthodoxy. Scheler's notion of real and ideal factors allows us to do this.

The dynamic interplay between the real and the ideal underpins the metaphysics of *The Human Place in the Cosmos*. This interplay is encapsulated in the dual-aspect of the human being as the microcosm and it describes the two mutually dependent and co-constituting ontological roots of the Ground of Being – *Geist* and *Drang*. Thus, I develop this aspects of Scheler's philosophy as a dynamic lens through which one can assess both the metaphysical implications of post-biological evolution and the technological Singularity, and the human/technology relation as a concern of Philosophical Anthropology. This should also

[24] Zachary Davis and Anthony Steinbock, 'Max Scheler', *Stanford Encyclopedia of Philosophy*, (2018) <https://plato.stanford.edu/entries/scheler/> [accessed 10th April 2022]. Davis and Steinbock say that Scheler himself states that *The Sociology of Knowledge* and *Cognition and Work*, are 'a means to understand both his philosophical anthropology and metaphysics'. For future study: the second route into developing Scheler's metaphysics would be well served by a recent translation of *Cognition and Work* by Davis. See, Max Scheler, *Cognition and Work: A Study Concerning the Value and Limits of the Pragmatic Motifs in the Cognition of the World*, trans. by Zachary Davis (Evanston: Northwestern University Press, 2021). Davis says that '*Cognition and Work*, as well as *Problems of a Sociology of Knowledge*, are the transition pieces' into Scheler's 'speculative turn.' p. xii.

serve as a critique of the reductionism that underpins the worldview of not just transhumanism, but also of the standard 'physics model' of reality.

My research also aims to offer an answer to Scheler's question, *what is the human being and what is our place in the cosmos*? – at least tentatively. An essential concept of the human is developed which is explicitly based in the human/technology relation. Scheler's position is also used to identify common themes within contemporary fields of study, which I argue are not only compatible with his thinking, but can also be seen to be anticipated by that thinking. I draw on a wide-range of interdisciplinary sources to do this. I first build a framework based in Philosophical Anthropology as a philosophical paradigm. Transhumanism is analysed and assessed, within this framework, and an anthropological perspective on technology is established. I have adopted sociologist Joachim Fischer's concept of Philosophical Anthropology as a paradigm, and I have constructed an analytical framework based on that.

Philosophical Anthropology as a paradigm describes a specific *approach* to philosophy which I feel is particularly suited to the current context. As our point of departure, we take the *fact* of our biology – the analysis starts from there and extends to all aspects of human concern, form the empirical to the transcendent. Fischer suggests that Philosophical Anthropology as a paradigm represents a 'Third Way', between Naturalism and Culturalism, between Darwinism and Foucaltism – as such it is perfectly suited to the current context, as it can incorporate both the biological and the cultural aspects of the human being, without giving preference to either.

The Naturalism/Culturalism divide closely reflects the Analytic/Continental divide in philosophy, it also describes the competing paradigms of transhumanism and posthumanism. Hence they are situated within Fischer's framework – the former exemplifying ontological Naturalism, and the latter exemplifying ontological Culturalism. Philosophical Anthropology allows for a possible synthesis of the two. In a similar way, philosophy of technology tends also to be split along these lines. The standard distinction is between humanities philosophy of technology (HPT) and engineering philosophy of technology (EPT). Philosophical Anthropology as a paradigm may also serve as a way to unite these two traditions.

Ina more general sense, Philosophical Anthropology provides solid conceptual grounding for an investigation into the human being in the post-biological age. I use it to explore the human/technology relation, the metaphysical implications of the post-biological paradigm, the engineering paradigm of late-modern technology (as exemplified by the field of synthetic biology), the design paradigm of NBIC Convergence, the Technological Singularity, and transhumanism as a philosophy of the human future. The results of this are then developed and explored through an interdisciplinary approach and I draw on a wide range of resources, across a wide range of disciplines, and include a variety of perspectives – all of which are incorporated into a response to Scheler's question.

In Chapter I: 'Transhumanism and Post-biological Evolution', transhumanism is approached as a philosophy of the human future. Necessarily speculative, it is characterised by its anticipatory perspective, and is always drawn toward the post-human future – both theoretically and practically. Even though the focus is always post-humanity, I argue that transhumanism is very much rooted in human concerns – as such, it is an issue of Philosophical Anthropology. Transhumanism is predicated on an explicitly technological re-imagining of traditional concepts of human nature, and it is this way that human nature itself has thus become an object of engineering – a sentiment that is encapsulated in the ideology of the NBIC design paradigm.

In Chapter II: 'The Question Concerning Technology is an Issue of Philosophical Anthropology', I argue that the an anthropological perspective on the human/technology relation is necessary. The dual-aspect of technological artifacts is taken into consideration and the conceptual groundwork is laid for an understanding of the human/technology relation that is compatible with Scheler. I approach technology from a broad perspective and understand it as 'technics'.[25] Technics – as *material culture* – allows us to address the issue of whether there exists or not an ontological gap between the human being and the technical. The two paradigms of transhumanism and posthumanism are engaged with and assessed in this respect.

Chapter III: 'Max Scheler's *The Human Place in the Cosmos*', introduces Scheler in more detail. The main concepts from the text are laid out combined with the findings from the previous parts. The initial challenge is to align the idea of technics with what Scheler says about technology in *The Problems of a Sociology of Knowledge*. This is an important step, as it brings together the *anthropological* perspective on technology that is developed in Part II, with Scheler's notion of the interplay between *Realfaktoren* and *Idealfaktoren*, as the determining dynamic of historical change. It is this that allows us to extend our understanding of technics as material culture, so as to align it with the evolution of the human being, *and* with the evolution of biological life *per se*. Technics is the bridge between the two, and as such, it must also play an important role in the process of cosmological evolution. If this is indeed the case, then an ontological link must be established between the human being – as a bearer of *Geist* – and technics.

In Chapter IV: 'The Human Being is Not a Thing: Against Substance Ontology', I build on Scheler's foundations and establish an argument for a non-reductive metaphysics within which to situate transhumanism. A critique of substance ontology is given, and the reductionism of the NBIC paradigm is challenged. This is a necessary move toward establishing the aforementioned ontological link between the human and the technical.

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[25] Don Ihde provides the conceptual foundations for this idea of the technological. See, Don Ihde, *Philosophy of Technology: An Introduction*, (New York: Paragon House Publishers, 1993); Don Ihde, *Technics and Praxis* ((Dordrecht/Boston/London: D. Reidel Publishing Company, 1979).

In Chapter V: ‘Technics and *Geist*: The End of Biological Evolution, the methods, assumptions, and findings of the field of cognitive archaeology are incorporated into the analysis. This is done toward developing a Schelerian philosophy of technology which is rooted in Philosophical Anthropology. Cognitive archaeology studies the mark of the human mind that has been left in our material remains. As such, it offers unique insight into the human /technology relation, and allows us to argue that the intimacy of the human/technology relation reveals that the humanity represents the end of purely biological evolution.

In Chapter VI: ‘Being Bending Back on Itself’, I undertake a metaphysical analysis of the findings to that point. I assess Kurzweil and Scheler in light of the concept of the Technological Singularity, and identify that the distinction that Scheler makes between consciousness and self-consciousness is an essential metaphysical move – one which offers important insight into our understanding of both ourselves, and our place in the cosmos.

Weaving through the analysis is the reoccurring theme that the human being’s self-image plays a functional role in human development. The theory of Philosophical Anthropology asserts that each historical epoch of human history generates an associated ‘idea’ or ‘image’ of the human being which operates as a model of orientation by which we steer our course in the world. The cyborg is an already established and recognised image of the enhanced human being. As an anthropological model, it is characterised by the merging of the organic with the synthetic, and it represents the increasing intimacy and ubiquitousness of the human machine interface – it points the way to the techno-scientific horizon of our post-human future. Philosophical Anthropology thus allows for the cyborg to be assessed as an anthropological model of the post-biological age. It also allows us to lay the groundwork for an enquiry into the link between self-image – understood as a *principle* of Philosophical Anthropology – and the historical developments of late modern technology.

This informs my understanding of late-modern technology as being characterised by the application of technology and engineering techniques to biological processes and systems toward establishing precise control of those systems, coupled with a concomitant project of *design retrieval* which is aimed at replicating and harnessing the biological complexity and self-organising principles of organic systems in service of technological and engineering goals. Thus, the basic orientation of late-modern technology, reveals its decidedly *ontological* perspective. The unconcealed ontological aspect of late-modern technology is something I interpret as a sign of the *quasi-metaphysical* aspirations of its exponents. Such aspirations find their clearest expression within the philosophy of transhumanism, and I argue that this has historical roots in the predominance of the engineering paradigm within the biological sciences. Ultimately it is a reflection of the *engineering perspective* which equates knowledge with the ability to create and build. In light of this, it is no surprise that the defining philosophical features of the post-biological paradigm are the principle of *control*, and the principle of *design*.

In this regard, our post-biological and post-human future is already being constructed in our imagination. While it is impossible to know with certainty what that future will look like, we can be sure it will be more – rather than less – technologically conditioned. Whatever course our evolutionary trajectory takes, we can be also be confident that technology will play a major role. The very idea of designing and controlling evolution is almost unthinkable outside the context of progressive technological development. It is technology that enables us to envision post-biological evolution in the first place, and it is technology which has now made it a matter of *practical* concern – an engineering concern. Post-biological evolution is not the product of *blind* natural selection, it is the product of (intelligent) *design*. This, in and of itself is telling, because the last time design was a defining feature of evolutionary theory, it was as a religious, or a metaphysical principle.

Now, it functions in evolutionary theory as a *principle of engineering*. A principle which encapsulates a practical, hands-on approach to the question, *what is the human being and what is our place in the cosmos?*

CHAPTER 1: TRANSHUMANISM AND POST-BIOLOGICAL EVOLUTION

INTRODUCTION

What does it mean to aspire to transcend the limits of our biology? Is such an aspiration a virtue, or a vice? Should it be endorsed or challenged as a goal for all of humanity? What does it say about human nature that we can even imagine such a thing? What would be left of us that we might still call human, if such a postbiological future came about? What is the relationship between or biology and our technology? Can we live forever? Can we be God? Can we control life? Can we design life? Can my consciousness be uploaded on to a computer? If it could, would it be me?

These are some of the questions that transhumanism throws up when it challenges us to imagine a postbiological future. None of these issues are exactly trivial, some of them are very profound. Their subject matter reveals that transhumanists are not afraid to think big and imagine beyond what is currently possible. As a philosophy it is aspirational – techno-aspirational, and techno-optimistic. Perhaps, not without merit, for technology has given us all we have – our civilizations, modern medicine, space travel, the internet, the Large Hadron Collider, washing machines. It is hard to imagine human life without it. It is also hard to imagine post-human life outside the context of technology – hard to imagine that we might control and direct evolution without the use of technology. Hence, technology gives us power, extends our capacities, enhances our control over the natural world and the forces that determine it. It is also what fuels our aspirations and allows us to dream beyond the possible. As such, technology directs our gaze to the future with the anticipatory promise of 'what if…'?

Combined with the promise of technology, there is a simple yet powerful logic that underscores the transhumanist world-view – what has evolved, will continue to evolve. The logic of evolution combines with the promise of technology, and through this combination the post-biological future takes shape. For some, this incontrovertibly means that technology will one day allow us to assume *full* control over the evolutionary process – it will be ourselves that will ultimately get to choose our own faith and make our own destiny. Maybe this is correct, maybe it is not. But there one thing we can be sure about – there will be those who will try, and there will probably be nothing that anyone can do to stop them.

1.1 ENGINEERING OUR POST-BIOLOGICAL FUTURE

1.1.1 TRANSHUMANISM

The philosophy of transhumanism has coalesced into an increasingly widespread and influential worldview that is structured according to – and also legitimised by – the logic of evolution. It is widely recognised that its roots are to be found in Enlightenment thought, hence it is characterised by a strong commitment to the concepts of human rationality and progress.[26] As a philosophy of the human future, transhumanism is predicated upon an explicit re-imaging of traditional understandings human nature.[27] This conceptual re-

[26] See, Fabrice Jotterand, 'At the Roots of Transhumanism: From the Enlightenment to a Post-human Future', *Journal of Medicine and Philosophy*, 35 (2010), 617–21 <https://academic.oup.com/jmp/article-abstract/35/6/617/969337> [accessed 9th September 2018]; James Hughes, 'Contradictions from the Enlightenment Roots of Transhumanism', *Journal of Medicine and Philosophy*, 35, (2010), 622–40 <https://www.researchgate.net/publication/49661542_Contradictions_from_the_Enlightenment_Roots_of_Transhumanism> [accessed 9th September 2018].

[27] Human nature re-imagined in increasingly technological terms is the dominant theme. Even authors who are not associated with transhumanism – or who don't view human enhancement technologies as necessarily positive – prioritise the analysis of late-modern technology in terms of what it means to be human and the way that our understanding of ourselves is changing due to the ongoing intensification of human/technology relations. See, Braden Allenby, and Daniel Sarewitz, *The Techno-Human Condition* (Cambridge: The MIT Press, 2011); Woodrow Barfield, *Cyber-Humans: Our Future With Machines* (New York: Springer, 2015); Mark Coeckelbergh, *Human Being @ Risk: Enhancement, Technology, and the Evolution of Vulnerability Transformations, Philosophy of Engineering and Technology* 12 (Dordrecht: Springer, 2013); Carl Eliot 'Humanity 2.0', *The Wilson Quarterly (1976–)*, 27/4 (2003), 13–20; Steve Fuller, *Humanity 2.0: What it Means to be Human Past, Present and Future* (Basingstoke: Palgrave Macmillan, 2011).

assessment of what it means to be human is also accompanied by the practical attempt to use techno-science to overcome our biological limits. This is a clearly stated and actively pursued endeavour, one that is aimed at the realisation of a vision of a post-human future. A vision which ranges from different manifestations of the technologically enhanced and upgraded human body, to the future possibility of the disembodied human 'mind' existing in cyberspace or some form of augmented or virtual reality.[28]

Transhumanism exists at the intersection of biological evolution and the evolution of technology and – in a fundamental way – it coheres around the dynamic of Technological Convergence.[29] The idea of converging technologies has helped facilitate the emergence of a 'cyborg identity' – a conception of the human being which stands astride the increasingly blurred line of demarcation which has traditionally differentiated the human from the machine, and the natural from the artificial.[30] Within transhumanist thought, issues of human identity are so deeply entwined with technology – and the way that it has allowed us to reshape the material world – that the perennial question, 'what is the human being'? is now articulated in terms of techno-scientific potential, and an almost unlimited range of imagined future possibilities. The increasing interpenetration of biology and technology is central to the debate, as is the predominance of engineering perspectives, and the application of engineering methods to the biological sciences. As the object of technology and engineering, the human is thus approached as a 'design project' – inspired by our imagination and our

[28] For now, I use the term 'mind' in the most general sense. In the remaining chapters the term will be clarified further and developed with respect to variation and distinctions drawn between different conceptions of consciousness and human consciousness, consciousness and self-consciousness, mind and Mind, spirit and Spirit etc.

[29] Technological Convergence is the observed tendency for different technologies to converge and become integrated, despite having distinct original purposes. See, 'Technological Convergence: What is it and what is it for?' *DSX HUB* <https://www.dsxhub.org/technological-convergence-what-is-it-and-what-is-it-for/> [accessed 15th February 2021].

[30] Erik Seedhouse, *Beyond Human*: *Engineering Our Future Evolution* (Berlin: Springer, 2014), p. v.

creative expressions of self, and constrained only by the limits of our material biological form.[31]

According to the *Transhumanist Declaration* 'humanity's potential is still mostly unrealized'.[32] We are a species that 'stands to be profoundly affected by science and technology in the future' and, as a result we need to take the necessary steps – both theoretical and practical – that can allow us to fully embrace 'the possibility of broadening human potential by overcoming aging, cognitive shortcomings, involuntary suffering, and our confinement to planet earth'.[33] Thus, transhumanism operates as a philosophy and a cultural movement that – 'seeks out the continued evolution of human life beyond its current human form as a result of science and technology guided by life-promoting principles and values'.[34] This objective is to be achieved through the promotion of – an 'interdisciplinary approach to understanding and evaluating the opportunities for enhancing the human condition and the human organism opened up by the advancement of technology'.[35]

There are many different interpretations of what transhumanism is, but some key themes and concepts can be identified. Early definitions referred to technologically understood 'philosophies of life', and 'extropian principles' (as opposed to the principle of entropy). These were philosophies that were aimed toward 'the evolution of intelligent life beyond its currently human form and human limitations' – such philosophies also had a necessary practical element, thus there was, from the beginning, an emphasis on the means to

[31] Nolen Gertz asserts that defining notion of transhumanism is that 'human existence is *imperfect* and it *can* and *should* be fixed. The *imperfection* of human existence identified by transhumanist is that of having a limitless consciousness trapped in a limited body' (original emphasis). Nolen Gertz, *Nihilism and Technology* (London: Rowman & Littlefield International, 2018), p. 25.
[32] Nick Bostrom, 'The Transhumanist Declaration' (Version of March 2009) in 'A History of Transhumanist Thought', *Journal of Evolution and Technology*, 14/1 (2005), 1–2. <https://nickbostrom.com/papers/history.pdf> [accessed 2nd May 2018].
[33] Bostrom, 'A History of Transhumanist Thought', p.1.
[34] Bostrom, *A History of Transhumanist Thought*, p. 1.
[35] Bostrom, *A History of Transhumanist Thought*, p. 1. There are many vocal opponents to the transhumanism. For one of the most noted see Francis Fukuyama, 'Transhumanism', *Foreign Policy*, 144 (2004), 42–43.

implement these objectives, i.e., applied human reason and the intrinsic potential inherent in science and technology.[36]

As a worldview, transhumanism's proponents have presented it as being primarily concerned with the 'practical implications' of technological and scientific advancement, and the formulation of an accompanying range of future orientated philosophical ideas. Both of these endeavours can be seen to be primarily 'informed by reason, science, progress and the value of existence in our current life' – in general, they should also be understood to represent an explicit rejection of any form of 'supernatural or physically transcendent belief'.[37]

Leading transhumanist philosopher Max More provides a conceptual framework by articulating transhumanism as both *trans*-humanism and transhuman-*ism*. This reveals and highlights the philosophical roots in what he identifies as 'secular humanism', which is characterised by an emphasis on progress, and the idea of taking 'personal charge' of the future, and the reliance on human reason and creativity, and the use of technology and the scientific method, rather than faith and recourse to God.[38] As such, transhumanism is committed to 'improving' the human condition, and is 'optimistic' about doing so. Even so, More is explicit in stating that this does not entail any dogmatism or 'belief in the inevitability of progress' – he highlights the explicit recognition within transhumanist thought

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[36] Max More, 'The Philosophy of Transhumanism', in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology and Philosophy of the Human Future,* ed. by Max More and Natasha Vita-More (Malden: John Wiley & Sons, Inc., 2013), pp. 3–17, (p. 3). See, <https://hpluspedia.org/wiki/Extropianism> [accessed 17th March 2021].

[37] More, 'The Philosophy of Transhumanism', p. 4.

[38] More, 'The Philosophy of Transhumanism', p. 4. It must be noted at this point that 'secular humanism' does not equate to 'humanism' *per se*. As Christopher P. Toumey points out, humanism is neither 'intrinsically religious', nor is it 'intrinsically secular' – it is a matter of debate whether a fully secularised version of humanism is a continuation or a digression from historical humanist traditions, especially the humanism of the *quattrocento* or what is commonly called Renaissance humanism. Christopher P. Tuomey, 'Evolution and Secular Humanism', *Journal of the American Academy of Religion*, 61/2 (1993), 275–301 (p. 288).

of the many uncertainties involved, while drawing attention to the movement's attempt to 'proactively' face the associated risks in a responsible manner.[39]

According to More, transhumanists work with an underlying concept of human nature which understands it as not being an 'end in itself' – as such, human nature as we currently know it, is not 'perfect', and does not have any 'claim on our allegiance'.[40] The fundamental assumption is that human nature is not 'fixed', hence, the human being is considered to be just one point along an 'evolutionary pathway', and our basic nature can be reshaped – as we see fit – as part of our evolution, into 'something no longer accurately described as human', i.e., the posthuman.[41]

Accordingly, the transhumanist conception of post-humanity ultimately represents 'exceeding the limitations that define the less desirable aspects of the 'human condition', characterised by improved 'physical capabilities', and a 'freedom of form' better suited as an accompaniment to greater cognitive abilities and more 'refined' emotions.[42] It is through these ideas that transhumanism articulates its attempt to construct the human future and expand the 'range of possible future environments for post-human life, including space colonization and the creation of rich virtual worlds'.[43] More says that to understand transhumanism and its goals, an 'interdisciplinary' approach is needed – one that is capable of integrating findings and research from both the physical and the social sciences.[44]

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[39] More, 'The Philosophy of Transhumanism', p. 4. The term 'trans-human' captures how transhumanism aims to go beyond humanism in both means and ends – whereas humanism can historically be characterised by use of 'educational and cultural refinement to improve human nature', transhumanism incorporates the direct application of technology to ourselves in a bid to 'overcome limits imposed by our biological and genetic heritage'.
[40] More, 'The Philosophy of Transhumanism', p. 4.
[41] More, 'The Philosophy of Transhumanism', p. 4.
[42] More, 'The Philosophy of Transhumanism', p. 4.
[43] More, 'The Philosophy of Transhumanism', pp. 4–5. There is a broad conception of technology at play which includes 'the design of organizations, economies, polities, and the use of psychological methods and tools', and while 'transhumanism does not intrinsically commend specific technologies' *per se*, More states that, 'certain technologies and areas of current and projected future development clearly are especially relevant to transhumanist goals'; these include IT, computer science, engineering, cognitive science, neuroscience, neural-computer interface research, materials science, A.I, regenerative and life extension medicine, genetic engineering, and nanotechnology.
[44] More, 'The Philosophy of Transhumanism', p. 5.

On a practical level transhumanism is committed to designing and managing technologies that 'improve' human life using the potential of techno-scientific knowledge, and its application to 'transcend 'natural', but 'harmful', and 'confining', qualities that are derived from our biological heritage.[45] Hence, the human being is apprehended and grasped in terms of a fundamental and simultaneous 'dual-aspect' of *limits* and *potentiality* – the limits of our finite biological form and our potentially infinite minds. Technology provides a solution in both cases – our finite bodies can be enhanced or replaced, and our potentially infinite minds can be nurtured, nourished, and allowed to bloom as they are transferred from a biological to a non-biological substrate.

The vast majority of transhumanists are, from an epistemological view, what More calls 'strong rationalists'. Although he acknowledges that it is impossible to accurately identify one single universally accepted 'transhumanist epistemology', he says that it is the legacy of humanism – in general – which ensures transhumanism's 'commitment to the scientific method, critical thinking and an openness to revision of beliefs'.[46] More also claims that – metaphysically speaking – the clear majority of transhumanists see themselves as materialists, physicalists, or functionalists. The implication of this is that 'our thinking, feeling selves are essentially physical processes'.[47]

Although some transhumanists adhere to a concept of the self that is tied to 'current, human physical form', the majority accept some form of functionalism which allows for a conception of self that must simply be 'instantiated in some physical medium but not necessarily one that is biologically human – or biological at all.'[48] This overarching commitment to 'technological mediated transformation', means that it is not surprising that there is a huge focus within transhumanism on the nature and possible limits of the 'self' –

[45] More, 'The Philosophy of Transhumanism', p. 5.
[46] More, 'The Philosophy of Transhumanism', p. 6.
[47] More, 'The Philosophy of Transhumanism', p. 7. This is hugely significant in terms of whether or not transhumanism succeeds in escaping the charge of mind/body dualism which is consistently levelled at it.
[48] More, 'The Philosophy of Transhumanism', p. 7.

this finds natural expression in the notion of transforming the self *through* technology.[49] Thus, for many transhumanists it is self-evident that the 'boundaries of the self are unclear and may not be limited to the location of a single body'.[50]

This notion of a changing and technologically mediated sense of self intersects with the concept of the 'world as simulation' – an idea that is of particular relevance to transhumanist philosophy, for despite living in the physical world, much human interaction takes place in cyber space. Our virtual interaction is thus accompanied by the assumption that the amount of time we spend online will only increase until 'simulated' environments', or 'real' environments with 'virtual overlays', will become the default space where the human condition is experienced.[51]

Philosopher Nick Bostrom posits that 'the human desire to acquire new capacities is as ancient as our species', we have 'always sought to expand the boundaries of our existence – be it socially, geographically, or mentally'.[52] Bostrom says that evidence for this anthropological principle of striving to fulfil a deficit of unrealised possibility, and our attempt to overcome the constraints of our environment and our biological finiteness, is to be found in the archaeological record – specifically in the findings from prehistoric burial ceremonies. He holds that the significance of this desire, and its existence as a fundamental and persisting theme of human preoccupation, is highlighted by the fact that it is a central and defining theme of the Sumerian *Epic of Gilgamesh* – generally considered to be the oldest known example of literature.[53]

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[49] More, 'The Philosophy of Transhumanism', p. 7.
[50] More, 'The Philosophy of Transhumanism', p. 7. As a result of the fact that technology seems to be developing and moving forward constantly, and the way that our everyday personal technologies are increasingly information-based, we have begun to store more of our memories 'externally', while at the same time developing and extending our sense of self through the creation of online profiles and virtual 'avatars'.
[51] More, 'The Philosophy of Transhumanism', p. 8.
[52] Bostrom, *A History of Transhumanist Though*t, pp. 2–3. It should be noted that Bostrom has recently distanced himself a little from transhumanism as a 'movement'.
[53] Bostrom, *A History of Transhumanist Though*t, pp. 2–3. See, *The Epic of Gilgamesh* <http://www.ancienttexts.org/library/mesopotamian/gilgamesh/> [accessed 24th November 2020]. In a similar

Bostrom goes on to show how this 'quest to transcend our natural confines', is found in the Greek tradition (though tempered by the concept of *hubris* which is exemplified in the cautionary tale of Daedalus), was the subject of medieval alchemy, and found very specific refinement within Renaissance humanism, where it was articulated in Giovanni Pico della Mirandola's *Oration on the Dignity of Man (1486)* – an exhortation of the idea that 'man does not have a ready-made form and is responsible for shaping himself'.[54]

Pico, along with the European alchemists – whose search for the philosopher's stone and the elixir of life is considered to exhibit similar characteristics as later transhumanist thought – are recognised and acknowledged as 'proto-transhumanists'. But historically speaking, a full philosophical articulation of transhumanism – and the beginnings of the possible realisation of transhumanist goals – could not even begin until the development and application of the scientific method. Hence, Francis Bacon is celebrated as a precursor and influence. According to More, it was Bacon's promotion and practical use of inductive reasoning that 'helped Western thought turn away from Scholastic and Platonic approaches and toward empirical methods'.[55] More states: 'Bacon's work first set out the essence of the scientific method. That conceptual framework is, of course, utterly central to the goals of transhumanism'.[56]

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way, Seedhouse holds that 'the urge to tamper with nature is pervasive among humans'. Seedhouse, *Beyond Human*, p. 4.

[54] Bostrom, *A History of Transhumanist Though*t, pp. 1–2. It was in the Renaissance that the term 'humanists' was first used as a self-identifying moniker by those who saw themselves continuing the classical Greek influenced Roman tradition of *studia humanitatis*. Of note is the fact that these self-defined Renaissance humanists did not aim at presenting some kind of secular alternative to the established religious worldview. Rather, the aim was to break free from the 'dogma' of the Dark Ages and challenge the reduced status the image of the human being endured within that historical period when compared to the aspirational heights it once enjoyed in the classical world. See, Nimrod Aloni, *Enhancing Humanity: The Philosophical Foundations of Humanistic Education* (Dordrecht: Springer, 2007), p. 27.

[55] More, 'The Philosophy Of Transhumanism', pp. 8–9.

[56] Max More, 'True Transhumanism: A Reply to Don Ihde', in *H+–: Transhumanism and Its Critics*, ed. by Gregory R. Hansell and William Grassie (Philadelphia: Metanexus Institute, 2011), pp. 136–146, (p. 138). More goes as far as to suggest that transhumanists should contemplate adopting the year of publication of Bacon's *Novum Organum* (1620) as year zero in a new calendar that would replace the 'terribly outdated' Christian calendar. For a breakdown of Bacon's 'inductive method' see, Florian Cajori, 'The Baconian Method of Scientific Research', *The Scientific Monthly*, 20/1 (1925), 85–91.

Similarly, Bostrom points out that Bacon's *Novum Organum* (1620), is often seen to represent the start of the Age of the Enlightenment. Also, of particular relevance for transhumanism is the fact that Bacon's 'scientific methodology' – which was based on 'empirical investigation rather than a-priori reasoning' – established the use of 'science to achieve mastery over nature in order to improve the living condition of human beings'.[57]

As well as having its roots firmly in Enlightenment thought, transhumanism has also been 'filtered through an evolutionary perspective' – More states that a significant factor in the development of transhumanism was the collapse of any 'traditional' idea of a fixed human nature when Darwin's *On the Origin of the Species* (1859) was published.[58] The re-appraisal of human nature that accompanied the Darwinian Revolution meant that the 'unique status' of the human being was challenged on a fundamental level. Our conceptual makeup was irreparably fragmented as Darwin revealed us to be just 'one step along an evolutionary path of development'.[59]

According to More, this reassessment of the human nature was the theoretical seed from which transhumanism was nurtured and from which grew the idea that the human being is merely a 'part of a spectrum of biological organisms and possible non-biological organisms of the future'.[60] Once the implications of evolution were combined with the recognition that humans – as physical beings – could be 'understood' and fully explained through science, the notion that human nature might be 'deliberately changed' began to develop.[61] Hence, as Bostrom states, once *Origin of the Species* was published, it became progressively more

[57] Bostrom, *A History of Transhumanism Thought*, p. 2. This methodological principle, combined with 'the heritage from the Renaissance', and the thought of Enlightenment thinkers such as Newton, Hobbes, Locke, Kant and the Marquis de Condorcet, combined to form the basis of what Bostrom calls 'rational humanism' – within which he says the roots of transhumanism are to be found.[57] He characterises both rational humanism and transhumanism in terms of their emphasis on 'empirical science and critical reason – rather than revelation and religious authority – as ways of learning about the natural world and our place within it and of providing a grounding for morality'.

[58] More, 'The Philosophy of Transhumanism', p. 3.

[59] More, 'The Philosophy of Transhumanism', p. 3.

[60] More, 'The Philosophy of Transhumanism', p. 3.

[61] More, 'The Philosophy of Transhumanism', p. 3.

reasonable to view the 'current version of humanity not as the endpoint of evolution but rather as an early phase'.[62] As such, the foundations were laid for the idea that human nature could be engineered and become the object of conscious and deliberate self-design.

Historically, More shows that the term transhumanism has been coined a number of times – and not necessarily always with the same meaning. He identifies the first tentative use of the term in Dante's *Divine Comedy* (1308-1320) where the word '*transumanare*' is used to describe a spiritual or religious process of passing 'beyond the human'.[63] Similarly, in his play, *The Cocktail Party* (1935), T.S. Eliot uses the word 'transhumanized' to refer to a process of 'illumination', rather than some form of technological transformation.[64] More goes on to acknowledge that Julian Huxley's use of the term 'transhumanism' in his book *New Bottles for New Wine* (1957), comes closer to our current understanding, but crucially for Huxley, the concept entails 'man remaining man', despite the possibility of our 'transcending' human nature – not just individually – but also as a species.[65] Closer again to our contemporary understanding is F.M. Esfandiary's – a.k.a. FM-2030 – use of the term 'transhuman' to describe a process of transition from human to post-human.[66] Although Esfandiary did not explicitly label himself as such, he has been described by some as the 'father of modern transhumanism'.[67] Ultimately, it was More himself – in his essay 'Transhumanism: Toward a Futurist Philosophy' – who first introduced the term as we know and understand it today; with his intention being – as he puts it himself – 'explicitly to label a deliberately transhumanist philosophy'.[68]

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[62] Bostrom, *A History of Transhumanist Thought*, p. 3.
[63] More, 'The Philosophy of Transhumanism', p. 8.
[64] More, 'The Philosophy of Transhumanism', p. 8.
[65] More, 'The Philosophy of Transhumanism', p. 8.
[66] More, 'The Philosophy of Transhumanism', p. 8.
[67] Ry Marcattilio Mccracken, 'The Frozen Father of Modern Transhumanism', *Vice* <https://www.vice.com/en/article/4x3kjj/the-frozen-father-of-moden-transhumanism>[accessed 14th January 2021].
[68] More, 'The Philosophy of Transhumanism', pp. 8–9.

Taking a more critical perspective, philosopher and historian Hava Tirosh-Samuelson traces the origin of the term to Huxley. The grandson of 'Darwin's Bulldog' – Thomas Henry Huxley – Julian Huxley developed a concept of 'evolutionary humanism', that Tirosh-Samuelson sees as the first proper attempt to grasp and articulate the defining characteristic of a then new and emerging way of approaching the issue of human nature. Huxley's attempt to apprehend and express human nature in scientific/evolutionary terms was intimately coupled with the idea of consciously directing human destiny. Huxley is recognised as playing a key role in the establishment of the neo-Darwinian synthesis, and Tirosh-Samuelson accurately describes him as one of the 'prophets of transhumanism'.[69] She states: 'Huxley can be seen as the as the inspiration for a cultural and intellectual movement that calls for the gradual transition from (biological) humanism to (mechanical) posthumanism and the prefix "trans" in the term "transhumanism" is simply a shorthand for "transition"'.[70]

For Tirosh-Samuelson, it is currently self-evident that technology is transforming human life at a greater rate than any previous historical juncture, and that the dynamic of Technological Convergence has resulted in the conception of the human being as a 'design project' within which new technologies mean new 'cognitive tools' and conceptual possibilities that can be applied to the issue of human nature – thus, there is a resultant and growing confidence in our ability to wrestle control of the evolutionary process from nature, and place it firmly under the command of human intention and design.[71]

Ultimately, Tirosh-Samuelson sees that it was Huxley's 'evolutionary' or 'scientific' humanism which provided the foundations for transhumanism as an 'ideological movement'

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[69] Hava Tirosh-Samuelson, 'Engaging Transhumanism', in *H+–: Transhumanism and Its Critics*, pp. 1–3. As an evolutionary biologist and zoologist, Huxley considered human nature itself to be evolving and was also an advocate of the use of eugenic practices to control and direct the evolving human condition. His ideas can be seen within the context of a broader intellectual background which conceived of the human species – and our collective aspirations for the future – as being inherently and progressively transformed and improved by science. For Huxley, it was self-evident that science was in the process of assuming the role – previously held by religion – as the dominant social force of the time.

[70] Tirosh-Samuelson, 'Religion', in *Post- and Transhumanism*: *An Introduction*, ed. by Robert Ranisch and Stefan Lorenz Sorgner (Frankfurt: Peter Lang, 2014), pp. 49–71 (p. 49).

[71] Tirosh-Samuelson, 'Engaging Transhumanism', pp. 1–3.

as it laid the theoretical underpinnings of its defining theme – an ardent belief in the essential benefits of 'the application of science and technology to the amelioration of the human condition'.[72] In time, well established figures within the scientific community such as Ray Kurzweil, Marvin Minsky, Frank P. Tipler, Hans Moravec, and Eric Drexler began to offer various techno-utopian and techno-optimistic visions of the future. Taken together, these thinkers – among others – provided a coherent and recognisable body of ideas that could accurately be grouped together under the label of transhumanism. The concept of the 'Technological Singularity' is one such idea.[73]

The above is summed up well by transhumanist Simon Young who serves us well as a representative of transhumanism's core ideals. Young's position can be taken as a template which outlines the main aspects of transhumanism as a philosophy. He offers a simple and precise definition of transhumanism: 'the belief in overcoming human limitations through reason, science, and technology'.[74] For Young, transhumanism seeks liberation from the 'suffering imposed upon us by our biological condition', and it is primarily concerned with searching for a way to 'overcome the mental and physical limitations that restrict our freedom', where technology and science offer 'the only serious possibility of succeeding'.[75] The context is clear and straightforward for Young – the goal of human life is survival,

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[72] Tirosh-Samuelson, 'Religion', p. 49.
[73] Tirosh-Samuelson, 'Engaging Transhumanism', pp. 1–3. The idea that science could be harnessed to enhance the human being and improve the human condition was also prevalent in the 1940's within the field of cybernetics, which at the time, was being developed by a combination of mathematicians and early computer scientists. One of their central concerns was to show that cognition was possible without a 'subject', and this line of theorising about human consciousness, and the processes of cognition, from a strictly scientific and technologically informed standpoint, was continued in the 1960's through the work of science fiction writers whose futurist thinking opened wide the conceptual imaginings of transhumanist thought at a time when advances in biotechnology, neuroscience, and nanotechnology and artificial intelligence began to be felt – both in a cultural and scientific sense.
[74] Young, *Designer Evolution*, p. 1. Young doesn't comment here on the fact that evolving beyond the limits of the human condition will probably be a speciation event which would probably not entail the survival of our species. It appears he defines humanity in terms of our 'mind' which he clearly differentiates from our physical, finite body.
[75] Young, *Designer Evolution*, p. 1.

hence, he sees it as an 'outrage that the mind should die because the body is programmed to self-destruct' – to survive we must evolve beyond the 'limitations of the human condition'.[76]

Standing in stark contrast to the reality of 'human' limits that are set by our biology, 'transhuman limits' – conceived as they are in terms of reason, science, and technology – 'will be set only by our imagination and ingenuity'.[77] It is in this spirit that Young presents his 'Transhumanist Manifesto', an argument for the advancement of biotechnology, or 'Superbiology' as he calls it, which he says holds the key to curing disease, enhancing human capabilities and experiences, and solving the problem of death. This idea is also meant as strong critique of what he calls the 'bio-Luddites' – those who oppose any such technological interference with human nature. Young is also attempting to address what he sees as an existing theoretical dearth – hence, his aim is to formulate transhumanism as a philosophy capable of grounding 'a popular, benevolent, rational system of ethics for a scientific age'.[78]

This conception of transhumanism is Young's response to the failure of Twentieth Century philosophy to find an alternative to 'religious' ethics. As such, transhumanism can act as a counter to an existing post-modern 'metaphysical and ethical vacuum' by focusing on three 'fundamental' philosophical questions: What is the nature of the world? What is the nature of the human being? What is the best way to live?[79] The answers given by Young to all three questions are, in a fundamental way, shaped by the idea of evolution: The world is understood as 'a process of evolutionary complexification'; human beings are 'conscious aspects of evolutionary complexification in nature' whose instinct drives are 'imbued with the innate Will to Evolve' toward survival, well-being, and the expansion of our natural

[76] Young, *Designer Evolution*, p. 1.
[77] Young, *Designer Evolution*, p. 1.
[78] Young, *Designer Evolution*, pp. 3–4.
[79] Young, *Designer Evolution*, p. 4. This narrowing down of the core philosophical concerns of the contemporary age clearly aligns with Scheler's focus on the nature of the human being and our place in the cosmos. It also highlights some of the points of intersection between transhumanism and Philosophical Anthropology.

capabilities; human purpose, direction, and meaning are best achieved by 'acting in harmony with the essential nature of the evolutionary process'.[80]

Not surprisingly, Young defines humanity as a species 'so weak it defines its own condition as tragic', while at the same time he exhorts us to think 'beyond the human condition' – not about what humanity is, but what we could be.[81] From this perspective, humans are 'slaves of a three-part genetic programme', a programme which has us shackled to a biological cycle of survival, reproduction, and decay.[82] Despite this, and – constituted as we are, both through and by, evolutionary complexification – we are evolving into a species capable of consciously directing its evolutionary course. This new species that *homo sapiens* are evolving into? – *Homo-cyberneticus*.[83]

The idea that the human future is to be a cybernetic one is a common 'transhumanist' theme that is explored across a wide range of disciplines by a wide range of academics, scholars, scientists and engineers. Professor of engineering Woodrow Barfield's book *Cyber-Humans: Our Future With Machines*, is an attempt by the author to provide a sketch of 'the landscape in human enhancement technology and artificial intelligence'.[84] Barfield holds that 'cyborg' enhancement technology is allowing us to move beyond 'the human capabilities

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[80] Young, *Designer Evolution*, pp. 4–5. Not everyone sees it as accurate to describe transhumanism in terms of 'controlled' or 'directed' evolution. Andrew Askland claims it is a mistake to describe it as such. His objection is based on the idea that 'most theoretical accounts' hold that evolution is 'a-teleological' and transhumanism is by definition 'teleological'. See Andrew Askland, 'The Misnomer of Transhumanism as Directed Evolution', *International Journal of Emerging Technologies and Society*, 9/1 (2011), 71–78.

[81] Young, *Designer Evolution*, p. 16. Young's view of transhumanism sees it as straddling a cross-section of human concerns – for him, transhumanism operates on a variety of levels as neoromanticism, futurism, evolutionary ethics, religion, and as metameme, all of which he ultimately sees as responses to the 'affliction' of the human condition.

[82] Young, *Designer Evolution*, p. 16.

[83] Young, *Designer Evolution*, p. 16.

[84] Barfield, *Cyber-Humans*, p. 2. Barfield has an engineering background: his area of research was the design of 'wearable computing and sensor technology that was fully integrated with the human body'. Barfield's aim in the book is to serve 'an up-to-date summary of recent advances in genetics, prosthesis, and brain-computer interfaces', and 'to discuss current efforts to create artificially intelligent machines that learn and solve problems in ways not predicted by humans'. He also refers to the research of Professor Theodore Berger and his work on neuroprosthetic devices <https://www.worldbrainmapping.org/About/Theodore-Berger> [accessed 30th November 2020]. In a similar vein see also, Kevin Warwick, referred to as 'the world's first cyborg' <http://www.kevinwarwick.com/> [accessed 30th November 2020] <https://www.youtube.com/watch?v=GLq7edATaFo> [accessed 30th November 2020].

provided by our evolutionary history and coded in our genes' – he states clearly that he believes it is 'our future to merge with artificially intelligent machines'.[85]

For Barfield, it is a simple fact that we are becoming more and more 'machine like', while at the same time machines are becoming more and more like us.[86] He says that this will be the 'logical outcome of technological advancements in robotics, artificial intelligence, prosthesis, and brain implants'.[87] He concludes that this coming 'merger between humans and machines' will not necessarily be 'a conscious decision made by humanity, but will be a gradual process, and inevitable'.[88] What was science fiction twenty years ago is now mainstream science according to Barfield, and he says that 'by the end of the twenty-first century, advances in science and engineering will have led to such significant changes in the structure of our bodies that the very nature of what it means to be human will be questioned'.[89]

He goes on to say that the increased use of prosthesis and implants in the future will be complimented by an increase in artificial intelligence in the fields of computers and robotics. This means that more and more sophisticated brain-computer interfaces will emerge, and rich and sophisticated 'virtual' realities – significantly more 'realistic and immersive' than they are at present – will provide the setting for many activities that currently only occur in the 'real' world.[90] Ultimately, advancements in artificial intelligence,

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[85] Barfield, *Cyber-Humans*, p.1. This scenario will entail a fundamental shift in evolution where the human being becomes more and more integrated with our technology, as we become increasingly 'transformed from a biological being into a technology-based being, evolving under the laws of technology, more so than under the laws of biological evolution'.
[86] Barfield, *Cyber-Humans*, p.1.
[87] Barfield, *Cyber-Humans*, p.1.
[88] Barfield, *Cyber-Humans*, p.1.
[89] Barfield, *Cyber-Humans*, p. 2. Barfield offers some working definitions that can be employed throughout this thesis: **Cyborg**: a cyborg is a 'human-machine combination that has certain physiological and intellectual process aided or controlled by mechanical, electronic, or computational devices'. The term, a combination of cybernetics and organism, was originally coined by Manfred Clynes in 1960. M.E. Clynes and N.S. Kline, 'Cyborgs and Space', *Astronautics*, 26/27 (74–75). <http://www.guicolandia.net/files/expansao/Cyborgs_Space.pdf> [accessed 30th November 2020]. **Transhuman**: an evolutionary 'transition' from human to post-human. **Post-human**: A hypothetical future being who was at some previous stage human in its lifetime or the lifetime of its immediate and direct ancestors.
[90] Barfield, *Cyber-Humans*, pp. 8–18.

cybernetics, and virtual reality will mean that sooner rather than later the question of where the human being ends and the machine begins will be a pressing question for all of humanity.[91]

Thus, we have a clear outline of a vision of post-biological evolution. An explicit attempt to theorise the intensification of the human/technology relation, and express both the conceptual and practical point of interpenetration between the human and the machine – the 'interface' – in evolutionary terms.[92] This is clearly a two-way relation: consider Young's assertion that the 'construction of machines based on biological principles – cybernetics – will allow us to further enhance our bodies and minds, as worn-out organs are increasingly replaced by artificial equivalents of superior performance, and neural implants begin to blur the distinction between human and computer brains'.[93] The interface between the human and the machine works both ways. As we shall see later, this is an important point to take note of.

The obvious question is, where will these developments lead? The debate – framed so obviously as it is in terms of evolution – is on the most basic level about speciation, i.e., the emergence, within evolution, of a new species. That new species is the post-human – in whatever form it may take. Barfield holds that the evidence from current research shows that we are already well on the way to the creation of machines with greater than human intelligence.[94] He predicts that this will have occurred 'by the middle, and almost certainly,

[91] Barfield, *Cyber-Humans*, pp. 6–20. Barfield shows how cybernetics is 'concerned with communications and control systems involving living organisms and machines' – of particular interest is the fact that the 'artificial parts used to create cyborgs do more than replace the main functionality of an organ or limb, they add to, enhance, or replace the computational abilities of biological systems'. He says that – technically speaking – there are many cyborgs already in existence, a person with a pacemaker would be considered a cyborg under these criterion as they would be unable to survive without the implant.

[92] See, Dharmendra S. Modha, 'Introducing a Brain-inspired Computer: TrueNorth's Neurons to Revolutionize System Architecture', *IBM* <https://www.research.ibm.com/articles/brain-chip.shtml> [accessed 18th February 2021]; William Weir, 'New Research Creates a Computer Chip which Emulates Human Cognition', *Yale News* <https://news.yale.edu/2017/11/28/new-research-creates-computer-chip-emulates-human-cognition> [accessed 18th February 2021].

[93] Young, *Designer Evolution*, p. 7.

[94] See, Nick Bostrom, *Superintelligence*, (Oxford: Oxford University Pres, 2014); James Barrat, *Our Final Invention: Artificial Intelligence and the End of the Human Era*, (New York: Thomas Dunne Books, 2013), pp. 56–57. Barrat gives a list of some relevant contenders for the development of Artificial General Intelligence (AGI); IBM Synapse Project <https://www.research.ibm.com/artificial-intelligence/vision/> [accessed 18th

the end of the twenty-first century', and he further postulates that, as 'technology advances, new forms of humans may evolve from different techniques to enhance human physiology, anatomy, and cognitive structures' which will potentially lead to a 'continuum of intelligent beings from human to machine'.[95]

The continuum Barfield sketches out is the transition from biological to post-biological evolution. The inevitability and imminence of this transition is a core tenet of transhumanism. This is an idea that it is characterised by two predominant themes; the *persistence of transcendent themes* within a post-Darwinian world-view supposedly purged of all notions of immateriality, and the attempt to control, replicate, and *harness the dynamic processes that define living systems for engineering purposes*. Both of these themes concern the notion of extending life and the possibility of surviving death – both on a personal level, and on a collective level. Thus, they both converge within transhumanism – practically and theoretically – upon the focal point of the human being. This is not surprising. For, as far as know, the human being is the first species to attempt to assume control of – and *engineer* – biological evolution toward such an end.

1.1.2 POST-BIOLOGICAL EVOLUTION AND TECHNOLOGICAL CONVERGENCE

February 2021]; Blue Brain Project < https://www.epfl.ch/research/domains/bluebrain/> [accessed 18th February 2021]; DeepMind <https://deepmind.com/> and AlphaGo <https://deepmind.com/research/case-studies/alphago-the-story-so-far> [accessed 18th February 2021].

95 Barfield, *Cyber-Humans*, p. 8. Barfield sketches a continuum 'progressing from human, bionic human, cyborg, android, robot, software bot, and machine.' The idea of a 'symbiotic partnership' between human and computer is not new. In 1960 J.C.R Licklider hypothesised a 'man-computer symbiosis' as an expected future 'development in cooperative interaction between men and electronic computers', which he imagined would 'involve very close coupling between the human and the electronic members of the partnership', with the main aim being to 'let computers facilitate formulative thinking as they now facilitate the solution of formulated problems' and to 'enable men and computers to cooperate in making decisions and controlling complex situations without inflexible dependence on predetermined programmes'. J.C.R. Lickler, 'Man-Computer Symbiosis', *IRE Transactions on Human Factors in Electronics*, 1 (1960), 4–11 <https://groups.csail.mit.edu/medg/people/psz/Licklider.html> [accessed 1st December 2020]. Similarly, in 1965 Ivan Edward Sutherland – one of the so-called godfathers of computer graphics – published an essay on augmented reality entitled 'The Ultimate Display', within which he postulates the possibilities of humans and computers co-constituting reality not restricted by the limits and laws of the physical world. Ivan Edward Sutherland, 'The Ultimate Display', *Proceedings of the IFIPS Congress*, 65/2 (1965), 506–508.

The notion of 'controlled' or 'designer' evolution is structured according to what can be understood to be a dual and simultaneous trajectory of human and machine evolution – the progression of which bends towards some future historical merger beyond which the process evolution takes places primarily within the mechanical – rather than the biological – realm.. That future merger is encapsulated by the idea of the Technological Singularity, and the logic that underpins the overall dynamic is derived from the concept of Technological Convergence.

Technological Convergence is a concept which pertains to the tendency for different technologies to converge, coalesce, and come to operate, as unified and networked technical amalgamations. As a theoretical device, the concept of Technological Convergence is employed within transhumanist thought to describe and characterise the unifying of biological and machine evolution. This notion of technological convergence is generally labelled NBIC Convergence to identify the constituent elements of nanotechnology, biotechnology, information technology, and cognitive science, i.e., the technologies that are considered to be in convergence. The idea behind the tendency for technologies to converge can be understood as a constituent part of the bigger concept of historical Convergence.

The broader concept of historical Convergence describes the propensity for diverse fields of study and technological progress and development to converge towards a common or shared goal or outcome. Accordingly, it is assumed by the theory of Convergence that various scientific disciplines – despite any disparity in initial starting points or areas of interest – are in actuality bound together in a process of gradually coming together in such a way that they are beginning to cohere around a single interlocking and coherent narrative. Thus, all scientific endeavour can be understood as constituent and interacting parts of an all-encompassing historical dynamic of inherent synthesis. This idea of synthesis – which lies at the heart of Convergence – understands that all the diverse areas of scientific and technological development can be viewed together as presenting a single unified timeline. A timeline which describes all the major scientific discoveries that have ever been made and which is a process that has been under way for over 150 years.

The theory of Convergence holds that this timeline contains an intelligible, coherent and emergent order which characterises the nature and success of scientific understanding itself. The theory also holds that the knowledge that derives from science will extend its reach in the years ahead into fields not traditionally associated with science, thus helping to shape and influence the research of those fields, and adding further to the overall process.[96]

According to journalist and science author Peter Watson, Convergence shows that – whether fundamental or otherwise – all scientific discoveries and technological developments dovetail together conceptually within the master narrative of Big History, and its conceptual point of origin, the Big Bang. Watson posits that when the concept of the conservation of energy was first articulated it brought together then current discoveries in the science of heat, optics, magnetism and chemistry, while – almost simultaneously – Darwin's theory of evolution brought together astronomy, geology, palaeontology, anthropology, geography and biology. For Watson, this is the first great coming together of Convergence, and he sees this as the most momentous breakthrough in the history of science. A momentous historical juncture that was an articulation of our realisation that one form of science logically 'supports' and inherently connects with another.[97]

Importantly, Watson understands this as signifying the birth of a new intellectual order. The idea that science has some inherent – and from that point on – *observable* unity and direction, has since been behind the modern progression of scientific discovery and technological innovation. Watson states that order – in particularly *spontaneous order* – is now the major theme of Western science. As a result of this, the emergent order that

[96] Peter Watson, *Convergence* (London: Simon & Schuster UK Ltd., 2016).
[97] Watson, *Convergence*, pp. xxvi–xxviii.

Convergence is producing is so strong and so coherent that science – as a form of knowledge – is beginning to not only invade other areas and other systems of knowledge that have been traditionally separate from it (and even opposed to its principles and methods), but it also is beginning to 'explain', as well as 'advance' them.[98]

Thus, if we take the idea of Technological Convergence to be part of this larger phenomenon, it reveals the potential scope of its influence could be profoundly significant. By implication, transhumanism might potentially be situated to be hugely influential with respect to the future historical developments of a whole array of fields – and not just those that are associated with science and technology. Importantly, what this reveals is that while the ideas and aspirations of transhumanism currently hover on the fringes of the mainstream science, some of its most basic insights nevertheless pertain to what appear to be fundamental facts about the world. As such, its philosophy has the potential to become – in the not too distant future – more and more accepted, by more and more people, across more and more disciplines.

If Watson is correct about Convergence, then the idea of controlled or designer evolution will move increasingly into the mainstream, and the dynamic of Technological Convergence will only serve to inspire the imagination in terms of the further integration of our technology with our biology. As we have already seen, technological developments are already being experienced as a reshaping of the human cognitive map – both in terms of what we imagine to be possible, and in terms of our understanding of human nature. For some commentators, Technological Convergence will simply mean that – in a mundane sense – more intelligent, more creative, and healthier humans will progressively emerge as time goes on.[99]

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[98] Watson, *Convergence*, pp. xv–xxxi.
[99] Priya Venkatesan, '"Nanoselves": NBIC and the Culture of Convergence', *Bulletin of Science Technology and Society,* 30/2 (2010), 119–129 (p. 120).

For transhumanism, this represents technology's 'infiltration' of the organic – it is this which shapes and moulds the emerging 'cyborg identity' highlighted in the previous section. Such an infiltration of the organic by the technological breaks down any pre-existing barriers between the real and the virtual, the natural and the artificial, the organic and the synthetic – and in doing so, reveals us to already be 'fabricated' beings, enmeshed in a network of high-tech information-based culture. This situation is persistently interpreted as an observable indication that evolution is entering a new phase, i.e., it is persistently interpreted as an indication of the *inevitability* of 'biological' evolution coming to a dead end.[100]

As a result, we have the concept of post-biological evolution – the desirability, inevitability, and imminence of an evolutionary transition from the biological realm to the technological realm. Obviously, this is a core tenet of transhumanism. On the most basic of levels, transhumanism is a philosophy of the human future – it attempts to offer a guide to the direction that our evolutionary trajectory *might* take. Thus, it is by necessity speculative – its philosophy consists of extrapolating from the success and achievements of current and past technological developments, and then legitimising these extrapolations through recourse to the 'fact' of evolution and the 'fact' of our biology.

As a philosophy of the human future, transhumanism is an amalgamation of the logic of evolution and the metaphor of mechanism, and it is from this that we get the idea of 'designer' or 'controlled' evolution, i.e., technology will allow us to engineer both the human condition, and the human future, and transcend the limits of our biological form. From its initial premise to its final conclusion we can – and should – accept the following: evolution is a fact; what has evolved will continue to evolve; technological developments promise greater and greater control over the physical mechanisms that underpin the evolutionary process; evolution will become a technologically mediated post-biological process.

[100] Seedhouse, *Beyond Human*, p. 129.

In in this manner that aerospace scientist and scholar Eric Seedhouse posits that the 'human species represents not the end of human evolution but its beginning', and that we are only just beginning 'to ride the wave of genetically engineered human redesign'.[101] This means that genetic engineering will – according to Seedhouse – mean that 'deliberate selection may replace natural selection as the driving force for species change'.[102] He states that the 'scientific march of genetic engineering' is well under way and – when looking into an unknown and uncertain future – the one thing we can be sure of is 'that all this genetic tampering will raise new moral issues as the ethicists try desperately to catch up' with techno-scientific developments such as 'human cloning', 'genetically enhanced humans', and eventually 'the creation of artificial life-forms'.[103]

Seedhouse acknowledges that such a step might seem at the moment a little far-fetched, but states that even if the future is 'impossible to predict, that's not going to stop people trying'.[104] He says that 'the urge to tamper with nature is pervasive among humans', and we should recognise that 'it is *human nature* to modify oneself' – something we do all the time in the name of individualism and how we self-identify.[105]

Astronomer, astrophysicist, and philosopher Milan M. Ćirković has stated that the 'idea of postbiological evolution has recently emerged as mainstream – or perhaps *the* mainstream – thinking about the future of humanity'.[106] He references amongst others, Ray Kurzweil, Nick Bostrom, Hans Moravec, James Hughes – all associated to some degree or other with transhumanism. Ćirković posits that, when one considers how physically, psychologically, and ecologically drastic and far-reaching the effects of our cultural and technological evolution have been, the idea of post-biological evolution can be seen as 'quite

[101] Seedhouse, *Beyond Human,* pp. 128–130.
[102] Seedhouse, *Beyond Human,* p. 19.
[103] Seedhouse, *Beyond Human,* p. 139.
[104] Seedhouse, *Beyond Human*, p. 139.
[105] Seedhouse, *Beyond Human*, p. 4.
[106] Milan M. Ćirković, 'Post-biological evolution?', *Futures* 99 (2018), 28–35 (p. 28).

a reasonable and expected development'.[107] Human history – since the appearance of our earliest civilisations – has seen humanity 'modifying both its physical environment and itself in an endless series of complex feedback loops', and this 'innovation + modification process', has been accelerating in recent years – a fact that, according to Ćirković, has long been recognised by transhumanists.[108] As engineer, economist, and futurist José Cordeiro puts it: 'In the beginning of the twenty-first century, it is now clear than [sic] humans are not the end of evolution, but rather the beginning of a conscious and technological evolution'.[109]

As a result, the 'potentials of the near-future transition into an entirely different evolutionary regime', have become the 'focus of research in many quarters' according to Ćirković.[110] He interprets the term 'post-biological' as most often referring to NBIC Convergence. Although he recognises that this is somewhat of an oversimplification, it is still accurate enough to say that, in general, Technological Convergence aims toward the enhancement and improvement of human 'performance' which, broadly speaking, can be said to equate to the basic idea of post-biological evolution.[111]

The question arises then, what differentiates post-biological evolution from a 'Darwinian' understanding of evolution? Ćirković holds that it will be the 'mechanisms' of selection. Evolution characterised by 'blind Darwinian processes' of natural selection and random variation, will be contrasted with post-biological evolution because post-biological evolution will likely turn out to be a 'Lamarckian' process, i.e., a process where 'intelligent agents consciously and deliberately choose their own evolutionary course'.[112] In other words, evolution by *design*.

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[107] Ćirković, 'Post-biological evolution?', p. 28.
[108] Ćirković, 'Post-biological evolution?', p. 28.
[109] José Cordeiro, 'The Boundaries of the Human: From Humanism to Transhumanism', *World Future Review*, 6/3 (2014), 231–239, (p. 237).
[110] Ćirković, 'Post-biological evolution?', p. 28.
[111] Ćirković, 'Post-biological evolution?', pp. 28–29.
[112] Ćirković, 'Post-biological evolution?', p. 29. The notion of post-biological evolution that Ćirković deems most accurate, is one that sees the 'postbiological domain as clearly bound by some of its emerging properties' – this assumes that 'classic Darwinian selectional processes will continue to be in play among cybernetic humans

Ćirković asserts that human beings have, for millennia, 'exercised *some* degree of control over evolution', but biotechnological developments can be expected to one day offer '*complete* (at least in principle) control over all expressed characters in any individual phenotype' – the result of this being that 'the entire evolution of our species will become an intentional and controlled process' (original emphasis).[113] The idea is that the other constituent elements of NBIC convergence will combine with the increased level of precision and control of biotechnology and come together as an amalgamation of 'multiple strands of development in the process of *substituting* natural processes for artificial, designed and intentional alternatives' (original emphasis).[114]

Interestingly, Ćirković sees all this within the context of Big History which – in its overview of history since the Big Bang to present – has observed an increase of local complexity in the course of cosmological history.[115] It has also observed a 'shift in the material substrate within which this complexity is manifested'.[116] While the evidence for this 'shift in substrate' may be obvious when looking at 'early cosmological history', Ćirković also states that there is 'no reason to expect the change to stop at the known substrate of proteins and nucleic acids' – leading him to conclude that the perspective of evolution given by Big History must intrinsically include an account of post-biological evolution.[117]

What is significant about this is the fact that evolution is understood as single process that is both biological *and* cosmological. Ćirković's conclusion aligns with Kurzweil's evolutionary theory and, I would argue, it is also compatible with Scheler's model of evolution. It correctly focuses our attention on the fact that everything we know seems to

or within a digital substrate', but ultimately post-biological evolution will consist of 'transferring previously biological processes like cognition or procreation into the machine domain' – it is this which will allow us to exercise 'complete intentional control over evolution' as the precision we exercise over the machine realm is brought to bear on the biological realm.

[113] Ćirković, 'Post-biological evolution?', p. 29.
[114] Ćirković, 'Post-biological evolution?', p. 29.
[115] Ćirković, 'Post-biological evolution?', p. 29.
[116] Ćirković, 'Post-biological evolution?', p. 29.
[117] Ćirković, 'Post-biological evolution?', pp. 29–30.

indicate that organic life has somehow ‘emerged’ from inorganic matter, and consciousness has ‘emerged’ from or with biological life – this would seem to indicate the potentially open-ended nature of cosmological evolution as well indicating the potential for variation with respect to the direction biological evolution might take as a constituent part of it.

This would also suggest that we might, at this point, be willing to lend a degree of philosophical validity to the basic premise of transhumanism. At the very least, the above serves to outline and bring into relief the most pertinent philosophical issue of post-biological evolution – how mind and matter are related. Ultimately, what is in question is whether or not biological life can be explained in strictly physical terms, and whether or not consciousness is irreducible – can it be reduced to simply a function of biological life, and if so, can those functions replicated or reproduced non-biologically?

When considered from the perspective of Big History, evolution is both cosmological and biological – stretching from the Big Bang to (currently) the human being. From this perspective it makes sense to include technology as a vital component of human evolution – which itself must be understood as both a biological *and* a cosmological phenomenon. This implies that the basic premise of transhumanism may not be as radical as it might initially seem. If we take human biological evolution to be a constituent part of cosmological evolution, then the idea of a ‘shift in substrate’ from the organic to the synthetic shouldn’t be too far removed – in principle – from the idea that the inert matter of the cosmos somehow gave rise to, or facilitated the emergence of organic life and consciousness in the first place.

This is why Scheler provides such solid foundations for our investigation – regardless of what the actual outcome of future evolution is, it is the human being that brings the only known element of intentionality to it. Similarly, regardless of where our attempt to intentionally direct evolution leads, the attempt itself will be – and already is – technologically mediated. Barring the possible existence of other evolved life forms existing somewhere in the universe, the concept of post-biological evolution only makes sense from the perspective of the human being, and can only be possible through the use of technology. Human agency and intention are the defining factors of any notion of designer evolution, this serves then to reinforce the previous claim that the idea we have about ourselves plays a functional and guiding role in our evolutionary development.

Even if the vision of post-biology presented is indeed more science fiction than science fact and even if it never comes close to the level of intentional control envisioned by those who strive toward the post-biological and post-human future, it is not an inconsequential matter that – with the human being – evolution, as both a biological and a cosmological phenomenon, has become a self-referential process. This in and of itself is profound. It is also almost unthinkable outside the context of our technological developments and achievements.

Within the design paradigm of NBIC Convergence, we now observe that the life sciences are becoming more and more technology-based (particularly with respect to Information Technology). As stated, transhumanism is a philosophy of the human future, its imperative insists that human nature is not something to be preserved, but something to be overcome – evolutionary success does not entail survival of the species, but *transcendence* of the species. Hence, with respect to post-biological evolution, what transhumanism actually reveals is that technology and engineering have become the arena in which both the natural aspect of human nature, as well as the transcendent aspect, are – and will be – addressed.

Both the theoretical and the practical focal-point of Technological Convergence is human biology – understood as it is now, as an object of engineering. Thus, the human being is the locus of post-biological *design realisation* – as both its subject, and its object. The very idea of post-biological evolution describes a recursively structured process – by definition it refers back to the question of human nature by virtue of its self-directedness.

1.1.3 BIOLOGY AS TECHNOLOGY

Bioethicist Gary Elkins sums up transhumanism as 'the idea that we are at the brink of witnessing exponential changes in the way we understand the human species' because technology now allows us to 'replace' the 'defective human body' with 'more resilient hardware'.[118] Underlying this position is an assumption, he says, that 'humans are essentially information and that information can be uploaded, perhaps indefinitely, into machines'.[119]

For Elkins, the technology that forms the horizon of the transhumanist vision, 'is just one component of a larger philosophical question about human nature' – the technology itself serves merely as a window into the human condition'.[120] Elkins states that – when stripped down to the bare bones – transhumanists fundamentally believe that 'there is no unscalable wall between human and machine'.[121] Hence, we describe ourselves in such metaphorical terms as 'hardware' and 'software', and reductively conceive of ourselves in informational terms – as such, we can, and will, transition fully from biological human beings into machines.[122] Within this picture, humans *are* 'biological machines' – our bodies are matter and our minds are simply data structures, i.e., hardware and software.

This notion segues with the understanding that we are currently living in what can be understood as the 'biotech century'. A time that is characterised by 'the intersection of

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[118] Gary Elkins, 'Transhumanism and The Question of Human Nature', *American Journals of Intelligent Systems*, 1/1 (2011), 16–21, p. 16.
[119] Elkins, 'Transhumanism and The Question of Human Nature', p. 16.
[120] Elkins, 'Transhumanism and The Question of Human Nature', p. 16.
[121] Elkins, 'Transhumanism and The Question of Human Nature', p. 16.
[122] Elkins, 'Transhumanism and The Question of Human Nature', pp. 16–18. Elkins lays out seven tenets of transhumanism: humans are material beings; the human body – in its current form – is limited and defective; the process of evolution is too slow; human nature is malleable, not static; the true essence of human nature is information; there is no necessary distinction between humans and machines; information can be transferred into something more durable.

bioscience and computer science' or, the intersection of 'genetic and computer codes'.[123] It is against this historical background that the narrative of transhumanism is presented.

Philosopher and author Eugene Thacker states that transhumanist approach to human enhancement technology has an associated conception of the 'body-technology relationship' which he describes as 'asymmetrical'. Hence, there is a tendency toward a simplified and 'linear narrative' within the discourse and this results in 'prevalent new research fields' apprehending the biological body and re-interpreting it *as* information.[124]

Significantly for Thacker, this is not limited to 'the fields of computer-based, cybernetic, and information technology research', but also extends to the life sciences where recent developments are 'equally active in the material transformations of notions of the body and life itself' – thus, within biotechnology research, the basic 'questions that concern posthumanist thinking are brought to a tensioned pitch'.[125] He continues by stating that biotechnology research is unique in the sense that it employs technologies that are associated with transhumanism and the idea of the post-human, yet the object of study remains the biological sphere. A sphere which traditionally would have been seen as separate domain of study from the technological sphere.[126] Biotechnology is, according to Thacker, 'based on a deep investiture and revaluation of the body as a materiality, and one that can be understood and controlled through information' – he says that 'the intersection between biotech and infotech' is characterised by a direct 'translatability' between genetic and computer codes, or between flesh and data.[127]

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[123] Eugene Thacker, 'Data Made Flesh: Biotechnology and the Discourse of the Posthuman', *Cultural Critique*, 53 (2003), 72–97, (p. 72). Thacker identifies the field of bioinformatics within biotechnology as the 'application of computer technology to life science research'.

[124] Thacker, 'Data Made Flesh', p. 87. Thacker describes this as a move which assimilates all notions of 'materiality and body' into an 'abstract, disembodied level of operativity based on some notion of consciousness or intelligence'.

[125] Thacker, 'Data Made Flesh', pp. 87–88.

[126] Thacker, 'Data Made Flesh', p. 88.

[127] Thacker, 'Data Made Flesh', pp. 89–95. Thacker holds that the 'technologies in biotech are not simply objects or things, but rather liminal techniques for intervening in the body', thus, unlike prosthesis, they do not operate mechanically, nor do they operate through 'engineered foreign elements' – as in gene therapy – rather

In light of how transhumanism understands 'technological development as a key to the inevitable evolution of the human' – Thacker describes the biotechnological attempt at controlling the human and technological domains as ultimately 'an ambiguous form of humanism, inflected through advanced technologies'.[128] Ultimately, these sentiments reveal a project built upon, and committed to, the principles of engineering and their methodological application to all aspects of biological life. They represent an *engineering perspective* that is central to NBIC Convergence – a perspective upon which the idea of post-biological evolution is built. Post-biology is an engineering project at its core, a project within which the object of engineering is biological life in general. I would argue that this engineering perspective can be interpreted as both constitutive of, and constituted by, the basic attitude of transhumanism – to both the natural and the artificial in general, as well as more specifically to the human and the machine. The associated mindset *equates understanding with the ability to create, design and build*. The oft referenced 'last blackboard' quote of Richard Feynman is commonly presented within the literature as encapsulating the overall sentiment, i.e., 'what I cannot create, I do not understand' [129]

1.2 ENGINEERING TRANSCENDENCE

1.2.1 NBIC CONVERGENCE: THE DESIGN PARADIGM

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the technologies of biotech operate by 'harnessing' biological/natural/organic processes which are directed 'toward novel therapeutic ends'. Thacker says that the technologies can be described as 'indirect and facilitative' because they are kept separate from the body of the 'biomedical' subject. Hence, he states that biotechnology 'is perhaps unique because it is one of the few information sciences that is also a life science; its continued interest is not in the anachronisms of the biological domain, but in the ways in which biology is itself a technology', as such, he claims that biotech 'is not to be confused with bioengineering or prosthetics – biotech is not about interfacing the human with the machine, the organic with the nonorganic. Rather, biotech is about a fundamental reconfiguration of the very processes that constitute the biological domain and their use toward a range of ends, from new techniques in medicine to new modes of agricultural production, and to deterrence programs in biowarfare'.

[128] Thacker, 'Data Made Flesh', p. 93. This echoes what Max More has already stated – transhumanism aims beyond traditional forms of humanism in both means and ends.

[129] Richard Feynman's Blackboard at Time of His Death <http://archives-dc.library.caltech.edu/islandora/object/ct1%3A483> [accessed 3rd September 2018].

It is somewhat of an oversimplification to equate transhumanism and the project of NBIC Convergence – involvement with the NBIC project does not necessitate being aligned with transhumanism philosophically, politically, or culturally. Even so, the idea of post-biological evolution that transhumanists tend to work with can be taken to be approximately equivalent with the central idea and goal of NBIC Convergence – it is accurate to see them as rendered with a single ideological veneer. Conflating the two also allows us to identify the contemporary operation and application of two of the defining principles which steer both the philosophical and the practical attempt to direct evolution beyond the boundary of biological life – design and control.

The centrality of these two principles for the project of NBIC reiterates that the defining feature of post-biological evolution is intentionality, i.e., it is now the (intelligent) design of conscious rational human agency that functions as the mechanism of evolutionary change rather than the 'blind' mechanisms of Darwinian natural selection. The assumption of intentionality operates explicitly as a key principle within all strands of transhumanist philosophy – we can, and will assume full control of evolution. The idea that intentional human design is now the mechanism of evolutionary change, reveals a deep and complex amalgamation of evolutionary logic and technological promise – an amalgamation which defines the essential character of transhumanism, and which also coheres on a practical level, on a theoretical level, as well as on an ideological level, within the NBIC project.

The predominance of the machine metaphor and the ubiquitous adoption of the brain/computer analogy is clearly a defining feature of NBIC. Coupled with the notion that the human future – which we ourselves are designing – is currently being realised through an ongoing historical convergence of our technologies, the NBIC project reveals that the metaphor of mechanism has fully merged with the metaphor of evolution. Each metaphor informs and explains the other, for it is through machines and the ability they will bestow upon us to precisely manipulate and engineer matter from the nano to the cosmological scale, that we will acquire the means to fully control and direct human progress and evolution.[130]

A 2002 report, sponsored by the US National Science Foundation and the Department of Commerce, entitled *Converging Technologies for Improving Human Performance*, presents the NBIC project as the attempt to unify science in the 21st Century through the convergence and further 'combination of nanotechnology, biotechnology, information technology, and new technologies based in cognitive science'.[131] According to the report, the 'building blocks of matter that are fundamental to all science originate at the nano scale'.[132] Thus, it is the 'unity of nature' itself that provides both the inspiration and the raw material for the endeavour.

The expectation is that future developments in nano-scale technology will allow us to harness and control the observable 'material unity' of the sub atomic level – serving to further accelerate the already ongoing convergence of science and technology.[133] The expected outcome is described as a 'new renaissance in science and technology' – this will stem from an increasing grasp of the 'structure and behaviour' of matter, from the nano-scale

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130 The prefix 'nano' means 10^{-9}, or one-billionth: a nano metre is one-billionth of a metre. See, 'Size of the Nano Scale', *National Nanotechnology Initiative* <https://www.nano.gov/nanotech-101/what/nano-size> [accessed 10th August 2021].

131 Mihail C. Roco and William Sims Bainbridge, 'Executive Summary', in *Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology and Cognitive Science*, Mihail C. Roco and William Sims Bainbridge, eds., NSF/DOC Sponsored Report (2002), pp. ix–xii (pp. vii–ix). The term 'converging technologies' refers to rapid progression, development, and 'synergistic combination' of the four major NBIC provinces of science and technology. The convergence of these technologies is presented in terms of an 'advancement', which offers the 'promises of improvement', with respect to societal 'fabric' of human life.

132 Roco and Sims Bainbridge, 'Executive Summary', in *Converging Technologies for Improving Human Performance*, p. ix.

133 Roco and Sims Bainbridge, 'Executive Summary', p. ix. The authors envision important breakthroughs in NBIC-related research in the near future and, as a result of this, the following issues are seen to be emerging as central issues of our time; the societal implications of 'unifying sciences and converging technologies', the future evolution of science and technology, the 'visionary ideas' which can serve as a guide to these future developments, the strategies that can be developed to maximise the positive outcomes of these developments. The claim is that NBIC Convergence, coupled with developments in computation, mathematics, and systems sciences, allows us to grasp 'the natural world, human society, and scientific research', as 'closely coupled complex, hierarchical systems', that all operate according to the same underlying principles. Thus, it is the project of NBIC Convergence – rather than the acute specialisation that characterises contemporary scientific ventures – that holds the key to the 'evolution of technical achievement'.

up, and will culminate in a 'comprehensive understanding' of the human brain which itself represents 'the most complex system yet discovered'.[134]

The entire vision is underpinned by the belief that the future technologies will allow for the construction and development of 'new categories of materials, devices, and systems' – nanotechnology will facilitate the creation of 'engineered biological processes', and future developments in information technology will mean that we will gain new insights into 'fundamental knowledge about the molecular-level processes essential to the growth and metabolism of living cells'.[135] These advances will result in the design and manufacture of new 'inorganic materials', and engineered 'complex molecular and microscale structures'.[136] All of this leads to the following declaration:

> If the *Cognitive Scientists* can think it
>
> the *Nano* people can build it
>
> the *Bio* people can implement it, and
>
> the *IT* people can monitor and control it[137]

Ignoring the fact that 'if' is the biggest word in the above quotation, what it says is revealing in terms of the overall project of NBIC – the initial concern is design and the final concern is control. Taken together they represent the engineering perspective previously

[134] Mihail C. Roco and William Sims Bainbridge, 'Overview – Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology, and Cognitive Science (NBIC)', in *Converging Technologies for Improving Human Performance*, pp. 1–24 (p. 1).
[135] Roco and Sims Bainbridge, 'Overview', pp. 9–10.
[136] Roco and Sims Bainbridge, 'Overview', p. 10. There are a couple of points of interest: the living cell is taken to represent 'the most complex known form of matter', and is approached as a 'system', whose 'components and processes' operate at the nanoscale – where the nanoscale is understood as the 'first level of organization of biosystems'; a necessary element of NBIC convergence is the attempt to grasp the 'fundamental principles' – based on insights from biology regarding the 'behaviour of complex dynamic systems'– i.e., of 'sensory, computational, and communication systems'; NBIC is fundamentally concerned with the study of the structures and functions of 'intelligent systems', most notably the human brain.
[137] Roco and Sims Bainbridge, 'Overview', p. 11.

discussed, and ultimately reveal a project built upon, and committed to, the principles of engineering and their application to biological life.

The NBIC project is ultimately concerned with the functional and structural understanding of ‘intelligent systems’ – specifically the human brain. But, despite the willingness to adopt a systems-based perspective, overall the project of NBIC is explicitly *reductive* in character. While on the one hand its proponents advocate a holistic approach to science and technology and decry a ‘discipline-centric outlook’ as ‘self-defeating’, their vision of a unity between ‘the natural sciences, the social sciences, and the humanities’ is one that is predicated upon and given definition by ‘cause-and-effect explanation’ – explanation that is validated because it has been historically ‘reflected in the coherence of science and engineering trends’.[138] The emphasis on the validity of the explanatory power of causation reveals that all knowledge claims are ultimately assessed in terms of physical laws. This, as we shall see is inherently problematic when it comes to biology and the fact that biology is not clearly defined through a set of immutable laws in the same way that physics is.

Such a physic-centric reductionism betrays the fact that, when the proponents of NBIC say that their particular focus is the human brain, they also mean the human *mind*. When they use the term ‘brain’, the assumption is that it also refers to and encapsulates mind – hence, the metaphor of the brain/mind as a computer applies across the board. One contributor to the NSF/DOC report holds that the consequences of fully understanding the human brain could potentially include speed of light travel, downloading one’s personality into a new form of ‘hardware’, instant learning, the possibility of a hive-mind, and self-directed evolution. The question ‘how does the brain work?’, is understood simply as a

[138] Roco and Sims Bainbridge, ‘Overview’, p. 11. While the argument is – on the surface, one of unity – the idea that different fields of study can discover ‘autonomous truths that should not be reduced to other sciences’ is rejected.

question of cognitive science.[139] It is well documented that cognitive science has traditionally worked with a computational theory of mind (CTM).[140] This means that emotion, memory, thought, learning, and knowledge can all be understood 'scientifically' – the assumption being, scientific understanding equals 'full understanding'.[141]

The predominance of brain as computer analogy reveals how the machine metaphor works both ways. The human brain is approached as simply a computational machine, and computing is approached not only in descriptive terms that mimic anthropomorphic behavioural and functional principles, but also in structural terms which aim to emulate the complexity and self-organisation of biological systems. Conceptualised as essentially the same, the brain is simply a biological computer, and the computer is a non-biological brain – in principle, capable of one day reaching human level intelligence, and beyond. Unsurprisingly, the cutting edge of research is the interface between the two, leading some researchers to suggest that the 'issue of the brain-machine (computer) interface' is to be the central problem for neuroscience in the coming decades.[142]

According to the basic assumptions of the NBIC project, this issue is one that will be addressed and solved by nanotechnology. But it should be noted at this stage that – despite the fact that all of the above hinges on its assumed future development – nanotechnology is still very much in its infancy. As a field of research, it is still very much at a speculative and untestable stage of its development.[143] Despite this fact, when it comes to the interface

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[139] Warren Robinett, 'The Consequences of Fully Understanding the Brain', in *Converging Technologies for Improving Human Performance*, pp. 148–151 (p. 148).

[140] Michael Rescorla, 'The Computational Theory of Mind', *Stanford Encyclopedia of Philosophy* <https://plato.stanford.edu/entries/computational-mind/> [accessed 11th Aug 2021].

[141] Robinett, 'The Consequences of Fully Understanding the Brain', p. 148.

[142] Rodolfo R. Llinás and Valeri A. Makarov, Brain-Machine Interface via a Neurovascular Approach', in *Converging Technologies for Improving Human Performance*, pp. 216–222 (p. 216).

[143] John-Pierre Dupuy, 'Cybernetics is Antihumanism: Advanced Technologies and the Rebellion Against the Human Condition', in *H+–: Transhumanism and Its Critics*, pp. 101–110 (p. 104). Dupuy says the following with respect to many of the technologies associated with NBIC: 'For the moment at least these technologies exist only as projects, indeed in some case only as dreams. But no matter that many such dreams physical reality sooner or later, the simple fact that they already exist in people's minds affects how we see the world and how we see ourselves'.

between the human mind and our tools, nanotechnology is purported to offer a way to by-pass the historical reliance on human motor functions to operate tools and technological devices. A reliance which some claim, has meant that we have been unable to realise the full potential of the 'digital revolution'.[144]

The historical link between our minds and our technology has traditionally been characterised by *external* tools and devices that require manipulation as 'an independent extension of one's body' – such traditional linkages are described as 'slow user-machine interfaces' by the proponents of nanotechnology.[145] What is promised with nanotechnology, is the capacity to move beyond this out-dated form of the human-machine interface by incorporating our tools and devices directly into our 'neural space' – allowing them to function as an extension of our muscles or senses. The overall objective is a direct link between 'neuronal tissue' and our engineered mechanical devices – the aim is to create an interface which is operational in both real and virtual environments.[146]

All of this offers useful insight into the NBIC project and aligns with, and reinforces the description offered earlier of the engineering perspective that permeates the worldview of transhumanism. It also serves to highlight how science and technology are driven by goals and motivations outside of themselves – for example, it is our imagination that drives the post-biological paradigm. Also, the almost universal applicability of these design principles lends them tremendous utility in terms of the practicalities of human existence. This fact offers unique insight into the depth and nature of the relationship between human cognitive processes and technology. It also highlights the extent to which our experience of lived human reality is technologically mediated.

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[144] Miguel A. L. Nicolelis, 'Human-Machine Interaction: Potential Impact of Nanotechnology in the Design of Neuroprosthetic Devices Aimed at Restoring or Augmenting Human Performance', in *Converging Technologies for Improving Human Performance*, pp. 223–226 (p. 223).

[145] Nicolelis, 'Human-Machine Interaction: Potential Impact of Nanotechnology in the Design of Neuroprosthetic Devices Aimed at Restoring or Augmenting Human Performance', p. 223.

[146] Nicolelis, 'Human-Machine Interaction: Potential Impact of Nanotechnology in the Design of Neuroprosthetic Devices Aimed at Restoring or Augmenting Human Performance', p. 223.

1.2.2 TRANSCENDING BIOLOGY: THE TECHNOLOGICAL SINGULARITY

In general terms, a 'singularity' simply represents the point beyond which our ability to predict outcomes fails, and the point at which all our knowledge breaks down – it is a term used in mathematics and physics. As a metaphor, the concept lies at the root of what is known as the Technological Singularity – a predicated, hypothetical, future event which represents the most radical vision of the eventual culmination of the evolutionary convergence of human biology and technology.

The Singularity is a loaded concept – full of metaphysical implications and eschatological trappings. It is a central theme within transhumanism, although it is a mistake to assume that all transhumanists are 'singularitarians'. On the most basic level, the Singularity represents an attempt to philosophise about a future that is beyond our ability to clearly perceive or fully understand, but which we are free to apply our unfettered imagination to. Thus, it is an open-ended invitation to extrapolate from a combination of the logic of evolution and the promise of technology. The Singularity represents the unshackling of the metaphor of mechanism from any existing limitations. In this way it unfolds before us the possibility of imagining a fully post-biological future.

The 'post-Singularity future' is an unknown, it is a metaphor for the evolutionary boundary between the human and the post-human. A boundary that hinges – for the most part – on the development of super artificial intelligence. For some, this will be achieved through 'augmented human intelligence reaching superhuman levels', while for others, it will come about through the creation of superhuman 'synthetic intelligences'.[147] According to author, mathematician, and computer scientist Vernor Vinge, accelerating technological progress was

[147] Max More an Natasha Vita-More, 'Future Trajectories: Singularity', in *The Transhumanist Reader*, pp. 361–363.

the central theme of the 20th Century, and as a result of this, we are now transitioning into a historical period of epochal change. Change which can be seen to be comparable to the rise of human life on earth. For Vinge, the broad sweep of historical evolution is the context within which we must try to appreciate the significance of this change. Key to understanding our current context is the idea that the human being is in a position now where we can solve problems of adaptation more efficiently and quicker than Darwinian natural selection.[148]

Similarly, professor of Cognitive Robotics Murray Shanahan sees that the use of the analogy of a 'physics' singularity to articulate a concept of a 'technological' singularity in human history, as our attempt to grasp the vast implications of the exponential progress of technology and how it now stands poised to irrevocably alter human life as we know it.[149] Using Moore's Law (roughly speaking the 'doubling' of computing power every year to eighteen months) as exemplifying an accelerating and historically evolving trend in action, Shanahan points out that when viewed on a 'evolutionary timescale', human history can be seen to reveal that our species is 'riding the curve of dramatically increasing complexity that stretches into the distant past'.[150] From there, Shanahan says that if we extrapolate only the 'technological' section of the curve even a short way into the future, an important tipping-point is reached.[151] This tipping-point is envisioned as the point at which human technology renders humanity in its *current biological form* as 'technologically obsolete'.[152]

Shanahan argues that the concept of the Singularity has moved from the realm of science fiction into the realm of serious theoretical discourse regarding the human future. Interestingly, he holds that even without viewing the prospect of Singularity as an impending future event, the concept alone is enough to stimulate debate in such a way that it will allow

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[148] Vernor Vinge, *The Coming Technological Singularity: How to Survive in the Post-Human Era*, Department of Mathematical Science Chicago University (1993) < https://www-rohan.sdsu.edu/faculty/vinge/misc/singularity.html> [accessed 10th November 2015].
[149] Murray Shanahan, *The Technological Singularity* (Cambridge: MIT Press, 2015), p. xix.
[150] Shanahan, *The Technological Singularity*, p. xix.
[151] Shanahan, *The Technological Singularity*, p. xix.
[152] Shanahan, *The Technological Singularity*, p. xix.

us to 'shed new light on ancient philosophical questions', the foremost being, 'what is the essence of our humanity?'[153]

Accordingly, it seems that here are two basic aspects which define the concept of the Singularity. The first is an explicit technological perspective on the implications of evolutionary change, and the second is an implicit presumption of salvation that is inherent in the transcendent nature of the concept itself. We can put aside the second aspect for the time being – I will develop the eschatological and transcendent components of the concept later. For now, we need to focus on the idea of evolutionary and technological change, and more specifically how this relates to consciousness. This is obviously a defining issue, for as More and Vita-More point out, the Technological Singularity – as a 'specific model (or set of models) of technological change and its trajectory into the future' – ultimately represents 'conjecture' regarding the possible future emergence of 'super-intelligent minds', i.e., speculation about the possibility of 'non-biological super intelligences we may become or create'.[154]

Unsurprisingly, mechanistic assumptions tend to apply across the board, and of course the brain/computer analogy predominates, hence there is a clear emphasis on associating biological with synthetic/artificial intelligence. Obviously, for anybody who takes the idea of the Singularity seriously in any kind of practical sense, understanding the human brain both in terms of biology, and in terms of computer science, is going to be the main objective.[155]

The overall project is often presented as a task of reverse engineering, and framed in the language of modification and improvement of what has already evolved naturally, i.e., the human brain is understood as the 'most advanced computer in existence', and reverse

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[153] Shanahan, *The Technological Singularity*, p. xix.
[154] More and Vita-More, 'Future Trajectories: Singularity', p. 361.
[155] Ping Zheng and Mohammed-Asif Akhmad, 'How Change Agencies Can Affect Our Path Towards a Singularity', in *The Technological Singularity: Managing the Journey*, ed. by Victor Callaghan, James Miller, Stuart Armstrong and Roman Yampolskiy (Springer Nature: Berlin, 2017), pp. 87–102 (p. 95).

engineering it as the best way to 'develop more advanced computing technology'.[156] Again, nanotechnology is envisioned to be an essential component. Some researchers predict that neuroscience will explode with the 'advent of nano-neuro-techniques', and the development of 'nano-neuro-technology' – leading to 'unfathomable insight into the dynamical mechanisms of higher brain functions'.[157] The Singularity represents the culmination of the colonisation of our cognitive sphere by our technology. For its adherents, it depicts the next bound forward in our historical progress, and the next significant juncture in the evolution of intelligent life – the point in the near future when we are replaced by machines as the most 'generally intelligent' species on the planet earth.[158]

Although the possibility of the Singularity actually happening hinges upon a combination of technologies – both current and future – for most, artificial intelligence is, and will be, the key. General artificial intelligence (AGI) or strong artificial intelligence (strong AI), and super artificial intelligence (ASI) are terms that describe artificial intelligence that is comparable to human intelligence. This is artificial intelligence that can equal or exceed the human level intelligence, and is capable of more than just data-processing. These terms are to be contrasted with the narrow artificial narrow intelligence (ANI) or weak artificial intelligence (weak AI) which is already in existence and employed to perform countless everyday jobs in nearly all areas of human life.

If AGI can be developed, it is assumed that ASI will not be far behind. Some predict an inevitability in terms of development and outcomes once a certain threshold is reached, i.e., if we create strong AI, then that AI will create AI that is more intelligent than itself, then

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[156] Zheng and Akhmad, 'How Change Agencies Can Affect Our Path Towards a Singularity', p. 95.

[157] Larry Cauller and Andy Penz, 'Artificial Brains and Natural Intelligence', in *Converging Technologies for Improving Human Performance*, pp. 227–230 (p. 227). The result of this? Artificial brains with 'human', or 'natural' intelligence, which will be characteristic of the 'coming nano-neuro-cogno-symbiosis'. A future where we will create 'brilliant, autonomous artificial partners' to share our daily lives with, and where we will construct 'direct channels of natural communication between human and artificial nervous systems for the seamless fusion of technology and mind'.

[158] Ben Goertzel, 'Artificial General Intelligence and the Future of Humanity', in *The Transhumanist Reader*, pp. 128–137 (p. 128).

that AI will in turn create AI that is even more intelligent again, then that AI will…and so on.[159] Such an 'intelligence explosion' is a scenario envisioned by I J Good in 1965.

> Let an ultraintelligent machine be defined as a machine that can far surpass all the intellectual activities of any man however clever. Since the design of machines is one of these intellectual activities, an ultraintelligent machine could design even better machines; there would then unquestionably be an 'intelligence explosion', and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the last invention that man need ever make.[160]

Clearly, there are significant implications inherent in the idea of the Singularity. Even a 'successful' outcome means an end to human life as we know it. Not surprisingly, it is a topic that generates much heated debate and not a little concern. Dismissed by some as science fiction, the Singularity is often described in terms that are quasi-religious, and predicted with such certainty and accuracy that it appears almost an article of faith. Thus, it is not simply philosophically interesting in light of the ramifications of it actually happening, the idea itself is so laden with promise and speculation that its existence as a constructed reality which has lodged itself in our cultural imagination reveals something meaningful about us.[161]

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[159] Goertzel, 'Artificial General Intelligence and the Future of Humanity', p. 128.
[160] 'Intelligence Explosion FAQ', *Machine Intelligence Research Institute* <https://intelligence.org/ie-faq/> [accessed 15th April 2022].
[161] More and Vita-More, 'Future Trajectories: Singularity', p. 362. It is generally accepted that the Singularity can be broken down into three basic models: Event Horizon, Intelligence Explosion, and Accelerating Change. The intelligence explosion model envisions a 'positive feedback cycle of cognitive improvement', where once technology produces 'superintelligence' the feedback cycle kicks in. This allows for the development of recursive 'cognitive self-improvement', and this drives an 'intelligence explosion', which then runs until it reaches some upper limit, which will probably be defined by the laws of physics or the limits of computation. The event horizon view – associated with Vinge – posits an 'unfolding future that is incomprehensible to us', and the point beyond the Singularity is completely unpredictable. Ray Kurzweil is generally associated with the last model which offers a view of technological change that is characterised as 'a positive feedback loop', hence it is 'exponential' rather than 'linear' and affords more predictability than the other models.

1.2.3 KURZWEIL'S EVOLUTIONARY EPOCHS: THE UNIVERSE 'WAKES UP'

The above has provided the necessary background context for our investigation and it is to Kurzweil now that we turn – he is without doubt the most recognisable and well-known figure associated with the idea of the Singularity. Kurzweil is an inventor, futurist, and author, and has developed a fairly comprehensive concept of the Singularity with an associated evolutionary model and underlying metaphysics. He is also head of engineering at Google, so he serves well as an exemplar of the engineering perspective which was identified earlier as a key constituent of the NBIC project and a defining feature of transhumanism. For Kurzweil, evolution is first and foremost an 'intelligent' process – an intelligent and ongoing process which 'created' the human being and human intelligence. Hence, even before we get to the realm of artificial intelligence, he has already posited a process within which one intelligence creates another intelligence more intelligent than itself. This perspective on evolution is one that understands it as a single and continuous process – both cosmological and biological – and not surprisingly, Kurzweil employs machine and computational metaphors to explain and describe it.[162]

Kurzweil talks about amino acids as the 'machinery of life', where DNA is the 'hardware' of the computational engine that drives life, and the 'billions of bits of coded data' that make up the genetic code are the 'software'.[163] Ultimately, he states that it is 'information processing' that is the basis of life. DNA-based evolution operates through the introduction of random changes to its 'programming' coupled with the operation of a natural mechanism that then selects for fitness. But judged as it is on the criteria of computer programming, biological evolution is revealed to be a less than optimal process. Random

[162] Kurzweil, *The Age of Spiritual Machines*, (New York: Penguin, 2000), p. 40.
[163] Kurzweil, *The Age of Spiritual Machines*, pp. 40–41.

selection based on fitness is a 'crude technique' at best according to Kurzweil – the work of a 'sloppy' and 'inefficient programmer', thus, biology is evolution's 'unfinished invention'.[164]

Design methodology is not a feature of evolution by random variation. Because it employs an 'incremental method of design' – one that can only deal with one issue at a time – it works well, but very slowly. By contrast, a human approach to computer programming implements changes that are designed with a specific purpose in mind, and multiple changes can be introduced simultaneously. As a result, 'complete redesign' is always an option when programming a computer in a way that it is not for the incremental approach that characterises evolutionary change in biological organisms. As such, Kurzweil sees that the evolution of intelligent life on earth has been 'stuck' for thousands of years with the 'very slow computing speed of the mammalian neuron'.[165]

Despite its amazing success and the profound implications of its structure and encoding, as an 'intelligent process', DNA-based evolution is – due to its incredible slowness – not *that* intelligent. In fact, Kurzweil holds that it is not much more intelligent than a completely unintelligent process. This situation is of course one that has been rectified by human intelligence, which uses technology to amplify and enhance the 'inherent intelligence of evolution'.[166] DNA-based evolution created intelligence greater than its own, the human being, and – as that greater intelligence – we will create intelligence greater again than that, i.e., computers that exceed human level intelligence.

Human intelligence, as the product of DNA-based evolution is far more intelligent than the process that created it, and, in the same way, the artificial intelligence that we create will be far more intelligent than we are. In principle, there is no reason that this will not be

[164] Kurzweil, *The Age of Spiritual Machines*, p. 41.
[165] Kurzweil, *The Age of Spiritual Machines*, p. 41.
[166] Kurzweil, *The Age of Spiritual Machines*, p. 42. Kurzweil assesses intelligence in terms of the time taken to successfully complete a given task or solve a problem. He then judges this in terms of the amount of time taken for the universe to evolve up to the point of the emergence of biological life, and the amount of time taken for organic life to evolve up to the point of the emergence of intelligence.

repeated again when the artificial intelligence that we have created assumes full control of the whole evolutionary process and creates machines intelligence even more intelligent than it is, and so on, and so on.

It is this merging of biological and non-biological intelligence that defines the 'essence' of Kurzweil's vision of the Singularity. This future stage of post-biological evolution will be characterised by technological and social change of an immense magnitude, and according to Kurzweil, we will see 'far greater transformations in the first two decades of the twenty-first century than we saw in the entire twentieth century'.[167] That this upheaval will eventually result in machines with greater than human intelligence seems like it is almost self-explanatory.[168]

As such, we currently stand at the threshold of the era of non-biological intelligence according to Kurzweil. Non-biological intelligence which will unfold as a result of human intelligence and knowledge merging with the 'vastly greater capacity, speed and knowledge sharing' ability of our computers – together these will create greater than human intelligence.[169] As Kurzweil puts it himself. 'Once a computer achieves a human level of intelligence, it will necessarily roar past it.'[170] This is the 'inexorable logic of where the twenty-first century will bring us' – 'since the inception of invention', the pace of technological change has itself been accelerating, and this reveals that evolution is speeding up and will continue to do so as technological processes increasingly replace biological ones as the primary vehicle in the evolution of intelligence.[171]

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[167] Kurzweil, *The Age of Spiritual Machines*, p. 15.
[168] Kurzweil, *The Age of Spiritual Machines*, p. 15.
[169] Kurzweil, 'Summary', in *The Singularity is Near* (New York: Penguin Books, 2006).
[170] Kurzweil, *The Age of Spiritual Machines*, p. 15.
[171] Kurzweil, *The Age of Spiritual Machines*, p. 15. Despite the fact that computers currently 'exceed human intelligence in a broad variety of intelligent yet narrow domains', it is the *flexibility* of the human brain that remains the objective in terms of emulation by machine intelligence. Even if a computer achieves the 'basic complexity' and 'capacity' of the human brain, it does not necessarily mean that its flexibility will be matched. Of equal importance is the 'organization and content of these resources', i.e., the 'software of intelligence. Computers have historically been able to 'significantly' exceed 'human mental dexterity in their ability to remember and process information', thus Kurzweil states that human-level intelligence in a machine that has a

Underlying this vision of human intelligence boosted by the speed, power, and processing abilities of a machine, is a clear identification of where the limitations of human intelligence lie – our biology. For Kurzweil it is a simple fact that neurons are very 'slow' compared to electronic circuits: 'Mammalian neurons are marvellous creations, but we wouldn't build them the same way…much of their complexity is devoted to supporting their own life processes, not their information-handling abilities'.[172] The aim is ultimately to combine the brute force computational abilities of a computer with 'a human level ability in understanding abstract concepts, recognizing patterns, and other attributes of human intelligence' – once a computer has achieved this level 'it will be able to apply this ability to a knowledge base of all human-acquired knowledge'.[173]

Key to this is that computer technology is not 'static', i.e., it is developing at an 'exponential' rate. Hence, Kurzweil predicts that within several decades, 'machine competence will rival-and ultimately surpass-any particular human skill one cares to cite' – as we move into the second decade of the 21st Century, 'it will become increasingly difficult to draw any clear distinction between the capabilities of human and machine intelligence'.[174] Through our merger with machines, 'we will fully understand human thinking and will vastly extend and expand its reach', until the 'non-biological' portion of our intelligence will be trillions of times more powerful than 'unaided' human intelligence.[175]

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computer's inherent superiority in the speed, accuracy, and sharing ability of its memory will represent a fundamental transformation of us, technology, and the world.

172 Kurzweil, *The Age of Spiritual Machines*, p. 15.

173 Kurzweil, *The Age of Spiritual Machines*, p. 15.

174 Kurzweil, *The Age of Spiritual Machines*, p. 15.

175 Kurzweil, *The Singularity is Near*, p. 25. Kurzweil says that we are currently in the early stages of this transition and he suggests that there is an observable 'acceleration of paradigm shift' (the rate at which humanity experiences fundamental changes in our technical 'approaches'), and coupled with the exponential rate of growth in the capacity of information technology, this means that in terms of the transition into the post-biological paradigm, it is now noticeable that we are approaching the 'knee' of the exponential curve. Ultimately, the 'culmination of the merger of our biological thinking and existence with our technology', will result in a world that is 'still human', but one in which we have transcended our 'biological roots'. The only 'human' characteristic to remain will be the inherent drive to 'extend our physical and mental reach beyond current limitations', inevitability this means that 'our technology will match and then vastly exceed the refinement and suppleness of what we regard as the best of human traits'.

The projected scenario is clear enough, soon we will be faced with the emergence of a 'new form of intelligence on earth', an intelligence that can compete with, and ultimately significantly exceed human intelligence', and this evolutionary development will be of 'greater import than any of the events that have shaped human history' – more important even than the 'creation of the intelligence that created it'.[176] Citing the fact that artificial intelligence and computation are already fulfilling a wide range of tasks that have previously exclusively required human intelligence, Kurzweil states that within 'several decades information-based technologies will encompass all human knowledge and proficiency' and artificial intelligence will eventually 'replace' the human brain as it begins to surpass it in areas where the human brain historically outperformed computers such as 'pattern-recognition, 'problem-solving', as well as the capacity for 'emotional and moral intelligence'.[177]

Kurzweil takes influence from John Von Neuman and is repeatedly explicit about the need to differentiate between linear and exponential growth; linear growth is expansion through the repeated 'addition' of a constant, whereas exponential growth is expansion through repeated 'multiplication' by a constant, thus, exponential growth is 'profoundly transformative' according to Kurzweil. He presents various models and scenarios which depict a 'historical exponential' view of human development, and this leads us to his theory of evolution – evolution is a process that works through 'indirection', and develops through a number of historical junctures, with each stage or epoch using the 'information-processing methods of the previous epoch to create the next'.[178]

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[176] Kurzweil, *The Age of Spiritual Machines*, pp. 15–16.
[177] Kurzweil, *The Singularity is Near*, p. 24. Despite its 'massive parallelism, the human brain is very 'slow', and its 'physiological bandwidth' for processing new information is limited by our biology, hence, it is unable to optimally utilise the 'exponentially growing' store of human knowledge – something artificial intelligence will be much more proficient at. The 'list of ways a computer can now exceed human capabilities is rapidly growing', and the range of applications of computer intelligence is 'gradually broadening', meaning that artificial intelligence is assuming responsibility for a host of tasks that would previously been impossible without the direct application of exclusively human intelligence.
[178] Kurzweil, *The Singularity is Near*, p. 29.

Kurzweil's historical model of evolution presents it as a cosmological, a biological, and now, technological process comprising of Six Epochs – with the Singularity occurring in the fifth epoch. He says that 'evolution is a process of creating patterns of increasing order' – the 'ultimate story of our world', is the 'evolution of patterns'.[179] Thus, he understands different evolutionary epochs as progressive levels of indirection. The transition between two epochs occurs through a *paradigm shift*, which he simply describes as a fundamental change in human 'technical approaches'. The metaphor of mechanism links everything. The underlying information essentialism allows Kurzweil to apply it as a combining factor capable of unifying cosmological evolution, biological evolution, and human evolution, into a single exponentially accelerating process that builds upon its own development.

The Six Epochs are:

<u>Epoch 1: Physics and Chemistry</u>

This epoch represents information in its most basic structures; matter and energy. Time and space can be broken down into 'discrete quanta' which Kurzweil says are essentially 'fragments of information', as such atomic structures 'store and represent discrete information'.[180] With the atoms of physics coming together as molecules to give us chemistry, carbon – with its ability to form bonds in four directions – gave rise to 'complicated, information rich, three-dimensional structures'.[181] This occurred within the boundaries of the 'physical constraints' and parameters of our universe's 'rules' which are 'exactly appropriate for the codification and evolution of information' which is the source of the cosmos' 'increasing complexity'.[182] Reflecting on the how 'extraordinarily unlikely' it is that the universe is so finely balanced and tuned for life Kurzweil acknowledges three

[179] Kurzweil, *The Singularity is Near*, pp. 25–26.
[180] Kurzweil, *The Singularity is Near*, pp. 25–26
[181] Kurzweil, *The Singularity is Near*, pp. 25–26.
[182] Kurzweil, *The Singularity is Near*, pp. 25–26.

potential explanations: a divine hand, as designer of the universe; our hand, expressed though some form of the anthropic principle; or the possibility of multiple universes. Regardless of which explanation appeals to one's particular taste, what is important for Kurzweil is that 'it's clear that the physical laws of our universe are precisely what they need to be to allow for the evolution of increasing levels of order and complexity'.[183]

Epoch 2: Biology and DNA

Kurzweil identifies the start of the second epoch as the point when 'carbon-based compounds became more and more intricate until complex aggregations of molecules formed and self-replicating mechanism and life originated'. From there on biological systems 'evolved a precise digital mechanism' to store and transmit information, i.e., DNA.

Epoch 3: Brains

The next paradigm shift to a further level of 'indirection' is achieved as evolution uses the results from the previous epoch to transition into the next. It is in the third epoch that 'DNA guided evolution' produced 'organisms that could detect information with their own sensory organs and store that information in their own brains and nervous systems'.[184] It was the mechanisms of the second epoch that made this possible, DNA and RNA enabled and defined the third epoch's fundamental 'information-processing mechanisms', brains and nervous systems.[185] At this point Kurzweil states that 'ultimately our own species evolved the ability to create abstract mental models of the world', we can extrapolate from these models, and rationally contemplate their implications, i.e., the human being has the 'ability to redesign the world in our own minds and to put these ideas into action'.[186]

Epoch 4: Technology

[183] Kurzweil, *The Singularity is Near*, p. 29.
[184] Kurzweil, *The Singularity is Near*, p. 30.
[185] Kurzweil, *The Singularity is Near*, p. 30.
[186] Kurzweil, *The Singularity is Near*, p. 30.

Kurzweil says that it was our ability for rational thought, combined with our 'opposable thumbs' that allowed us to usher in the next level of indirection – it was in the fourth epoch that humans created technology. He suggests that technology itself has become 'capable of sensing, storing, and evaluating elaborate patterns of information', hence biological evolution has led to human directed evolution as the evolutionary process migrates from the biological to the technical realm. This is captured in a list of epochal events or 'canonical milestones' in historical developments in both biology and technology that Kurzweil describes – his aim is to show how the process of evolution itself is accelerating. This acceleration of evolution from the physical and the chemical to the biological and into the technological is characterized by an exponential growth of 'order and complexity'. This increasing complexity is observable as the 'facts' of our common sense experience, i.e., how new paradigms in technology emerge – from 'inception to mass adoption' – in increasingly shorter periods of time.[187]

Epoch 5: The Merger of Human Technology with Human Intelligence

It is in the fifth epoch that the singularity will begin. This will be a result of the merging of 'vast knowledge embedded in our own brains', and the 'vastly greater capacity, and knowledge-sharing ability of our technology'.[188] The fifth epoch will see the human being transcend the limits of biology. The Singularity will be a way for us to 'overcome age-old problems and vastly amplify human creativity' – in this way we will be able to 'preserve and enhance the intelligence that evolution has bestowed on us', in and through overcoming our biological heritage.[189]

Epoch 6: The Universe Wakes Up

The sixth epoch is the 'intelligent destiny' of the universe. When Kurzweil says that the universe will 'wake up', what he has in mind is that the existing 'dumb' matter and

[187] Kurzweil, *The Singularity is Near*, pp. 30–34.
[188] Kurzweil, *The Singularity is Near*, p. 34.
[189] Kurzweil, *The Singularity is Near*, p. 34.

mechanism of the cosmos will be transformed into 'exquisitely sublime forms of intelligence'.[190] With the Singularity, artificial intelligence will emerge from a combination of biological origins – human brains – and technological origins – human ingenuity – and will begin to saturate the matter and energy of the cosmos. This will be achieved through the intelligent 're-organizing' of matter and energy in a way that will provide the 'optimal level of computation' to 'spread out from its origin on Earth'.[191] The Singularity ushers in the sixth epoch of the evolution of information, which is its 'ultimate destiny'.[192] Intelligence is both the 'most complex phenomenon in the universe' and 'a profoundly simple process according to Kurzweil. It 'originated' as a 'result of the evolutionary process we call natural selection', but by 'reverse engineering a proven design' – i.e., the human brain – we will be able to replicate/recreate our intelligence in a non-biological substrate. When we can do that we will be able to 'harness' evolution through computers. By way of a simple process of evolutionary iteration – combined with the simplicity of massive computation – we will be able to generate complex and intelligent algorithms.[193] The underlying logic of this scheme hinges on the assumption that once greater than human intelligence is the driving force behind evolutionary progress, then the rate of progress itself will continue to accelerate toward the exponential. Previously, our biological heritage meant that our 'animal' adaptation and tool-use were hampered by natural selection. But through our ability to 'internalize' the world we can inventively use our imaginations to conduct speculative and imaginative scenarios in our minds – what Kurzweil call 'what ifs'. This ability for abstraction combines with the potential of technology to manipulate material form, thus, the human being uses technology to 'solve problems' much quicker than natural selection ever could.[194]

[190] Kurzweil, *The Singularity is Near*, p. 35.
[191] Kurzweil, *The Singularity is Near*, p. 35.
[192] Kurzweil, *The Singularity is Near*, p. 35.
[193] Kurzweil, *The Age of Spiritual Machines*, p. 89.
[194] Kurzweil, *The Singularity is Near*, p. 35.

1.3 THE ENGINEERING PARADIGM OF LATE-MODERN TECHNOLOGY

1.3.1 TECHNOLOGY IS NOT *JUST* APPLIED SCIENCE: ENGINEERING AS AN EXISTENTIAL ACTIVITY

With the above we have a clear and unambiguous articulation of the engineering perspective that I argue is an essential and defining component of transhumanism. Kurzweil exemplifies this perspective by virtue of a combination of speculative theory and working practice. As well as that, the very nature of the subject matter – and the fact that its appraisal is undertaken within the technological and scientific realm – highlights another defining aspect of transhumanism: the persistence of transcendent themes into late-modernity. Thus, as well as exemplifying transhumanism's engineering perspective, Kurzweil also serves as a model for how the transcendent themes and aspirations – which were once strictly the concerns of religion – are now the object of engineering theory and practice and the concern of techno-science.

In light of this, the question of whether technology is 'different' from science should be given brief consideration at this point. From one position, technology is 'applied science': simply 'action underpinned by theory'.[195] It is the link with theory that separates technology from 'arts and crafts', and places it alongside science. When technology is understood as applied science, it is conceived of as simply a means to an end 'outside' of engineering itself. This understanding gives rise to what is known as the instrumentalist view of technology –

[195] Maarten Franssen, 'Philosophy of Technology', *Stanford Encyclopedia of Philosophy* (2018) <https://plato.stanford.edu/entries/technology/> [accessed 25th May 2019]. Despite the close relationship between science and technology, Franssen says that technology involves questions that don't arise within science – science concerns itself with what is, and technology concerns itself with what is to be, i.e., the scientist is concerned with how things are while the engineer is preoccupied with how things should be. Technology is understood from this perspective as an 'ongoing attempt to bring the world closer to the way one wishes it to be' – technology aims to 'change' the world, rather than just 'understand' it as does science. The goals of engineers are often understood as 'attempts to change the world as a service to the public', where the 'ideas on what is to be or what ought to be are seen as originating outside of technology itself; engineers take it upon themselves to realise these ideas'. Franssen references Mario Bunge, Henryk Skolimowski, and Herbert Simon.

within this instrumentalist view, technology is conceived of as being 'neutral with respect to values'.[196]

This conception of technology is widely criticised today. If technological production is a 'goal orientated process', technological artifacts have – by definition – specific functions, so that those goals can be achieved. The artifact's intended function is to make achieving that goal easier. Thus, there is a clear 'conceptual connection' between artifacts, functional requirements, and goals. This conceptual connection means it is difficult to sustain the perspective that technology is 'value neutral'.[197]

It is perhaps more accurate to conceive of technology as value 'open', rather than value neutral. Technology will always reflect the values of those that produce and use it. This is true even if one described the instrumental application of a technology as *neutral* by virtue of the fact that specific technologies are not tied down to specific values and value preferences, nor are they fixed to strictly specific functions or goals. In other words, even if a technology is used for something other than its intended function, it is still the product of human fabrication and material production. Any such process – in and of itself – can never be value neutral *per se*.

In *The Nature of Engineering: A Philosophy of Technology*, G.F.C Rogers states that philosophers have historically tended to favour science over engineering. He states that 'engineering knowledge differs from other branches of knowledge', and the reason for this is that there are always very specific 'technical' aspects that are associated with engineering. Rogers says that engineering throws up different philosophical and psychological problems than science. This is due to the fact that technology is ultimately concerned about 'changing the way we live' – an obvious example, would be the question of the 'origin and nature of

[196] Franssen, 'Philosophy of Technology'. This is a contentious and widely rejected view – Franssen says that market driven technological innovations which were developed in response to the logic of profit maximisation, offer a clear example of technology as value laden.
[197] Franssen, 'Philosophy of Technology'.

invention and creativity', a question thrown up by the very nature and activity of our hands-on technological engagement with the world, rather than from our contemplative reflection of it.[198] Rogers goes on to say that engineering can be distinguished from science due to the fact that the 'type of reasoning involved' is different – the logic of engineering is in 'direct connection with purposive design and development'.[199] This assessment of engineering as n activity fits neatly with Kurzweil's description of our ability express abstractions in and through the manipulation of matter and the production of material form by technological means. As a working definition of an engineer, Rogers offers the following: a 'professional' who possess a specific mix of 'theoretical knowledge' and 'practical experience', knowledge which enables them to undertake and manage 'technical projects' and drive 'technical innovation'.[200]

Thus, in the most mundane sense we change the way we live through the use of technology, and we use it to modify both ourselves and the world around us. Through this constant experience of adaptation and creation we are continually adjusting the relationship between ourselves and the world. In a similar way as Kurzweil, Rogers holds that technology allows us to *solve problems* – an endeavour that has both physical and symbolic significance for us. Not only does technology help alleviate practical concerns, technological developments also allow us to approach with renewed optimism, issues which Rogers says may have been previously 'regarded fatalistically'.[201] This point is particularly succinct in light of the stated aims and goals of transhumanism – *fatalistic* problems such as the problem of death and human finitude perhaps?

As a result, Rogers holds that engineering 'spawns ethical problems', and as such it is essential to understand: 'the nature of engineering' itself; the 'conditions under which

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[198] G.F.C. Rogers, *The Nature of Engineering: A Philosophy of Technology* (London and Basingstoke: The Macmillan Press Ltd, 1983), p. 4.
[199] Rogers, *The Nature of Engineering*, p. 5.
[200] Rogers, *The Nature of Engineering*, p. 1.
[201] Rogers, *The Nature of Engineering*, p. 4.

technologies develop'; and the social, political, and philosophical 'impact' of technologies.[202] Thus, engineers and technologists wield significant influence over the way we live our lives, and progressive technological developments continuously present us with increasingly complex and unpredictable situations. Hence, Rogers states, we need to understand the 'nature of engineering and the ways in which technologies are born and develop'.[203]

It must be noted, that engineering and technology also spawn *metaphysical* problems. Engineering might generate ethical problems that are specific to it, but I argue that the 'problems' that engineering aims to solve in the first place are not ethical problems – they are existential, or anthropological problems. The root-source of engineering and technology's motivation and drive is located outside of engineering practices and does not originate within technological innovation. It is the human imperative for a solution to these initial existential problems that throws up the resulting ethical problems we associate with technology.

In the same way the *problem* of the human being is not simply an ethical problem, it is first and foremost an existential issue and a problem of Philosophical Anthropology – ethical problems arise *after* the initial fact of our condition. The issue of Philosophical Anthropology is thus a foundational concern, it is a point of departure which then provides a grounding for subsequent ethical reflection: 'what is the human being and what is our place in the cosmos', is a more fundamental question than 'what is the good life' – morality comes after the fact.

It is useful then to approach the engineer primarily as a 'problem solver' – they respond to the factual necessities of the human condition. In doing so, they build the world we live in – engineering represents the human being's hands-on engagement with the world. It is for this reason that I focus on metaphysics rather than ethics in my assessment of

[202] Rogers, 'Preface', in *The Nature of Engineering.*
[203] Rogers, *The Nature of Engineering*, p. 1

transhumanism.[204] Engineering is a normative response to the lived experience of the human condition. Initially it can be understood as a response to our 'instinct deficit' and can be seen to originate in our biological drives. Hence, the question of whether or not we *should* use technology to 'intervene' in our nature comes too late. Ethical reflection is always struggling to catch up with technological developments. Technologies are developed and practically applied before we are aware of – or fully understand – the ethical problems they generate. There are always interests and forces external to science and engineering that direct scientific research and engineering practices. These forces direct and influence research that shapes change and innovation, and they also help to insulate technological developments from critical ethical reflection and help ensure that certain technologies are free to operate beyond the influence of ethical judgments.

In the same way that we must take evolution seriously, we must also take engineering seriously if we are to understand transhumanism and the overall project of post-biology. The Western philosophical tradition has historically relegated practical knowledge associated with arts and technical systems to a poor second place behind the pursuit of theoretical knowledge – the reign of *epistêmê* over *technê* is a legacy of classical Greek thought. Despite that fact – and as any mechanical engineer would probably attest to – it still remains that the second law of thermodynamics owes more to the development of the steam engine than the steam engine ever did to the formal expression of the laws of thermodynamics.

Also, there has been a notable predominance of the 'critical' perception of technology within philosophy for most of the 20th Century. This has its roots in philosophy that is associated with the humanities – thinkers who, in general, have had virtually no direct

[204] The discourse surrounding transhumanism is largely 'ethical' in nature. Generally the opposing sides are positioned as the 'bio-conservatives' vs. the 'techno-optimists'. Broadly speaking, ethical concerns relate to the idea of human 'enhancement' through technology, and metaphysical issues are related to concepts associated with the idea of mind 'uploading'. There is a tendency in the literature to dismiss the metaphysical aspect of transhumanist thought as science fiction, or to reduce it to ideology, mythology, or a secularised expression of religious sentiments. While there may be merit in assessing transhumanism in such terms, Scheler's Philosophical Anthropology allows us to take the notion of uploading, the idea of post-biological evolution, and the concept of the Technological Singularity seriously in a *metaphysical* sense.

knowledge or experience of engineering.[205] Thus, there has been a tendency to take the 'phenomenon of technology for granted', and to focus primarily on its 'relations' to cultural and social phenomena rather than to study the phenomena of technology itself'.[206] In contrast, philosophical reflection on technology from within the Analytic Tradition is characterised by a focus on technology itself.[207] Hence, this type of philosophy of technology stands as an alternative to the humanities perspective. Within the Analytic Tradition, technology is generally understood in terms of 'practice' – more specifically, *engineering* practice.

Philosopher of technology Maarten Franssen states that, 'theoretical research within technology has come to be often indistinguishable from theoretical research in science' – this started in the middle of the 19th Century, and is the reason there is considered by many to be such a distinction between 'traditional' technology or craft, and 'modern' technology.[208] Ever since the scientific revolution (of primarily the 17th Century) which was characterized by the 'experimental method' and the 'mathematical articulation of scientific theories', philosophical reflection has tended toward the concerns and interests of the scientific community rather than the realm of engineers, and it seems to be the case that only recently has the philosophy of technology 'discovered' the engineering quarter.[209]

Historically, philosophy has had a closer relationship to science then to it has had with technologists or engineers. This makes sense in some regards – having its roots in natural philosophy, science addresses questions that were once the preserve of natural philosophers. Thus, it is not surprising that the philosophy of science came to be understood in terms of the epistemological transformations that came about as a result of the developing of science itself and the effects of the expansion of its influence, authority, and reach.[210]

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[205] Franssen, 'Philosophy of Technology'.
[206] Franssen, 'Philosophy of Technology'.
[207] Franssen, 'Philosophy of Technology'.
[208] Franssen, 'Philosophy of Technology'.
[209] Franssen, 'Philosophy of Technology'.
[210] Franssen, 'Philosophy of Technology'.

Franssen argues the attention which has historically been shown by philosophy to science, would need to be shown to engineering and technology to establish a proper 'engineering' philosophy of technology. He says that if analytic approaches to philosophy of technology actually focused on 'the practice of technology as sustained by engineers', in a similar way to how philosophy of science has focused on 'the practice of science as sustained by scientists', then the case could be made that it amounts to the 'philosophy of engineering'. Any such philosophy would have of course have to have 'design' as its key theme. Franssen concludes by stating that humanities philosophy of technology would still encompasses 'metaphysical issues' in a way that philosophy of engineering would not.[211]

This is an interesting point – and one that is called into question when we consider Kurzweil. Kurzweil offers us an insightful case study – as Google's head of engineering, he embodies the engineer's perspective associated with transhumanism.[212] With the resources available to him as a result of his position, he stands poised to exert enormous influence over the path our future takes. For Kurzweil, philosophising about the human future is just as much a practical endeavour as it is a speculative one. As an engineer he is a problem solver who must come up with imaginative and innovative solutions to a wide range of problems. As shown, engineering strives toward *change*. Thus, unlike science, engineering is not a descriptive undertaking. For the engineer, the problem – in whatever form it may take – functions as an imperative for a solution which elicits a practical hands-on response. This response is not undertaken wholly independent of theoretical reflection but it relies just as much, if not more so, on hands-on experience and knowledge based on the traditional accumulation of workable rules-of-thumb.

[211] Franssen, 'Philosophy of Technology'.
[212] See, <https://www.kurzweilai.net/genius-ray-kurzweil-on-google-and-the-singularity> [accessed 4th February 2021]; Tom Simonite, 'What is Ray Kurzweil Up to at Google? Writing Your Emails', *Wired* <https://www.wired.com/story/what-is-ray-kurzweil-up-to-at-google-writing-your-emails/> [accessed 4th February 2021]; Maya Ajmera, 'Conversations with Maya: Ray Kurzweil', *Society for Science* <https://www.societyforscience.org/blog/conversations-with-maya-ray-kurzweil/> [accessed 4th February 2021].

This is why ethical reflection is always a step behind technological development. By the time we begin to reflect on whether we should do something, the engineer has already found out if we *can* do it. If engineering represents the response to design problems, then the formulation and understanding of the problem are of vital importance. Hence the argument as to why the task of Philosophical Anthropology is such a vital undertaking.

With transhumanism, we see that existential questions that were traditionally the purview of philosophers and theologians are now the concern of technology and engineering. The future is an unknown, and the metaphor of the 'singularity' has been adopted for that very reason – beyond that point everything we think we know breaks down. In a sense, any philosophising about our future must be to some degree speculative metaphysics – imagination is required. The future is not fixed and subject to the same restriction that our past or present are. It stretches ahead of us, but now we have technologies that seem to offer a 'promise' of the salvation which was previously the preserve of religion. Technology orientates us toward the future, its promise is the promise of an all-encompassing 'techno-fix' capable of solving all our problems – it operates at the edge of what is physically possible and is existentially coupled with the potential, power, and hope of a profoundly aspirational – and characteristically human – *what if*?

Thus, the instrumentalist conception of technology and the view that engineering is simply applied science are clearly out-dated and inadequate to grasp the significance of the attempt to usher in an era of post-biological evolution – the very idea of which is in itself unthinkable outside the context of the techno-scientific developments of late-modernity.

1.3.2 DESIGN: AN ENGINEERING, BIOLOGICAL, OR METAPHYSICAL PRINCIPLE?

Design is a key tenet of transhumanism – it pertains to a principle of control and captures the positive dynamic engagement of creative innovation which describes how an engineer orientates themselves to the world as a problem solver. Imaginative design unites theory and practice, conceptual reflection and engaged everyday know-how, and provides the impetus for a solution to the transhumanist's dissatisfaction with the current limited specifications of the human body. Design becomes the lens with which to view both evolution and the human form – both a promise and reflection of a deep-seated confidence in the capacity of human reason combined with strong faith in the potential of technology.[213]

The essence of post-biological evolution is the notion that evolution – both biological and cosmological – is now a self-directed process. As already shown, it has been described explicitly as *Designer Evolution* by a prominent and self-identifying transhumanist.[214] It is the inherent self-directed characteristic, and the presupposition of an element of intentional design that marks post-biological evolution in contrast to traditional Darwinian and contemporary neo-Darwinian evolutionary models. Whereas Darwinian natural selection is understood in the strictest sense to be a *blind* mechanism, the mechanism of evolutionary change within the post-biological model, is intentional human agency, i.e., design.[215]

This contrast highlights an unresolved tension in the philosophy of transhumanism. The transhumanism world-view establishes an explanatory framework within which all transcendent themes and notions have supposedly been purged. This means that design is not – and should not be – a biological principle. Design is an engineering principle. The assumption that engineering principles are directly translatable to biology as functional components of evolutionary theory, reveals a ubiquitousness and unreflective extension of the metaphor of mechanism to all aspects of biological life. The mechanistic ontologies that

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[213] See, Natasha Vita-More, 'Aesthetics: Bringing the Arts & Design into the Discussion of Transhumanism', in *The Transhumanist Reader*, pp. 18–27.
[214] Young, *Designer Evolution*.
[215] Ćirković, 'Post-Biological Evolution?', p. 28.

inform transhumanism are materialist and reductionist in nature, despite this, it is defined to a large degree by its transcendent themes. There seems to be an obvious tension between assuming a principle of intentional design as a mechanism of evolutionary change, while at the same time assuming a perspective of reductionism. A perspective within which all biology is reduced to the laws of physics and – by default – explicable exclusively through recourse to causal explanations.

This clearly has implication for any notion of free will, as it would be precluded as a causal factor in such a framework. Such a denial of any causal efficacy to human intentionality stands as a challenge to the philosophy of transhumanism to explain the root source and motivational locus of the post-biological impetus. How can a principle that is intentionally directed toward transcending biological life have its origins solely *in* biological life, if the underlying conception of biology is one that reduces all biological processes to the causally determined laws of physics which preclude the notion of free will? This issue does not appear to be addressed by transhumanist philosophers.

This lack of reflection is nevertheless telling. Human knowledge and experience is not just conceptual or theoretical, it is also practical and hands-on – this is the crux of the entire matter. As shown, transhumanism can be defined in accordance with the some-what paradoxical persistence of transcendent themes into late-modernity coupled with the engineering perspective that Kurzweil embodies. Across all of its manifestations, it is ultimately predicated upon an explicit and open-ended re-imagining of traditional notions of human nature, and this is expressed in explicitly technological terms that assume an ontology of mechanism. The mechanistic worldview is deeply related to the methods, assumptions, and knowledge of engineering and technology – it fosters, and is fostered by the engineering perspective.

Whereas a scientist looks at the world and describes what they see, an engineer looks at the world, sees what is missing and endeavours to find and build an adequate solution to that problem.[216] Thus, as a philosophy and a cultural movement, transhumanism is thus committed to both the theoretical and the practical endeavour of *engineering* the human condition, i.e., providing *an engineering solution to the problem of the human being*.

This objective can also be seen to be the explicit goal of the NBIC project. The aim is to overcome the design limitations of biology – especially human biology – and subject it to the methods and principles of engineering practice. Thus, the way in which transhumanism explicitly re-imagines the human condition in technological terms, its goal of overcoming all our biological limits, and the significance that is given to the direction, expected outcome, and convergent nature of the technologies of NBIC, all serve to reiterate the sense that within the post-biological narrative the problem of human nature is now firmly apprehended from the engineering perspective.

Also, it is widely accepted that a significant component of the NBIC narrative is anticipatory. The entire project hinges on the promise of nanotechnology, and the predictions that it will allow us 'to precisely manipulate matter at the atomic scale'.[217] As such, it is important to note that some commentators say that nanotechnology 'isn't as much a discipline, like chemistry or physics', rather it is more like 'a tool kit for manipulating matter at its finest scale'.[218] There is a clear gap between the 'theoretical accounts of nanotechnology possibilities and their material actualization in contemporary nanoscience' – the narrative is ultimately 'embedded within a set of future-oriented socio-cultural dreams and scenarios that imagine its possibilities and foretell of its potentially transformative effects'.[219] Eric Drexler may been influential in getting people to imagine what might be

[216] Rogers, *The Nature of Engineering*, p. 3.
[217] Matthew Kearnes, '(Re)making Matter: Design and Selection', *Area*, 39/2 (2007), 143–155 (p. 144).
[218] Robert F. Service, 'Nanotechnology Grows Up', *Science*, 304/5678 (2004), 1732–1734 (p. 1732).
[219] Kearnes, '(Re)making Matter', p. 144.

possible with nanotechnology, but his vision of a future shaped by that technology has also been described as a 'nanoreligion'.[220]

Ideologically, the field of nanotechnology is characterised by a 'discourse of control' – encapsulated by the very phrase 'control over the structure of matter'.[221] This vision of control has both practical and theoretical aspects, with the theoretical aspect having its roots in what is known as the 'biological turn in physics' and the 'materialist turn in biology'.[222] The important thing to note here is how it has been the complexity and self-organisation of biological systems that has provided the inspiration for nanotechnology as field of research. The vision is underpinned by the concepts of 'design', 'precision', and 'control', and the ultimate goal is to 'recreate the functionality of living systems and the means and possibility of its technological recreation', i.e., biological 'life' becomes the 'benchmark against which to compare 'human-designed' machines'.[223]

Social and political philosopher Jean-Pierre Dupuy states that the defining character of the 'nanotechnological dream' is its aspiration to mechanically adapt and improve the intricacies of biological evolution. Hence, he describes it as a 'paradigm of design' – a paradigm within which nanotechnology is designed by humans to be *self*-designing. The assumption of the proponents of nanotechnology is that self-replicating nanomachines will

[220] Ivan Amato, 'The Apostle of Nanotechnology', *Science*, 254/5036 (1991), 1310–1311.
[221] Kearnes, '(Re)making Matter', p. 146. Kearnes says that clearly there is a 'disjuncture between the dreams of nanotechnology and the results of scientific practice', and a glaring 'mismatch between the theoretical possibility of the precise manipulation of matter and more provisional results of contemporary nanoscience is a common feature of the field' – thus, the '*a priori* assumptions of control and accuracy are moderated by actual research practice'. Obviously, the proponents of nanotechnology say that any such issues will be resolved with time.
[222] Kearnes, '(Re)making Matter', p. 147. Kearnes traces the former back to Erwin Schrödinger's 1944 essay, 'What is Life? The Physical Aspect of the Living Cell', which he says 'implies a physicalist understanding of life by suggesting that biological processes may be explained physically', and suggests that 'biological life is accomplished through the selective control over the movement of atoms and molecules demonstrates the possibility of similar human-designed processes' – hence, this perspective ultimately gave rise to the idea that life itself may be designed and manipulated through the precision control of matter's atomic base. The later he traces back to the thought of John von Neumann and his theory of automata which presented a mathematical model of self-reproducing systems, while suggesting that naturally occurring self-reproducing systems might be recreated through appropriate algorithms'. Kearnes holds that ultimately, von Neumann's theory represents the idea that 'it is possible to create a machine which recreates itself, modelled on biological examples' – the underlying assumption is that 'life is controlled by code and is essentially computable', as such the aim is the 'creation of sufficiently complex computations that would model such existing natural systems'.
[223] Kearnes, '(Re)making Matter', p. 147.

circumvent the inefficiency and meandering of Darwinian evolution and streamline directly to successful evolutionary design.[224] Dupuy points out how ironic it is that, after years of conflict with creationism, science in America seems to be reverting back to the logic of intelligent design. Here though, it is of course the human being that assumes the role of designer and creator as our technologies 'supersede nature and life as the engineers of evolution' – we ourselves have become the 'designers' of processes that were previously exclusively biological.[225]

With the NBIC project, Dupuy sees that 'a novel conception of engineering has been introduced' – one in which the engineer views success as the realisation of a system, device, or entity that is capable of the radical, novel, and unexpected behaviour which characterises the essential property of life itself.[226] Hence, the attempt to create a genuinely self-organizing system *is* the attempt to create life'.[227] As a result of this, Dupuy concludes that the NBIC agenda is a 'Promethean project', and a 'distinctly metaphysical program', one that is caught in a paradox that results from our insistence on viewing humankind as a kind of 'divine maker of the world' or Demiurge, while at the same time viewing ourselves instrumentally as 'things' that are obsolete and as something that must be overcome.[228]

This means that while transhumanism is correct when it asserts that the human being is characterised by our ability to alter ourselves and our environment, further reflection is needed on what is meant when we speak of human nature, rather than uncritically assuming it is something which needs to be overcome. It is necessary to assess the 'idea' of the human being that is assumed – be it explicit or implicit – within any such debate. For the human being, our very nature is a problem for ourselves, and in the 'design paradigm', the 'problem'

[224] Dupuy, 'Cybernetics is Antihumanism', p. 105. Dupuy references Damien Broderick who critiques the notion that human designed 'nanosystems' will outperform natural selection and 'leap straight to design success'. See, Damien Broderick, *The Spike: How Our Lives Are Being Transformed by Rapidly Advancing Technologies* (New York: Forge, 2001).
[225] Dupuy, 'Cybernetics is Antihumanism', p. 105.
[226] Dupuy, 'Cybernetics is Antihumanism', p. 105.
[227] Dupuy, 'Cybernetics is Antihumanism', p. 105.
[228] Dupuy, 'Cybernetics is Antihumanism', p. 106.

of the human being becomes a *design* problem – a problem of engineering, one which tends to be approached unreflectively in mechanical and reductive terms.

In a sense, this is the logical conclusion of ontological mechanism, and the concomitant success and dominance of reductionism as a methodological programme within the natural sciences. But, despite the claims of legitimacy that derive from methodologies built upon the principle of objective verification, and the capacity for precision of measurement and control over matter, the reductionism and objectification associated with this worldview face a possibly intractable problem when it comes to consciousness and how it relates to the world. Our future is a construct – one which the engineers of technoscience are already building – and the promise of technology means what was previously purely philosophical or theological metaphysical speculation is now accompanied by practical, hands-on metaphysics of engineering. Thus, *the principle of design at the heart of post-biological engineering is a metaphysical principle*.[229]

This is an important point because the language of design and *telos* already permeate biology and apparent design in nature has traditionally lain the foundations for teleological arguments for God. The mark of a designer, or intentional creation, is also what is generally accepted as the distinguishing feature that differentiates the artificial from the natural. Design implies mind and technology is characterised by the design principles, hence technology

[229] It can be argued that engineering disciplines cannot have metaphysical pretensions because they depend fundamentally on highly specialized knowledge derived from the natural sciences which themselves depend upon metaphysics for their first principles. See, Alexander R. Sich, 'The Independence and Proper Roles of Engineering and Metaphysics in Support of an Integrated Understanding of God's Creation', in *Engineering and the Ultimate: An Interdisciplinary Investigation of Order and Design in Nature and Craft* (Broken Arrow: Blyth Institute Press, 2014), pp. 39– 61. It can also be argued that the practical and imaginative application of technological developments provides an opportunity to re-address age old philosophical problems. Take for example the relatively recent field of complex systems science. As a science it is 'computer dependant', it harnesses modern computer's processing and computation capacities to analyse complexity and change in both natural and synthetic systems. It studies self-organization, the emergence of novel properties, and how systems transition into new ways of being without an explanatory reduction – either epistemologically or ontologically – to their constituent parts. Complexity sciences facilitate the identification and mapping of intelligible patterns in nature and how these patterns can be studies at various levels of abstraction and integration. The study of complexity has its roots in chaos theory and the deeper structures of reality it aims to elucidate are the same essences that Scheler says metaphysics is required to gain insight into. The study of complexity involves the use of machines to elucidate the essential structures of nature and this shows that Scheler's distinction between metaphysics and science may not be so clear cut in the post-computer revolution era.

implies mind – it represents *both* ‘artificial’ and ‘symbolic’ production through material engagement.

So, even if the engineering perspective is engendered by an ontology of mechanism, it is ultimately a reflection of human consciousness which itself would seem to evade being grasped reductively – this is perhaps the root cause of the persistence of transcendent themes within transhumanist thought and may also be why the *event* of the Technological Singularity has been accorded a decidedly eschatological role in the speculation about our post-biological future.

Engineering is also a *normative* response to the lived experience of the human condition – it strives to the make the world as we think it *ought* to be. This is reflected in the defining principle of design, because the principle of design itself *is* the aspiration to change an existing situation into a *preferred* one.[230] This understanding of the centrality of design represents a fundamental challenge to the traditional idea that engineering is simply ‘applied science’.

Because it is engineering and technology from which transhumanism draws its inspiration, and from who’s disciplines many of its most influential adherents originate from, we can view the attempt to apply engineering techniques and design principles to human biology as a practical extension of the theoretical attempt to reconceptualise and re-imagine the human condition in late-modernity, i.e., it falls under the remit of Philosophical Anthropology.

Transhumanism exalts, champions, and actively pursues technology as means of ‘redesigning the human condition’.[231] Hence, the outstanding and unresolved issue of human nature is framed with a new urgency due to the fact the question of who or what we are,

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[230] Pieter E. Vermaas, and Dingmar van Eck, and Peter Kroes, ‘The Conceptual Elusiveness of Engineering Functions: A Philosophical analysis’, *Philosophy and Technology*, 26 (2013),159–185 (p. 160).
[231] Carl Eliot, ‘Humanity 2.0’, *The Wilson Quarterly (1976–)*, 27/4 (2003), 13–20 (p. 14).

seems to be an issue of *practical* concern in way that it has never been before.[232] The engineering perspective is pro-active and orientated toward problem solving – it is hands-on, innovative, creative, and employs experience-based rules-of-thumb just as much as it employs theoretical knowledge. As such, we can understand the concept of post-biological evolution to capture the essence of the engineering perspective perfectly – it is the ultimate expression of engineering principles applied to biological life. It is in this way that human nature itself has become an object of engineering. The *problem* of the human being in now an engineering problem, i.e., a problem of *design*. As such, we can assess transhumanism in terms of it operating as a project of Philosophical Anthropology.

Thus, the issue of engineering design is of paramount importance if we are to try and grasp the character of the post-biological paradigm. In this light, we can reflect on the way that philosopher of technology Pieter Vermaas posits the simple question of what engineering design – in and of itself – *is*. Vermaas shows that the concept of design includes, 'existing practices of engineering design', while at the same time it also includes the possibility and usage of the development of 'new practices' – practices which can be incorporated into the corpus of already established engineering knowledge.[233]

Vermaas says that one used to be able to make an easy distinction between broad and narrow definitions of design, i.e., to mark a distinction between 'engineering' design and design *per se*. But because of the way that engineering design has evolved historically, the range of engineering practices today encompasses such a wide sweep of human activities and

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[232] Mark Coeckelbergh, *Human Being @ Risk: Enhancement, Technology, and the Evolution of Vulnerability Transformations, Philosophy of Engineering and Technology 12* (Dordrecht: Springer, 2013), p. 21. Coeckelbergh suggests that 'for the first time in human history, philosophical anthropology becomes part of normative practical philosophy, since we now have the opportunity to change the human'.

[233] Pieter E. Vermaas, 'Engineering Design', in *Spaces for the Future: A Companion to Philosophy of Technology*, ed. by Joseph C. Pitt, and Ashley Shrew (New York: Taylor and Francis, 2018), pp. 196–207
p. 196. In the broadest sense, the goal of engineering design is understood to be the formulation of plans of action which are intended to transform a given situation into a preferred one. More specific understandings will include theoretical and contextual details such as the profession of the engineer in question, and will include descriptions of the designed products or systems that are brought to bear as a solution to a particular design problem. Vermaas references Herbert Simon's conception of the goal of design here.

is no longer limited to material or artifactual design. Thus, the narrow definition on its own is too narrow to capture the nature of what engineering design has become. Saying that, solely applying the broad conception seems also to be problematic, as simply saying that engineering design *is* design fails to offer a way to distinguish between professional disciplines, and express the way that design can realise a preferred outcome or situation in areas and fields that are not based in engineering.[234]

Of note, is the fact that the narrow definition – would seem to suggest that any such definition of engineering which incorporates a combined descriptive account of existing practices and products, and of new practices and products that are involved in the process of design resolution, is by necessity *provisional*. Design characterised as such, is both descriptive and prescriptive, as both old and new practices are included in the definition. Hence, engineering design is characterised by the inclusion of the possibility of prescribing new practices, as derivations of old practices, as novel postulations, or as emerging from a combination of 'descriptive analysis with new propositions'.[235] In summary, we can understand engineering design as 'the practice of finding a technical solution to a design problem', where the problem is formulated in terms of the requirements that need to be satisfied, and the solution is 'typically a description of a material artifact' or technical system.[236]

While the exact articulation of the precise requirements for finding a solution to the problem at hand may need to be formulated by the engineer, the problem itself is fixed by factors considered to be outside the engineering design process.[237] Thus, the process of engineering design is not a 'linear' process that follows a fixed order of stages, developments

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[234] Vermaas, 'Engineering Design', p. 196. Vermaas says that 'engineering design should be taken as broader than the description of products that solve design problems, yet not too broad since not all design is unconditional engineering design'.
[235] Vermaas, 'Engineering Design', pp. 196–197.
[236] Vermaas, 'Engineering Design', pp. 196–197.
[237] Vermaas, 'Engineering Design', p. 197.

at one stage may require changes at the previous stage, and different alternative routes to a potential solution can be explored simultaneously.

Engineering design is first and foremost concerned with satisfying the requirements of the design problem, it is pragmatically orientated, and the design process stops when a solution to the given problem is found and 'for which there are no obvious variations that are technically better or cheaper'.[238] As a result, a considerable amount of the time, engineering design is actually *redesign*, as it is based on variations of existing artifacts or components – this redesigning has been described as 'normal' design, and taken in contrast to what is described as 'radical' design.

As such, the engineering design process reveals that the artifacts that are produced through engineering show an observable link between the intentions of the designer and the structural characteristics of the product designed. Artifact production is aimed at realising the intentions of the designer, and these intentions become transcribed in the material structure of the artifact produced. To grasp the nature of an artifact, both the intentional and the structural aspects must be considered together. In this sense, intention and structure are seen to be complimentary.[239]

It is also of interest to note that not only is engineering design conceived of in terms of finding solutions to problems, it is also understood with respect to finding and identifying problems in the first place. Here, the problem as initially presented and understood, is reassessed and 'reframed' by the engineer – hence, the design process begins with an interpretation (or reinterpretation) of the initial problem by the engineer themselves. This early stage is an exploration for an initial 'solution direction', and it generates new insights into the problem, viewed as it is from the designer's perspective.[240]

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[238] Vermaas, 'Engineering Design', p. 197.
[239] Vermaas, 'Engineering Design', p. 198.
[240] Vermaas, 'Engineering Design', pp. 198–199.

This reframing of the problem is a characteristic of design that differentiates it from other problem solving; for example, the problems of science and mathematics are 'well-structured'; they tend to provide more information about the problem; and they are more clearly defined in terms of success criteria. In contrast, design problems are understood to be potentially 'ill-structured', and as a result it may be necessary within the design process to completely reformulate the problem itself so as to make it solvable.[241] Thus, the skills necessary to successfully address problems that are 'ill-structured, wicked, and paradoxical', sets design apart from the methodologies, skills, and knowledge employed to address problems in of the natural sciences and the humanities. [242]

It is not surprising then to note that engineering design has been described as a 'negotiation process'. Vermaas also says that design – as a general principle – has now come to be approached from a perspective that is described in general terms as 'design thinking'.[243] From this perspective, the reframing, reinterpretation, and reformulation of initial problems, can be seen to be 'propositional' in nature, i.e., designers don't actually come up with a solution to given problems, rather they draw on experience, knowledge, and expertise to analyse the problem and come up with proposals for new 'products' – products that people do not know they want or need until the designer shows it to them.[244]

In terms of the relevance of this for our investigation, the exact way we understand the relationship between 'engineering design thinking' and 'design thinking' understood more generally is open to debate. It is clear that one can, if one chooses, assume the broad definition of engineering design given above and take the two to be conceptually equivalent.

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[241] Vermaas, 'Engineering Design', p. 199.

[242] Vermaas, 'Engineering Design', p. 199. in reference to this fact, it has been described as a 'third culture'. This reference, according to Vermaas, is in virtue of the fact that the 'first culture' of the natural sciences succeed in establishing norms, practices, and methodologies that made it unfeasible for the humanities to claim to be 'scientific', and that now we have a situation where 'design research is confronted with a struggle with positioning itself as a science relative to the standards that are now set by the natural sciences and the humanities'. p. 204.

[243] Vermaas, 'Engineering Design', p. 199.

[244] Vermaas, 'Engineering Design', pp. 202–203.

Likewise, one can insist on the narrow definition and differentiate between design by engineers and design by non-engineers. If this is the case, then the question arises of the exact nature of the relation between the two. Regardless of where one stands on the matter, we can proceed by recognising that a more general perspective of design thinking functions through adopting 'the problem finding and solving aspects of engineer design', and extending their applicability to domains outside those traditionally associated with engineering, and/or to activities undertaken by people who would not be identified as engineers.[245]

This idea that non-engineering problems – i.e., social problems – can be solved through the application of engineering principles is captured in the concept of the 'technological fix', or as it is commonly called, the techno-fix.[246] Vermaas says that this term has eventually come to refer to 'the naivety involved in the engineering assumption that technology can conclusively address social issues and that engineers can control all the side effects of the use of new technological applications'.[247] Vermaas sees that the tendency toward a broadening of the perspective taken on engineering design, shows that it is no longer simply a 'niche practice that produces on demand material artifacts, but becomes one by which we all – engineers, scientists, industrialists, policy makers – shape and innovate our material world and social reality'.[248] This highlights a critical task for philosophy – the task of 'challenging the modernist claim that engineering design will solve all our problems'. [249]

Also, it should be noted that there are distinct differences between the methods and orientation of 'technical design' and 'scientific research'. Philosopher of technology Peter Kroes, says that whereas scientific research is methodologically descriptive and orientated toward its products, design methodologies are normative and decidedly 'process

[245] Vermaas, 'Engineering Design', p. 203.
[246] Vermaas, 'Engineering Design', p. 203.
[247] Vermaas, 'Engineering Design', p. 203.
[248] Vermaas, 'Engineering Design', p. 204.
[249] Vermaas, 'Engineering Design', p. 204.

orientated'.[250] Whether understood as 'rational problem solving', or as 'reflective practice', design is a process. The engineer or designer undertakes a normative task when they design or manufacture a technical artifact or system, they are first and foremost concerned with how the system or artifact 'ought' to work in order to achieve the desired outcome. In other words, they are primarily concerned with function.[251]

Function is an essential concept in engineering. Functions are ascribed to technical artifacts and these functions can also be broken down into subfunctions of their components. Any design of an artifact – including explanations of how an artifacts works – or any process of reverse engineering toward determining how existing artifacts work or are designed, must engage with these functions and subfunctions.[252] But problematically, there is no single universally accepted and used notion of function that applies across engineering practices in general – the term is employed in a variety of ways. As a result of this, the concept of function as it is used in engineering is at root an ambiguous one.[253]

In philosophy of technology, function is used to describe, and explain the notion of the 'dual-aspect' of technology, i.e., technological artifacts display both physical and intentional characteristics. In philosophy of mind and philosophy of biology, function is generally an explanatory concept associated with mechanistic perspectives and a tendency toward reductionist ontologies. Thus, the ambiguity that characterises the concept of function in engineering has implications that extend beyond engineering itself – perhaps making any use of the term in the above fields as similarly ambiguous.[254] This is especially relevant when we take into consideration the computer/brain analogy that is so prevalent within the engineering disciplines associated with the NBIC project.

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[250] Peter Kroes, 'Design Methodologies and the Nature of Technical Artefacts', in *Readings in the Philosophy of Technology* (Maryland: Rowan & Littlefield Publishers, 2009), pp. 127–138, p. 127.
[251] Kroes, 'Design Methodologies and the Nature of Technical Artefacts', p. 127.
[252] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', p. 160.
[253] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', p. 160.
[254] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', p. 160.

When we posit that a technological artifact is characterised by a dual-aspect, it is generally assumed that the notion of function is exactly what relates these two aspects – it is function that links the physical properties of the artifact with the human intentions that lie behind its design and/or its use.[255] On further reflection, this actually serves to highlight the distinction between what an artifact is designed to do and what it is actually used for, and reveals how the designer can't control the outcome of the overall design process. Function describes the intended ends of the artifact, the actual ends are something that is out of the designer's control once the artifact is in use. Unintended uses, and unintended consequences show that the designer can't define the artifact strictly in terms of function. They can't control its actual use, and what a thing is used for at least partly determines what it is.

Also, in philosophy of biology, the concept of function serves to elucidate the nature of biological organisms, hence if the idea of function that is employed derives from an engineering perspective, the ambiguity that surrounds the engineering concept of function transfers to the biological domain and renders any use of the concept there as equally ambiguous.[256] Functional explanations abound in biology, and teleological language persists along with it. The situation may require that we recognise engineering as in some way special in that it has multiple meanings and uses for the concept of function, or that we accept the ambiguity that the notion displays in engineering applies also to its use in biology. Either way, there is need for deeper engagement with, and reflection on, the wider implications of transferring engineering principles and concepts beyond the boundaries of engineering disciplines.[257]

To conclude, we must briefly ask what drives the innovation process itself? This issue has significance not only for the understanding of technology as a phenomenon in and of

[255] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', p. 175.
[256] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', p. 179.
[257] Vermaas, et al., 'The Conceptual Elusiveness of Engineering Functions', pp. 181–182.

itself but also for the understanding of its effect on social, cultural, and political processes.[258] In engineering the design process is generally constituted of a number of 'translational steps' – these include the initial need, which is followed by a listing of 'functional requirements', which will 'define the design task' at hand and delimit what the engineered object must be capable of. These functional requirements are translated into 'design specifications', which then translates into a 'blueprint'. The blueprint 'contains all the details that must be known such that the final step to the process of manufacturing the device can take place – it is then translated into the final stage of testing and the production of a 'prototype'.[259]

Of interest here is that the engineer's task is rarely to design a specific artifact – engineering is a response to a problem, it is problem solving – the origin of a 'design task' is a problem that the engineer themselves or society identifies as needing to be addressed, i.e., the need for an engineered solution to some problem outside of the design process. In general, design originates with a 'problem pointed out by some societal agent, which engineers are then invited to solve'.[260] These problems are often 'ill-defined' and such ill-defined problems are often referred to as 'wicked problems'. Without any clear definitions regarding what the actual problem is, nor what a potential solution might look like – the problem then can also be constituted as a 'situation'. This situation is experienced to some degree or other as 'unsatisfactory', either by the people in that situation or those assessing it in some way from an external vantage point. Such situations are not necessarily accompanied by a clear vision of what an alternative and satisfactory situation might be – it isn't necessarily obvious that a specific artifact or artifactual 'system' or 'process' represents an adequate response to the problem or situation.[261] For our purpose, it should be recognised that

[258] Franssen, 'Philosophy of Technology'.
[259] Franssen, 'Philosophy of Technology'.
[260] Franssen, 'Philosophy of Technology'.
[261] See: Franssen, 'Philosophy of Technology'; Interaction design Foundation <https://www.interaction-design.org/literature/topics/wicked-problems> [accessed 16 June 2020]; H.W. Rittel &m. M. Webber, 'Dilemmas in a General Theory of Planning', *Policy Sciences*, 4/2 (1973), 155–169

these ill-defined 'wicked problems' are generally socio-political or ethical problems.[262] In other words, they are *human* problems.

1.3.3 THE PROBLEM OF THE HUMAN BEING AS AN ENGINEERING PROBLEM

Engineering design is first and foremost concerned with satisfying the requirements of the design problem. As such, it is pragmatically orientated, which means that the design process stops when a solution to the given problem is found – provided of course, that there are no recognisable alternatives.[263] The design process begins through the identification of a problem or need that is to be solved or satisfied, and an awareness of the centrality of the design principle for engineering processes is crucial if initial design decisions are to translate further down the line into the desired outcomes.[264]

As a central pillar of engineering, design is understood as an 'essential creative process', one which requires 'imagination, creativity, the knowledge and application of technical and scientific skills, and skilful use of materials' – it is this which distinguishes engineering from science.[265] Significantly, and of note for our analysis, is the fact that the basic principles of engineering design are not 'rooted in physics or mathematics' – they 'derive more from experience, practice, or pragmatism than from formal theory', hence, they can be 'referred to by all designers of any discipline'.[266]

Thus, the principle of design allows engineering practices to transcend the boundaries of traditional engineering disciplines. The principle of design extends outwards like an

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<https://www.stonybrook.edu/commcms/wicked-problem/about/What-is-a-wicked-problem> [accessed 16 June 2020].

[262] See, Australian Public Service Committee <https://www.apsc.gov.au/tackling-wicked-problems-public-policy-perspective [accessed 16 June 2020].

[263] Vermaas, 'Engineering Design', p. 197.

[264] Royal Academy of Engineering, 'Principles of Engineering Design' (1999) <https://www.raeng.org.uk/publications/other/armstrong-keynote> [accessed 12th July 2021].

[265] Royal Academy of Engineering, 'Principles of Engineering Design'.

[266] Royal Academy of Engineering, 'Principles of Engineering Design'.

interweaving cord, braiding together the disparate aspects of the human world – cultural and biological. When any aspect of the human world is apprehended from the engineering perspective, it is subsumed in the category of a design problem – identified, categorised, and awaiting an engineering solution.

In this way, design is a principle that has been extended beyond traditional engineering disciplines, allowing the perspective of the engineer to extend its reach to disciplines previously beyond the sphere of engineering. More and more, areas of human knowledge previously outside the remit of engineers, are now subjected to engineering principles and methodologies – a process which can potentially change the very nature of their knowledge and practice. The impact of IT on the biological sciences, and the way that biology is more and more becoming an 'information science', clearly illustrates this phenomenon.[267]

A paradigmatic example of engineering principles extending to the life sciences within late-modern technology, is the field of synthetic biology. Synthetic biology is essentially rooted in the notion that an engineering perspective can be brought to bear in biology. As an example of 'late-modern technology', it is considered to be one of the 'key technosciences of the future' – it has been identified as representing a possible 'epochal break in the ontology of technoscientific systems'.[268] The field is characterised on a fundamental level by reference to the attempt to harness 'self-organization for engineering purposes' – this task is its unifying leitmotif, and it is this that some commentators say sets it apart from other areas of technoscience and biotechnology.[269]

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[267] Thacker, 'Data Made Flesh', pp. 72–73.

[268] Jan Cornelius Schmidt, 'Prospective Technology Assessment of Synthetic Biology: Fundamental and Propaedeutic Reflections in Order to Enable an Early Assessment', *Science, Engineering, Ethics*, 22 (2016), 1151–70 (p. 1151). Schmidt gives three standard definitions of the field as the 'engineering definition', the 'artificiality definition', and the 'extreme gene/biotech definition'.

[269] Schmidt, 'Prospective Technology Assessment of Synthetic Biology: Fundamental and Propaedeutic Reflections in Order to Enable an Early Assessment', p. 1151.

A defining feature of synthetic biology is the dynamic of non-biologists attempting to take a new perspective on biology. This is built upon the initial premise that principles from engineering and computer science can be successfully applied to biological systems.[270] Building on the results and insights of molecular biology, the philosophical discourse is focused around the debate between concepts of reductionism and complexity – how they relate to each other and the fundamental tensions that exist between the two. Of equal concern is the question of how human knowledge and understanding relate to the essential features and characteristics of design – *both intentional human design and apparent design in nature*.[271]

The simple and well-defined task of synthetic biology is to 'build new things'.[272] Its fundamental goal is not research orientated, it does not ultimately aim at theoretical 'understanding' of natural biological phenomena, rather it strives to go beyond traditional bioscience and standard models of organisms and – as an 'applied' discipline – make biology amenable to engineering methodologies by attempting to engineer new biological tools with which to build new biological organisms and systems.[273] As a new field of applied science, synthetic biology has been described as representing a crossing of 'the border from the non-living sphere of traditional technology into the realm of the living' and – rather than being seen as a sub-field of genetic engineering – some commentators suggest it should be considered a distinct field of techno-science, incorporating as it does, elements of molecular biology, systems biology, bioinformatics, biochemistry.[274]

Two major and emerging trends have been identified as defining the field; the increasing complexity of biological constructs supported by systematic modelling; and the

[270] Darren N. Nesbeth, ed., *Synthetic Biology Handbook* (Boca Raton: Taylor & Francis Group, 2016), p. ix.
[271] Sarah Green, 'Philosophy of Systems and Synthetic Biology', in *Stanford Encyclopedia of Philosophy* (2017) <https://plato.stanford.edu/entries/systems-synthetic-biology/> [accessed 2nd May 2018].
[272] Nesbeth, *Synthetic Biology Handbook*. p. ix.
[273] Nesbeth, *Synthetic Biology Handbook*. p. ix.
[274] Nesbeth, *Synthetic Biology Handbook*. p. xi.

transferring of engineering principles and concepts previous applied to non-living objects to living entities.[275] The latter perfectly captures the dynamic of transhumanism and how it represents the widening of the scope of the engineering perspective to encompass all aspects of life as the objects of potential design, re-design, and innovation.

Synthetic biology is seen by many as marking a qualitative shift in the understanding of biology – its 'technicization' of the biological realm captures the essence of technoscience itself.[276] The field has also been described as driven by the attempt to domesticate complexity, and there are two main schools of thought that can identified – molecular genetics and systems biology. As a result of this there is a tension at the heart of synthetic biology – a tension between the two schools of thoughts that is derived from the outstanding dichotomy between reductionism and holism. The tension emerges as a result of the antagonistic interplay between the 'mechanistic' assumptions and methods of genetics, and the 'organic' approach of systems biology with its preference for 'synthesis' rather than 'purely quantifying analysis'.[277]

Philosopher Jan C. Schmidt sees the philosophical tension at the core of synthetic biology – the relation of the parts to the whole – as an apparent dialectical relationship of 'seemingly contradictory concepts'.[278] As such, the holism of a systems approach and the technological reductionism of convergence, are in fundamental tension; he states that this 'inherent dialectic' is key to understanding the essential features of synthetic biology.[279] To fully grasp what is at play Schmidt argues that the analysis must extend beyond the definitions, goals, methodologies, and objects of synthetic biology, to the philosophical engagement with the underlying, and unifying, principle according to which it is built – the

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275 Nesbeth, *Synthetic Biology Handbook*. p. xi.
276 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', pp. 1154–1157. Because it is fundamentally interdisciplinary in nature Schmidt says that the question arises whether it represents a unique and emerging 'technoscientific wave' rather than merely developments and progress in an existing discipline or branch of academic research.
277 Nesbeth, *Synthetic Biology Handbook*. p. xi.
278 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1157.
279 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1157.

attempt to harness the 'self-organization of nature for technological purposes'.[280] Schmidt traces the source of this principle and its expression through synthetic biology to prominent transhumanist thinker, engineer, and early pioneer and proponent of nanotechnology, Eric Drexler.[281]

Ultimately what is at play within synthetic biology is the further intensification of an ongoing blurring of the line between the biological and the technical. For Schmidt, what is happening is that technologies are becoming more 'biological', and they and are being endowed with properties and characteristics previously only attributed to living organisms and biological systems – thus, we have the emergence of a new understanding of technology, a new understanding based on a shift away from the idea of 'nature technologized' to a concept of 'technology naturalized'.[282]

Schmidt states, 'self-organization appears to be the kernel of the ideal of the convergence of technologies'.[283] This position aligns with the central notion of Convergence – order, and particularly *spontaneous order*, is now the major concern of a wide range of disciplines and fields of study.[284] It should be noted that self-organisation is a central theme in robotics, AI, nanotechnology, and cognitive-neurotechnologies, all of which are key areas of interest with respect to transhumanism, all of which involve an operational understanding of engineering design as transdisciplinary, and a functional conception of engineering methods and principles as transferable and directly transmissible across different fields.

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280 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1157.
281 Drexler's initial step was to wonder if it was possible to mimic and replicate 'mechanically' what cells automatically do 'biologically'. See, Ed Regis, 'The Incredible Shrinking Man', *Wired* <https://www.wired.com/2004/10/drexler/> [accessed 22nd February 2021].
282 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1157. Here Schmidt is referencing philosopher Alfred Nordman.
283 Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1159. This refers to the reversal of metaphors described earlier, a reversal inspired by, and based on, the principles of complex, self-organising systems. See also, Eric Davis, *TechGnosis: Myth, Magic, and Mysticism in the Age of Information* (New York: Harmony Books, 2004), p. 6. Davis says that a less mechanised metaphor has now emerged as predominant, no longer do we speak of the 'myth of the machine', now we talk about the 'myth of information'.
284 Watson, *Convergence*, pp. xxx–xxxi. As Watson puts it, a 'breakthrough in this area could have breathtaking consequences, not least for our understanding of evolution'.

Philosopher Alfred Nordmann says that what distinguishes synthetic biology from traditional scientific fields is that fact that it *generates* rather than reduces complexity. He states that synthetic biology 'promotes the controlled generation of complexity by technical means, that is, by drawing available theories and tools into a technoscientific design process.'[285] This is significant as it shows how biology and technology have become combined within a single research programme under a principle of design.

As Nordmann points out, design has been a historically contentious issue within the philosophy of biology – post-Darwin, it has been almost universally accepted that the objects of biology are the outcome of 'natural history', rather than the result of intelligent design. As such, Nordmann asks 'how can synthetic biology speak of design processes and simultaneously take the insights of evolutionary biology into account'?[286] He goes on to say that if we assume synthetic biologists are 'interested in maintaining the continuity between the scientific naturalism of Darwinian biology and their engineering-orientated enterprise', then it is necessary to hold that they will need to address the significant philosophical tension that is immediately apparent when a biological entity is conceived of on the one hand, as an 'object of evolution', and on the other as an 'object of design'. Nordman states that synthetic biology appears to both uphold the distinction between organism and artifact while simultaneously seeming to 'undermine', or 'even reject it'.[287]

This tension reflects a problem that Darwin recognised in his comparison between artificial selection and natural selection, i.e., regardless of any similarities between the two, the positing of an intelligent designer is compatible only within the context of artificial

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[285] Alfred Nordmann, 'Synthetic Biology at the Limits of Science', in *Synthetic Biology: Character and Impact*, ed. by Bernd Giese, Armin von Gleich, Christian Pade & Henning Wigger (Berlin: Springer, 2015), pp. 31–58 (pp. 31–33). In a 2015 publication aimed at providing a comprehensive analysis and description of the field – *Synthetic Biology: Character and Impact* – Nordmann puts it quite simply when he says that synthetic biology aims 'to bring an engineering approach to biology', in order to achieve 'technical control of biological complexity'.
[286] Nordmann, 'Synthetic Biology at the Limits of Science', p. 32.
[287] Nordmann, 'Synthetic Biology at the Limits of Science', p. 39.

selection.[288] Nordmann says that the aspiration to 'reproduce the work of natural evolution in a more purposeful manner', gives rise to the charge of 'technological hubris'. Accusations abound that the engineers of biology are positioning themselves as a 'divine creator', the figure of which has long since been 'banished from the scientific worldview'.[289]

According to Nordmann, the idea that human culture and technology has 'finally' developed to the point where we can assume responsibility over our evolutionary destiny, predates and precedes the development of synthetic biology as a field of research, but synthetic biology represents a specific articulation of the overall sentiment. He says that it is not a case of synthetic biologists 'playing God' – God has been purged from their scientific account of nature – and it also not simply a case of synthetic biologists viewing nature as a mechanism whose principles of construction can be discovered. Rather, for Nordmann, it is a matter of synthetic biologist viewing nature itself as 'an engineer of sorts', an engineer who, like them, designs 'biological artifacts', but whose creations are subject to unnecessary inefficiencies and design flaws and are overly constrained by evolutionary history and the slow pace of natural selection.[290] In other words, from an engineering perspective, not only should we be able to harness the organising principles and complexity of natural systems through the technological creation/recreation of those systems, but we can also improve upon them.[291]

The above precisely matches the sentiments of Kurzweil form earlier, and it all adds up to a situation which is defined by an extreme intensification – both practically and theoretically – of the interpenetration of biology and technology, toward the goal of human evolution becoming fully a matter of controlled, intentional design. Even if that goal is never

[288] Charles Darwin, *The Origin of Species by Means of Natural Selection* (New York: Hurst and Company, 1912) <http://darwin-online.org.uk/converted/pdf/1912_Origin_F518.pdf> [accessed 2nd March 2021]. Darwin's first two chapters of *The Origin of Species* were about domestic and natural variation.
[289] Nordmann, 'Synthetic Biology at the Limits of Science', p. 39.
[290] Nordmann, 'Synthetic Biology at the Limits of Science', pp. 39–40.
[291] Nordmann, 'Synthetic Biology at the Limits of Science', pp. 33–34. Nordmann says that – despite some variation in its formulation and interpretation – Richard Feynman's maxim 'What I cannot create, I do not understand' is a ubiquitous sentiment within synthetic biology.

realised, the fact the we are trying is of huge significance. If we want to identify something that is a uniquely human trait, something that differentiates us from non-human animals, the fact that we are the first known species trying to direct evolution is a good candidate. Our understanding of human nature is then of huge importance, and it is no surprise then that there are competing voices when it comes to interpreting human/technology relations. The debate will only heat up as the engineering paradigm in biology becomes even more entrenched. This situation also has some contextual roots that should be acknowledged.

Historian of science Philip J. Pauly says that even though it is well recognised that biotechnology raises 'significant social and ethical questions', their 'exact nature and implications is uncertain'.[292] Pauly characterises biotechnology simply as the 'scientific control of life'. Because such an enterprise lacks an obvious and 'viable historical context', it has 'recurrently been conceptualised in fictional, even mythical contexts'.[293] But there is a real history to the idea of controlling life scientifically, and Pauly suggests that it can be broadly seen to be 'coextensive with civilization' – all of our technological developments, agriculture, and medicine representing, on the most basic of levels, the attempt to 'transform living nature for human purposes'.[294] For Pauly, Francis Bacon exemplifies this goal.

While there are numerous historical precedents, – Bacon, chief among them – it was not until the late 19th Century, with the rise of experimental biology, that 'a number of biologists began to think of themselves and their work within the framework of engineering'.[295] This led to the development of the idea that the 'fundamental purpose' of biology should be the 'control of organisms'.[296] Such a doctrine entailed a perspective within which nature was understood as 'raw material' to be manipulated and transformed through

[292] Philip J. Pauly, *Controlling Life: Jacques Loeb and the Engineering Ideal in Biology* (New York and Oxford: Oxford University press, 1987), p. 3.
[293] Pauly, *Controlling Life*, pp. 3–4.
[294] Pauly, *Controlling Life*, p. 4.
[295] Pauly, *Controlling Life*, p. 4.
[296] Pauly, *Controlling Life*, p. 4.

the biologist's application of engineering principles. The first attempt to methodologically approach biology from an explicitly engineering perspective can be traced back to German-born American biologist Jacques Loeb (1859–1924). Loeb was the first to actively pursue the engineering ideal in biology, and to conflate the identification of the biologist with that of the engineer. 'Ontological and epistemological aspects of the science would be subordinated to technics; the appropriate image of the biologist would be, not the naturalist, philosopher, or physician, but the engineer'.[297]

This identification of the biologist with the engineer came to be expressed in the notion that, not only was it possible to get 'the life-phenomena' under scientific control, but that this was in fact the sole aim of biology as a science. Accordingly, 'experimentation' became a central concern and was approached as 'a value in itself', the pursuit of which was ultimately an expression of the 'manipulative power of biologists'.[298] Of most interest here is the fact that – as a result of this turn toward engineering – previous 'metaphysical' concerns of biology, such as evolution, the nature of life, the causes of biological organization, and the explanatory problems associated with biology in general, were to be sidestepped and considered simply to be 'distractions from the central aim of control'.[299]

Pauly describes this overall perspective as 'the engineering standpoint' in biology.[300] Underpinning it is a conception of biology *as* engineering – defined and characterised by experimentation. This was a radical and unprecedented move according to Pauly, primarily because it 'made the human future disturbingly open-ended', and understood that 'the main

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[297] Pauly, *Controlling Life*, p. 4. Pauly states that it was Jacques Loeb (1859–1924) who was the first to actively pursue this 'ideal' and that build a 'scientific career on the identification of the biologist and the engineer'. He quotes Loeb from 1890: "the idea is now hovering before me that man himself can act as a creator, even in living Nature, forming it eventually according to his will. Man can at least succeed in a technology of living substance". See, Jacques Loeb, *The Mechanistic Conception of Life*, (Chicago: The University of Chicago Press, 1912).
[298] Pauly, *Controlling Life*, p. 5.
[299] Pauly, *Controlling Life*, p. 5.
[300] Pauly, *Controlling Life*, pp. 5–7. Pauly states that Loeb's advocation of this standpoint was underscored by a strong 'single minded' commitment to a position of 'mechanistic materialism', and that his longstanding ideological preference for experimentation over theory was a clear articulation of his 'reductionist epistemology and mechanistic materialist ontology'.

problem of biology' was the 'production of the new, not the analysis of the existent'.[301] Pauly concludes by stating that the observable trend in biology – since the 1970's – toward the 'artificialization of nature', reflects the fact that we are only now beginning to see the effects of this change of perspective.[302]

In light of our assessment of transhumanism, synthetic biology's attempt at mastery over the self-organisation observed in nature, and the attempt to harness biological complexity for engineering purposes, can be seen as a late-modern continuation of the basic principles of Baconian science.[303] Similarly, the engineering perspective gives definition to a shared horizon that exists between the speculative philosophy of transhumanism and current techno-scientific developments. The transhumanist vision reveals – and venerates – the principle of control at work. The engineering perspective is a design-orientated view of the world – where the objects of engineering show up as design problems. Thus, the human being itself is also seen in these terms as a problem to be studied, mastered, understood, and overcome. This idea that human biology is a problem or limitation that needs to conquered is a fundamental assumption of transhumanist thought and it dovetails neatly with the concept that the biological human being is an engineering or design problem – best approached from a position that equates understanding with the ability to build, design, and construct.[304]

Accordingly, synthetic biology as a field of study demonstrates the influence that key ideas associated with transhumanist thought have had in the development of late modern technology. This can be seen as an example of how the analysis of the interpenetration of

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301 Pauly, *Controlling Life*, pp. 7–8.
302 Pauly, *Controlling Life*, p. 8.
303 See, Francis Bacon, *The New Organon*: *or True Directions Concerning the Interpretation of Nature* ed, by Lisa Jardine and Michael Silverthorne (Cambridge: Cambridge University Press, 2000); Stephen Gaukroger, *Francis Bacon and the Transformation of Early-modern Philosophy* (Cambridge: Cambridge University Press, 2004); Florian Cajori, 'The Baconian Method of Scientific Research'; Jürgen Klein, 'Francis Bacon', *Stanford Encyclopedia of Philosophy* (2012) <https://plato.stanford.edu/entries/francis-bacon/> [accessed 22nd February 2021].
304 Tim Adams, 'When Man Meets Metal: Rise of the Transhumans', *The Guardian* <https://www.theguardian.com/technology/2017/oct/29/transhuman-bodyhacking-transspecies-cyborg> [accessed 18th March 2019].

biology and technology can be given focus and direction by identifying an underlying philosophical concept which functions as an overarching and multidisciplinary principle of orientation, a principle which can then be investigated within the current framework because it is fundamentally linked to how we understand ourselves and our relation to the world.

CONCLUSION

Transhumanism is essentially correct in its claim that the we should assume that what has evolved will continue to evolve, and that the human and the technological are intimately bound together within the evolutionary process. It is difficult to accurately assess what the implications of this position might be, but it is clearly of the utmost importance to us as a species. Engineering the post-biological future is an opaque task, and it remains to be seen how significant it is that, when it was previously considered a functional feature of evolutionary theory, design was a *metaphysical* principle.

The intractable problem of the human being is paradigmatic as an example of the *ill-structured*, *wicked*, and *paradoxical* problems referred to earlier – problems that require the methodological nuance of the design process and the innovative, creative, and imaginative approach of the engineering perspective. Saying that, reductionism is a major philosophical stumbling block – as is the associated worldview of mechanism, and all assumptions based on the unreflective acceptance of the computer/brain analogy. Ontologies of control are also problematic.

If the instrumentalist conception of technology as value-neutral is rejected, design could operate across disciplines as a value-based principle that is inclusive in nature, and helps stimulate refection and debate on the nature and application of technology. Technology is foundational to the human experience. Engineering is an existential activity and might offer a unique resource in terms of how we approach human nature – it understands that ill-structured problems might need re-assessment, re-formulation, and *re-interpretation* as a part of the process of design resolution.

Such an understanding can serve as an essential aspect of Philosophical Anthropology and help with the task of overcoming immutable, dogmatic, and historically fixed conceptions of human nature. The belief that human nature is an open ended process is central to both transhumanism and Philosophical Anthropology – it marks an initial point of contact between the two in terms of a dialogue on the human being and the idea of post-biology. The engineering perspective itself is not a problem, but problems will arise though its mis-direction. A dialogue which is hugely important and which can start with the recognition that the problem of the human being is not a well-defined problem. As such, it may be of benefit to ask who and what we are, *before* we ask, who or what we should turn ourselves into.

CHAPTER 2: THE QUESTION CONCERNING TECHNOLOGY IS AN ISSUE OF PHILOSOPHICAL ANTHROPOLOGY

INTRODUCTION

Philosophical Anthropology is probably best described in terms of it being a 'philosophical paradigm', i.e., a particular *approach* to philosophy. Such an approach takes its shape, and is given definition by the attempt to philosophically theorise the human *via* theorising biological life.[305] As a paradigm, it emerged as a philosophical current in the 1920's in German-speaking countries and was characterised by the explicit endeavour to make the findings of the human sciences the starting point of philosophical engagement.[306] The human being is apprehended as both the subject and the object of Philosophical Anthropology – the analysis begins with a critical *objective* view of the human as a biological organism.[307] This is of course only the point of departure, as the paradigm extends to all aspects of human existence – including our technological capacities.

Philosopher Denis Weiss states that the goal of Philosophical Anthropology is to construct a 'comprehensive view of the whole human being', one which assumes the necessity of 'such a comprehensive anthropological framework', in overcoming 'both the dualistic view of the human being that has been the lasting heritage of Descartes, and the picture of the human being coming out of the various sciences as being composed of distinct often unrelated parts'.[308] At the root of this assessment is the realisation that there are

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305 Joachim Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', trans. by Christina Harrison, *Iris*, 1 (2009), 153–70. (p. 153).

306 Micha, Brumlik, 'Transhumanism is Humanism, and Humanism is Transhumanism', in *Perfecting Human Futures: Transhuman Visions and Technological Imaginations*, ed. by J. Benjamin Hurlbut and Hava Tirosh Samuelson (Wiesbaden: Springer VS, 2016) pp. 121–40 (p. 112).

307 Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', p. 153.

308 Dennis Weiss, 'Scheler and Philosophical Anthropology' <https://www.dennisweiss.net/philosophical-anthropology> [accessed 9th April 2022], pp. 3–4.

‘fundamental problems of interest to us as human beings which science cannot answer and require a specifically anthropological insight’.[309]

The human being is approached within Philosophical Anthropology as *both* biological and socio-cultural. We are the result of an initial biological situation which has been subject to long historical developments. Developments that have facilitated the accumulation and expansion of human culture through our species’ construction of – and participation in – a symbolically mediated complex of cultural phenomena. Experienced intersubjectively, it is within culture that we strive to give expression to the *idea* of the human being. This is done through our art, our music, our religion, and in the stories and myths we weave – for it is through these that we strive to describe and explain our place in Being. Whereas it is clear that our culture has its original basis in our biological heritage, it is also clear that it is not exclusively determined by it.[310] Hence, according to the theory of Philosophical Anthropology there is an obvious *dual-aspect* to the constitution of the human being.

The structure of this dual-aspect ensures that we have an uneasy and problematic relationship with our own nature. The human being is not bound by its instincts in the same way as other non-human species are, nor are we confined to a single and determining environment – we are *free* in an apparently unique way. We are free to construct our identities in a way that non-human species are not, as such, we are a part of the natural world, but at the same time our experience is one where there is a fundamental sense of opposition to nature. This sense of separation from nature can be expressed through the idea that – even though we are a biological species – it appears that we experience our embodiment in a unique way.

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[309] Weiss, ‘Scheler and Philosophical Anthropology’, p. 11.

[310] Richard Schact, ‘Philosophical Anthropology: What, Why and How’, *Philosophy and Phenomenological Research*, 50 (1990), 155–76 (p. 155) <http://www.jstor.org/stable/2108037> [accessed 3 January 2018].

We can *objectify* our body, meaning it can be both, the body one *is* and the body one *has*.[311] Thus, the issue of human nature has always been a contentious one. There is no universally accepted answer to the foundational question of Philosophical Anthropology – *what is the human being*? This outstanding question is perennially unresolved and often neglected, but of fundamental and persistent significance. It resists definitive resolution, and persists alongside us as an elusive target – only ever partly captured by the multifarious historical self-images that the human being has constructed of itself. As a philosophical paradigm, Philosophical Anthropology understands the question of the human being to be primary. It is also essentially problematic. Without consensus, our constructed self-images remain incomplete. Their lack of determinacy a paean to the intractable *problem* of the human being – not only do we not know who or what we are, but we also know that we don't know.

2.1 PHILOSOPHICAL ANTHROPLOGY: THE *PROBLEM* OF THE HUMAN BEING

2.1.1THE DUAL-ASPECT OF THE HUMAN BEING

In a recent publication on the subject of philosophical anthropology, *Philosophical Anthropology: An Introduction* (2017), the authors – philosophers and theologians – José Angel Lombo and Francesco Russo, begin by calling attention to a persistent inclination to speak about the 'problem of man', when referring to the subject matter of Philosophical Anthropology.[312] For Lombo and Russo, this tendency is rooted in the fact that any enquiry of a philosophical anthropological nature must be a 'metaphysical anthropology', i.e. it must

[311] Mia Gosselin, *Homo Sapiens, A Problematic Species*: *An Essay in Philosophical Anthropology* (Lanham: University Press of America, 2015).
[312] José Angel Lombo and Francesco Russo, *Philosophical Anthropology: An Introduction*, trans. by Rev. James Socias (Downers Grove: Midwest Theological Forum, 2017).

consist of 'philosophical reflection that extends to the ultimate, the radical, causes and principles of human reality'.[313]

This metaphysical aspect means that, Philosophical Anthropology is distinguished from other forms of anthropology, such as cultural anthropology, psychological anthropology, or social anthropology – all of which employ some form or other of experimental-based analysis to generate 'empirical' findings that are the core of their analysis. Rather than adopt a perspective from any single particular viewpoint, Philosophical Anthropology attempts to grasp the human being in its entirety, thus, it aims at 'fundamental principles' that are constitutive of the human being, and this is done in conjunction with a constant engagement with the knowledge generated by other sciences.[314]

Philosophically, there is an obvious close connection with ethics as well as the necessary link with metaphysics identified above. Philosophical Anthropology acts as a foundation for ethics, and in turn, metaphysics provides a foundation for Philosophical Anthropology. All ethical systems presuppose some conception of the human being, and metaphysics – concerned as it is with the nature of ultimate reality – must be the context (implicitly if not explicitly) if the human being is to be taken in its entirety.[315]

The 'idea' of the human being informs everything we do, and all our philosophical inquiries have Philosophical Anthropology as 'a transcendental condition of its own possibility'.[316] Philosophical Anthropology is the explicit philosophical engagement with this implicit background – it represents the philosophical task of focusing all of our enquiries into and through the human being itself. 'What is the human being'? is the central question of

[313] Lombo and Russo, *Philosophical Anthropology*, p. ii. The authors are working within an Aristotelian framework.
[314] Lombo and Russo, *Philosophical Anthropology*, pp. 1–2.
[315] Lombo and Russo, *Philosophical Anthropology*, p. 5.
[316] Phillip Honenberger, 'Introduction' in *Naturalism and Philosophical Anthropology: Nature, life, and the Human between Transcendental and Empirical Perspectives*, ed. by Phillip Honenberger (Basingstoke: Palgrave Macmillan, 2015), pp. 1–26 (p. 16).

Philosophical Anthropology, but this is by no means its only one.[317] The term 'philosophical anthropology' is generally traced back to Kant. It was then consolidated in the early twentieth century by Max Scheler, Helmut Plessner, and Arnold Gehlen and given recognisable form as a particular approach to philosophy based on the shared starting point of all three philosophers, i.e., the human being as a biological entity contrasted – first and foremost – with other non-human animals.[318]

Anthropologist Andreas Spahn describes this as 'classical' Philosophical Anthropology. He says that a defining feature of the philosophy of all three thinkers was the attempt to try and grasp the 'essence of the human'.[319] What stands out for Spahn is that this objective was accompanied by the endeavour to bring together the knowledge of different disciplines and different anthropological perspectives. Importantly, he says that Philosophical Anthropology also accorded a central role to technology as part of its investigation into the human condition. He states: an 'initial focus on linking technology with a universal, philosophical anthropological vision, also rooted in biological knowledge, was one of the key achievements of early philosophical anthropology'.[320] This is an key point. I argue that this willingness to adopt an interdisciplinary approach is of particular significance with respect to using Philosophical Anthropology as a response to transhumanism and post-biological evolution.

Methodological flexibility is also a requirement. In this regards, Lombo and Russo suggest that such flexibility is inherent in the approach. While an inductive-analytic method may offer precision, it is limited due to its reductive character, at the same time, a deductive-synthetic method may miss variation due its focus on the totality of the subject matter. Hence,

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[317] Honenberger, 'Introduction', p. 16.
[318] Lombo and Russo, *Philosophical Anthropology: An Introduction*, p. 2.
[319] Spahn, 'Technology', in *21st Century Anthropology: A Reference Handbook*, ed. by H. James Birx (London: Sage Publications, 2010), pp. 132–143, p. 136. Spahn also says that transhumanism is rooted in 'classical anthropological questions' about the essence of the human being.
[320] Spahn, 'Technology', p. 140.

neither approach is – on its own – entirely adequate. Lombo and Russo suggest a 'systemic approach' as a remedy for this.[321]

This 'systemic approach' conceives of the human being as a 'system' whose constituent parts are 'in close coordination with one another' – the parts are understood only in terms of the whole and the whole depends on the interrelation of the individual parts.[322] This methodological approach is needed because, as Lombo and Russo put it, philosophical reflection on the human being is not the same as reflection on other 'objects of study', i.e., when we reflect upon ourselves it involves 'a degree of pre-comprehension' in the sense that we always already have a 'prior' understanding of the human being/human condition which relates back to every human being's 'self-comprehension', or first-hand knowledge they have of themselves.[323]

As such, this systems approach can be understood as essentially hermeneutic – concerned as it is with *interpreting* the problem of the human being.[324] A 'systems' approach such as this allows for analysis that is based on the dynamic processes which characterise the relationships that exist between the constituent parts of a system – both to each other, and to the system as a whole – rather than being restricted to analysis based in reduction which assumes each constituent part can be described and explained in isolation. The strength of this approach is that it offers scope to address the issues that arise if one is to adopt a position of irreducibility with respect to the human being in a broad sense, and more specifically with

[321] Lombo and Russo, *Philosophical Anthropology*, p. 3.
[322] Lombo and Russo, *Philosophical Anthropology*, p. 3.
[323] Lombo and Russo, *Philosophical Anthropology*, p. 4.
[324] See, Theodore George, 'Hermeneutics', *Stanford Encyclopedia of Philosophy* (2020) <https://plato.stanford.edu/entries/hermeneutics/> [accessed 23rd February 2021]. George understands hermeneutics as both a historical movement and a philosophical discipline. As a philosophical discipline it can be taken as 'the philosophy of interpretation'. As such, it takes interpretation itself as its subject matter. It is concerned with the meaning, scope, and nature of interpretation as well as how it relates to human existence. Hermeneutics is also concerned with how interpretation as a methodological principle is applicable to fundamental philosophical questions. The merits of this are obvious if we understand Philosophical Anthropology in broad terms as an attempt at self-interpretation, i.e., the human experience is, to some degree or other, an interpretive experience.

respect to the human mind, or consciousness itself, and how it relates to biological function.[325]

The human being – as a unity – presents an ill-defined target, one that is constantly moving and perennially hard to pin down. The question of human nature is a long-outstanding one. It is an intractable, obstinate, and contentious issue, lacking consensus and far from settled. A systems approach can facilitate the integration of a wide range of disparate knowledge from a multitude of disciplines under an overarching commitment toward a non-reductionist account of human nature. Thus, it is a strength that Philosophical Anthropology aims at bringing together the findings from a wide range of philosophical enquiry and the empirical findings of the natural sciences, without having to be tied into a predetermined perspective or fixed methodology.[326]

Philosopher Richard Schacht says that the very idea of Philosophical Anthropology rests on the presupposition that it makes sense to speak of 'human nature' – however it may be conceived – and that philosophy is capable of 'elucidating or comprehending' that nature, to some degree or other.[327] For Schacht, it is a mistake to assume that human 'nature' refers in some essential way to biology. Human life is both biological and socio-cultural, and recognition of the fundamentally 'social' character of human life does not make the idea of human nature redundant. Human culture is 'grounded in' and 'conditioned by' our biological context – as such the human condition is a result of an initial biological situation which itself has been subject to long historical developments. These developments have been manifested historically as a variety of different 'socio-cultural formations' which coalesce as the

[325] This systems-based approach is also better suited if one is inclined toward a process-based ontology as opposed to a substance-based ontology. I argue that the irreducibility of the human being and consciousness *per se* require a process-based ontology – this is particularly relevant within an evolutionary context in terms of the problems that arise with respect to what place – and possible function – consciousness is assigned within models of biological evolution. The significance of this will be evident later when we consider in more detail Scheler's Philosophical Anthropology which is non-reductive, characterised by the irreducibility of *Geist*, and understands the human being as a process which is structured according to a dynamic interplay between the 'real' and the 'ideal'.
[326] Schact, 'Philosophical Anthropology', p. 155.
[327] Schact, 'Philosophical Anthropology', p. 155.

complex of human 'relations and interrelations' which ultimately, constitute the scope of all human interaction. This complex of intersubjectivity is mediated by 'symbols, conventions, and institutions' – it finds a multitude of forms, and while it is conditioned by our biological heritage it is not reductively determined by it.[328] Hence, the obvious *dual-aspect* to the constitution of the human being – we are both biological and cultural, both natural and transcendent, animal yet spiritual.

This dual-aspect to human nature is reflected in the specific character of Philosophical Anthropology itself. This is in virtue of the fact the human being is – at the same time – both the 'object' and the 'subject' of enquiry.[329] As a field of enquiry, Philosophical Anthropology is rooted in the notion that the human being occupies a unique or special place in the world.[330] Philosopher and Jesuit priest Roma Darowski, says that this is a consequence of our being a 'special unity of matter and spirit', a unity that preserves the 'separateness of both'.[331] He offers a definition of Philosophical Anthropology as an investigation into the human condition which is conducted in terms of 'ultimate cause', or 'fundamental conditions'. By definition, it is metaphysical in nature – it pertains to the 'being' of human beings, and is primarily concerned with the issue of the nature and mode of our existence, how we relate to other existing beings, and why we relate to them in the particular way we do.[332] Darowski says that the human being is a 'questioning being' and, as such, one finds

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328 Schact, 'Philosophical Anthropology', p. 155.
329 Roman Darowski, *Philosophical Anthropology: Outline of Fundamental Problems* (Cracow: WAM Publishing House, 2014), p. 13.
330 Darowski, *Philosophical Anthropology*, p. 14.
331 Darowski, *Philosophical Anthropology*, p. 14.
332 Darowski, *Philosophical Anthropology*, p. 18. There are some basic underlying assumptions according to Darowski: Philosophical Anthropology 'assumes the philosophy of being (ontology) and relies on it; Philosophical Anthropology assumes to some degree or other available 'empirical knowledge' about human beings; Philosophical Anthropology 'assumes the philosophy of cognition or theory of cognition'.

that it is ‘existential questions’ that lie at the roots of Philosophical Anthropology – Philosophical Anthropology *is* the attempt to ‘answer existential questions’.[333]

The human experience is one of attempted self-interpretation – we ask about ourselves, we are a ‘problem’ for ourselves, and as Scheler points out, we are all too painfully aware of it also. In light of this, it must be recognised though that there is a difference between ‘philosophical’ questions and the questions of other discipline, i.e., philosophical questions are ‘general and ultimate’, compared to ‘scientific’ questions, which are ‘specific’, ‘material’, ‘concrete’, and ‘measurable’.[334]

While philosophical anthropology looks to other sciences for ‘data’ to incorporate into its analysis, it still faces the same problems that face philosophy in general, i.e., the highly ‘abstract’ and ‘theoretical’ nature of its subject matter.[335] There are, according to Darowski, several main concerns of Philosophical Anthropology. First is how humans relate to other non-human animals. The human being is both like and unlike other animals – in terms of any essential difference we can frame the debate as a question of ‘quantity’ vs ‘quality’. Darowski argues that despite ‘significant external resemblance’, there exists an ‘essential’ difference between the human being and other non-human animals.[336] From this position, it is understood that as an ‘animal’ – or ‘biological species’ – the human being has ‘peculiar characteristics’, characteristics that reveal us to be ‘poorly equipped’ when compared to other members of the animal kingdom.[337]

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[333] Darowski, *Philosophical Anthropology*, pp. 20–23. Darowski says that these existential questions have their roots our very nature – such questions represent the ‘natural aspiration’ of the human being, they refer to and ‘prove’ the ‘existence of a spiritual element (the soul) in a human being’.
[334] Darowski, *Philosophical Anthropology*, p. 22.
[335] Darowski, *Philosophical Anthropology*, p. 13.
[336] Darowski, *Philosophical Anthropology*, p. 33.
[337] Darowski, *Philosophical Anthropology*, pp. 34–35.

This idea that the human being lacks in tooth and claw, is generally described as an 'instinct deficit'.[338] Despite this deficiency of instinct, the specific characteristics we display also distinguishes us from other non-human species in an advantageous manner – i.e., the standard argument is that our 'physical' weaknesses are compensated for by our 'spiritual' abilities.[339]

As well as our animal aspect, we must too consider the issue of the human being as a cultural being. The human being creates culture – it is the 'fundamental sphere of human activity in this world' – in one sense, culture is what the human being 'adds' to nature.[340] Saying that, the presumption of a fundamental nature/culture dichotomy is problematic. The tendency to see *nature* as external or something that is 'inborn', and in an essential way as independent from human activity, segues neatly with the view that *culture* is that which results from intentional free human action – taken together these two perspectives can work to divorce us from the world in such a way that we neglect to recognise that nature and culture are intimately connected. It seems obvious that nature has historical precedence, but at the same time all human experience of the natural world is through the medium of culture. The sense of separation generated by the nature/culture dichotomy can obscure the fact that in the human being, our natural aspect and our cultural aspect are 'mutually and closely intertwined' – nature is to some degree or other, the 'source' of all human culture.[341]

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[338] See, Arnold Gehlen, *Man: His Nature and Place in the World*, trans. by Clare McMillan and Karl Pillemer (New York: Columbia University Press, 1988); Landmann, Michael, *Fundamental Anthropology*, ed., and trans, by David J. Parent (Boston: University Press of America, 1985).

[339] Darowski, *Philosophical Anthropology*, pp. 33–36. Darowski holds that our intelligence and freedom are rooted in the human soul and expressed in the mind and through our free will. He says that the 'uniqueness' of the human being is captured in our 'consciousness', which reveals the defining characteristic of a double 'openness' – cognitive openness and volitive openness. He claims that this is evidence of the 'superiority' of the human being with respect to other animals. Our cognitive openness allows us to experience and have access to both material and spiritual phenomena which is expressed in our ability for speech and symbolic gesture – it allows us 'infer the existence of the absolute' – while and our volitive openness means that 'any kind of being can become an object and aim of human desires, aspirations and achievements'. He operates according to a Aristotelian/Thomistic anthropological model where the human, as a 'rational animal' has a rational soul which is of a 'higher order' than the soul or 'element of life' that defines of other organic lifeforms. His philosophical views are obviously shaped very strongly by his religious beliefs.

[340] Darowski, *Philosophical Anthropology*, p. 109.

[341] Darowski, *Philosophical Anthropology*, p. 110.

Darowski identifies both subjective and objective cultural domains and both spiritual and material cultural output. Material culture, or civilisation, is clearly identifiable as a 'specifically human creation; such phenomena are not seen in the animal kingdom, which consequently realises its instinct-driven aims'.[342] He says that culture is 'humanistic' – it refers always back to the human being – and 'is possible only within the realm of spiritual-material beings', and as such, it is 'creative, active, and dynamic', and can take many forms.[343] The human being does not exist outside of culture – culture can be understood as a 'manifestation' of humanity, and as a 'fundamental' human activity. For Darowski, the 'fact' of culture offers 'proof' for the 'existence of a spiritual element in a human being'.[344]

Also, we must take into account that the human being is a 'historical' being. Our lives occur in history, and our historical 'circumstances' contribute to our make-up – we both 'create' history, and 'depend' upon it.[345] For Darowski, the human being is a 'historical being by nature' – we are 'conscious' of the flow of time yet there is something within us that 'transcends' the flow of time which allows us to 'resist' time's passing enabling us to 'hold' the past and 'preserve' it – the mode of human existence is determined by 'historicity'.[346] As such, the human being is 'not only an object of history', but is also its 'subject and creator'.[347] The historicity of humanity is 'connected' with our passing – 'reality' is passing constantly from the future into the past and it is through culture that we can attempt to 'preserve certain elements of the passing reality'.[348] It is in this way that the human being also displays something that is 'constant', and 'which does not pass with time' – Darowski says that it is this that is the 'foundation of identity and consciousness', and he comes to the

342 Darowski, *Philosophical Anthropology*, p. 111.
343 Darowski, *Philosophical Anthropology*, p. 112.
344 Darowski, *Philosophical Anthropology*, p. 113.
345 Darowski, *Philosophical Anthropology*, p. 117.
346 Darowski, *Philosophical Anthropology*, pp. 117–118.
347 Darowski, *Philosophical Anthropology*, p. 119.
348 Darowski, *Philosophical Anthropology*, p. 120.

conclusion that this ‘constant’ element of human existence cannot be matter.[349] As we shall see later, this is intimately linked to our technology.

The notion that we are free to make our own history and shape our existence is a central theme of Philosophical Anthropology. There is significant emphasis placed on the idea that human beings have the ability to determine their reality. Again, this reflects our dual-aspect. Not being bound and defined by our instincts, nor confined to a single and determining environment – we are ‘free’ to frame ‘projects’ and ‘create’ our own existence.[350]

Scheler describes this in terms of the human being as having the capacity in ‘unlimited degrees’, to be ‘world-open’ – we have a ‘world’ rather than simple being immersed in an ‘environment’ in the way other biological species are. In other words, the non-human animal does not have the ability that the human being does to turn to ‘objectify’ their environment, and transform it into a world or ‘a symbol of the world’.[351] For Weiss, this was Scheler lasting contribution to philosophy – identifying the need for an account of the human being that builds on the notion of world openness and which incorporates the ‘human being as a moral agent, as capable of having second-order desires, and as self-creating or self-determining’.[352] This is significant according to Weis because world openness is ‘not a characteristic of human beings that floats free from any ontological or anthropological foundation’.[353]

Obvious parallels can be drawn with the aspirations of transhumanism and the very notion of post-biological evolution. This freedom to create our own reality and transform our immediate physical environment into a world – or a symbolic representation of a world – finds expression in transhumanism’s ‘faith’ in the potential of technology. It is through

[349] Darowski, *Philosophical Anthropology*, p. 120.
[350] Gosselin, *Homo Sapiens,* p. vi.
[351] Scheler, The *Human Place in the Cosmos*, p. 28.
[352] Weiss, ‘Scheler and Philosophical Anthropology’, p. 13.
[353] Weiss, ‘Scheler and Philosophical Anthropology’, p. 13.

technology that the practical attempt to create our own worlds takes place.[354] Such techno-optimism has been notably critiqued as a secular theology that is rife with utopian and eschatological themes – themes which more often than not have their philosophical source in the veneration of human rationality and progress associated with what is generally identified as Enlightenment thought.[355]

I argue that the world-openness that Scheler describes is the root source for the persistence into late-modernity of these transcendence themes. If we consider that it is also the source for traditional religious beliefs, then any distinction that exists between techno-science and religion may in fact be quite a flimsy one. According to philosopher Mia Gosselin, the tradition within Western culture of an unwavering belief in scientific and technological progress can be seen as an inheritance from the Christian worldview.[356] This worldview is seen to be characterised by an overt anthropocentrism – an ancient anthropocentrism that has been in problematic tension ever since it found its modern expression within the scientific tradition. The scientific tradition insists that the human being is nothing other than a natural animal, yet the underlying anthropomorphic stance insists that we stand in some way in essential *opposition* to nature – filled as we are with the pretension that we constitute our own reality, we implicitly place ourselves *outside* of the natural world.[357]

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[354] Virtual reality, augmented reality, and cyberspace, are obvious examples of this.
[355] See, Jeffrey P. Bishop, 'Transhumanism, Metaphysics, and the Posthuman God', *Journal of Medicine and Philosophy*, 35 (2010), 700–20 <https://www.researchgate.net/publication/47815248_Transhumanism_Metaphysics_and_the_Posthuman_God> [accessed 4th September 2018]; Michael Hauskeller, 'Reinventing Cockaigne: Utopian Themes in Transhumanist Thought', *The Hastings Center Report*, 42/2 (2012), 39–47 <http://www.jstor.org/stable/23882927> [accessed 11 November 2015]; James Hughes, 'Contradictions from the Enlightenment Roots of Transhumanism', *Journal of Medicine and Philosophy*, 35, (2010), 622–40 <https://www.researchgate.net/publication/49661542_Contradictions_from_the_Enlightenment_Roots_of_Transhumanism> [accessed 9th September 2018]; Fabrice Jotterand, 'At the Roots of Transhumanism: From the Enlightenment to a Post-human Future', *Journal of Medicine and Philosophy*, 35 (2010), 617–21 <https://academic.oup.com/jmp/article-abstract/35/6/617/969337> [accessed 9th September 2018]; Hava Tirosh-Samuelson, 'Transhumanism as a Secularist Faith', *Zygon*, 47/4 (2012), 710–34 <https://doi.org/10.1111/j.1467-9744.2012.01288.x> [accessed 9th September 2018].
[356] Gosselin, *Homo Sapiens,* p. v.
[357] Gosselin, *Homo Sapiens.*

Thus, the notion of a special reality is rooted in our dual-aspect – it reflects our potential for the spiritual. Our specific form of human self-consciousness brings a sense of liberation (whether actual or contrived) from nature which allows us to engage with the transcendental – this can be the infinite, the ultimate, the Ground of Being, or God depending on one's perspective, inclination, or taste. Thus, the nature/culture dichotomy has the potential to widen and become entrenched as a seemingly primary cleft in the ontological fabric of the world, which seems to simply reflect an intrinsic split in human nature. Gosselin says that this sense of a special reality can drive a wedge between the human being and nature, and between the human and non-human animals – it can be a source of separation from the material world.[358]

The experience of being human has a seemingly unique character to it. The experience of human embodiment seems to be unlike how we observe other non-human species to be. Even though we are a biological species, humans do not seem to be fully contained within their material form. Non-human animals *are* their bodies in a seemingly more complete and defining way than humans are.[359] Non-human animals are not free to construct their identities in the way human beings are – the human being can objectify their body and it can be both , the body one *is* and the body one *has*.[360]

Hence, all facets of human experience are mediated through an apparent dual-aspect which seems constitutive of the human condition. This dual-aspect has historically become manifest in its interpretation as an actually existing ontological duality. This interpretation has traditionally been rooted in mechanistic and reductionist thinking. Paradoxically, the reductionism that intends to reduce us to, and confine us as, simple material constituents of the physical world, has ended up divorcing us from it through the establishment of a persistent and problematic subject/object dichotomy. A dichotomy which situates us over and

358 Gosselin, *Homo Sapiens.*
359 Gosselin, *Homo Sapiens.*
360 Gosselin, *Homo Sapiens.*

against the world and everything in it – including ourselves. This ontological dualism has divorced us from the natural world in its attempt to locate us in it, and in doing so it has erected ostensibly insurmountable barriers between nature and culture, mind and body, and between subject and object.

2.1.2 TRANS- VS. POSTHUMANISM: NATURE, CULTURE, AND THE HUMAN/TECHNOLOGY RELATION

The central concern of Philosophical Anthropology can – according to philosopher Christian Lotz – be boiled down to the question of how *nature* and *culture* relate to each other.[361] This is a relation that that has historically been perceived as describing a mutually exclusive ontological disparity. Such a distinction is often expressed as an either/or choice between the scientific mindset, and a worldview based on the experience of culture. Whereas the natural sciences aim at a complete and unified description of nature and try to explain the human being through a theoretical lens of Naturalism, a perspective rooted in Culturalism will prioritise the fundamentally social character of human life, and the constitutive role of historically and socially constructed forms and practices.[362]

It is accurate to say that the transhumanist worldview is conditioned through a lens of Naturalism. Culturalism, on the other hand, is identifiable with the other contemporary paradigm that is primarily concerned with technology and human nature and how our current context describes a fundamental reassessment of both, in light of, and through, each other – the paradigm of posthumanism.

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[361] Christian Lotz, 'From Nature to Culture? Diogenes and Philosophical Anthropology', *Human Studies*, 28 (2005), pp. 41–56.
[362] Nathan Harter, 'Recovering the Philosophical Anthropology of Max Scheler for Leadership Studies', *Journal of Leadership Education,* 5 (2006), 15–29 <journalofleadershiped.org/.../284/Jole_5_3_Harter.pdf> [accessed 6th September 2018].

Philosopher Stefan Lorenz Sorgner says that while transhumanism and posthumanism can and should be distinguished as separate 'contemporary philosophical movements', it should also be noted that they both explicitly seek to reject or go beyond the notion of human nature that is associated with traditional humanism. They also both represent a challenge – at least on the surface – to the idea that we enjoy a unique category, or 'special status', in the natural world.[363]

I would argue that posthumanism, which Sorgner says is 'characterized by an attempt to move culturally beyond categorical dualities concerning ethical and ontological issues', is far more successful in upholding this position than transhumanism is.[364] Transhumanism 'affirms technological means' for human enhancement, and as such it is both a philosophical and a cultural movement, one which has a distinctly 'practical' aspect to it as many of its adherents are engineers, technicians, designers, body-hackers etc., who are actively engaged in the practical pursuit of transhumanism's theoretical objectives.[365] But despite the aim to go beyond traditional humanism, transhumanism struggles to free itself from the problematic dualities stemming from its Enlightenment roots.

It appears to me that these problems are firstly manifested in the predominance of the simplified instrumentalist conception of technology within transhumanism – a conception of technology which accepts and promotes an ontological distinction between human-as-subject and technology-as-tool/object. This makes it impossible to escape the negative implications of what is commonly called 'Cartesian' dualism, i.e., substance dualism. Such a perspective on technology functions to not only expand and reinforce any ontological gap that might exist between the human being and technology, but also any that may exist between the human being and the material world. Thus, the ontological mechanism that underpins the

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[363] Stefan Lorenz Sorgner, 'The Future of Education: Genetic Enhancement and Metahumanities', *Journal of Evolution and Technology,* 25/1 (2015), 31–48 (p. 32).
[364] Sorgner, 'The Future of Education', p. 32.
[365] Sorgner, 'The Future of Education', p. 32.

instrumentalist conception of technology ultimately translates into the mechanisation of the natural world. This results in its entire contents being conceived of in mechanistic terms, and then approached from an instrumentalist perspective that operates in such a way that it establishes a dichotomy between the subject and all other objects – natural or artifactual – which are subjected to a process of instrumentalisation, a process which reduces everything ontologically to the status of machine, instrument, or thing.

Because the ontological separation established by the instrumentalist conception of technology has the effect of separating the rational tool-using subject from not only the tool in use, but from all other objects, the initial ontology of transhumanism that ascribes the human being a place firmly within the natural order ultimately results in the banishment of the rational – tool-using – human subject from the natural sphere.

Added to this, is the compounding fact that, in general, there seems to be *an priori* commitment to Naturalism within the philosophy of transhumanism. As a result, human nature is reduced to a function of biology and, as the product of a biological system it must in some essential sense be *real*, as opposed to a cultural construction or ideal abstraction. If human nature is to be altered technologically, it must be something we can grasp and manipulate with engineered precision. If it cannot be reduced as such, then how is it to be recreated artificially, synthetically duplicated, or materially transferred to some form of non-biological substrate. As professor of religious studies Eugene Clay points out, the very idea of human nature 'represents a conundrum for transhumanists', i.e., is it something to be overcome or does it provide foundations for the entire transhumanist project?[366] Transhumanism struggles with the issue of nature in a way that makes it difficult to escape the entrenched dualities that Sorgner says it aspires to be rid of.

[366] Eugene Clay, 'Transhumanism and the Orthodox Christian Tradition', in *Building Better Humans? Refocusing the Debate on Transhumanism*, ed., by Hava Tirosh-Samuelson and Kenneth L. Mossman (Frankfurt am Main: Peter Lang, 2001), pp. 157–179, p. 160.

Philosopher and author Michael Hauskeller provides us with the means to assess this. He states that transhumanism is less a philosophy than a worldview (*Weltanschauung*) – i.e., it articulates in clear and well defined terms how we view ourselves and our place in the world. Within this worldview there operates an overarching aspirational logic which frames and contextualises the very idea of human nature – the human being is not what we are now, *we are what we might someday be*. The 'true human is still to be created, and it is to be created by us. We can, should, and will shape ourselves into what we have always meant to be'.[367]

Technology will allow us to 'fulfil our destiny as an ever-expanding, nature-defying, freedom-seeking race', and our 'salvation' – which on the most basic level simply means to *improve* human nature – will be 'human bioenhancement.[368] As such, Hauskeller says that transhumanism is essentially the attempt to radically transform human nature, as the imperative that we can, and we should, and we will, transcend ourselves.[369]

While this vision of radical autonomy, total control, and creative self-design is a potent one, Hauskeller says that within it there are in fact two competing – and antagonistic – conceptions of human nature. One is limiting, and the other is what urges us toward the transgression of all limits. A major source of tension is the fact that, for transhumanists, 'our nature is very much identified with our body, that is, with the fact that our existence is, at least for the time being, inseparable from that of an organic body', and it is precisely because of this, that 'the attempt to overcome human nature is realized in practice as the attempt to reduce and ultimately eliminate our corporality'.[370] Thus, at the heart of transhumanism, we

[367] Michael Hauskeller, 'Human Nature from a Transhumanist Perspective', *Existenz*, 8/2 (2013), 64–69 (pp. 64–65).
[368] Hauskeller, 'Human Nature from a Transhumanist Perspective', pp. 64–65.
[369] Michael Hauskeller, *Mythologies of Transhumanism*, (Cham: Springer International Publishing AG, 2016), p.11.
[370] Hauskeller, 'Human Nature from a Transhumanist Perspective', p. 65. See, Max More, 'A Letter to Mother Nature', *Max More's Strategic Philosophy* <https://strategicphilosophy.blogspot.com/2009/05/its-about-ten-years-since-i-wrote.html> [accessed 12th January 2022]. More berates Mother Nature for our shortcomings – which seem to be mostly related to our physical bodily form.

have a deep-rooted philosophical tension. It is unclear – even in the most limited sense – what exactly of the human being is to be transcended, and what exactly of the human being will be doing the transcending – thus, the tendency to strongly identify with our material being is undermined by the fact that it is our material being that defines and delimits the very boundaries that transhumanism seeks to cross.

While transhumanism locates the human being firmly in the natural world, and – according to its worldview – rejects transcendent ontologies, we nevertheless end up being differentiated from it in an essential way as a result of underlying presuppositions about human nature that have their origins in Enlightenment and early modern thought. By virtue of our reason, we stand over and above the world – we are rational subjects faced with a world of objects.

It is here that the distinction between transhumanism and posthumanism can be located. For posthumanism the idea of the human that grounds the transhumanist worldview, is simply an ideological construct which falsely establishes a fundamental separation between human and non-human. A separation which both constitutes and is constitutive of, a fatally flawed ontological perspective, which establishes and reinforces a series of problematic dualisms and dichotomies such as the nature vs culture, body vs mind, and subject vs object distinctions.[371]

The antagonism between the two paradigms of transhumanism and posthumanism is a long and outstanding one, over which much philosophical ink has been spilled – at its heart is the very question of human nature, how we relate to the world, and the way in which the intimacy of the our relation with technology gives definition to both. Addressing this issue in an entry in a 2014 publication entitled *Post- and Transhumanism: An Introduction*, philosopher Martin G. Weis says that the concept of nature, as it is understood in Western

[371] Hauskeller, *Mythologies of Transhumanism*, pp. 21–22.

philosophy, can be traced back to what we commonly refer to as the 'pre-Socratic' philosophers. The pre-Socratic thinkers used the term 'nature' to designate two distinct but 'intertwined' meanings: as a designation of the phenomena of the physical world – as opposed to the creations of human beings; and as a description of the 'inherent characteristic features' of a particular thing – i.e., its essence.[372]

This is obviously a central issue in any discussion about transhumanism and post-biological evolution. Weiss says that both paradigms of transhumanism and posthumanism represent a challenge to established notions of the natural: both in the sense of 'nature' as in the world and whatever way it exists independently of us, and nature as in 'human nature', or human essence. Biology as a 'normative boundary', is challenged by both paradigms as the line that defines the limits and true nature of the human being. The idea that the essential feature of the human being is our ability and will to transform human nature itself is in fact one of the few themes common to both paradigms.[373]

Weiss states that posthumanism challenges the nature/culture dichotomy and – associated as it is with Culturalism – holds that the very idea that human beings have a fixed and 'given biological nature', is itself a construct and a 'product of culture'.[374] In contrast, transhumanism is rooted in Naturalism and has a more 'naturalistic' conception of human nature. It promotes the idea that 'the human being is primarily an animal, although an animal which has the power to manipulate its biological features'.[375] Weiss concludes that both

[372] Martin G. Weiss, 'Nature', in *Post- and Transhumanism*: *An Introduction*, ed. by Robert Ranisch and Stefan Lorenz Sorgner (Frankfurt: Peter Lang, 2014), pp.185–200 (p. 185). *Post- and Transhumanism* is the first volume in an excellent series – Beyond Humanism: Trans- and Posthumanism – which deals specifically with transhumanism, posthumanism, human nature, evolution, and a wide range of associated relevant topics. Weiss goes on to say that the Aristotelian distinction between 'natural things' *(physei on*) and human made artifacts (*technê*) has held soundly for centuries This distinction is based on the notion that 'natural' objects have contained within them their principle of motion, as opposed to the objects of human arts, crafts, and technical systems, which derive their principle of motion externally from the craftsperson who made them. Even so, the advent of modern technology has revealed that the lines we thought existed between what is natural and what is artificial have become increasingly blurred and ill-defined. As Weiss puts it, modern technology has 'made it increasingly difficult to identify truly natural objects not yet intertwined with some kind of human action'.
[373] Weiss, 'Nature', p. 185.
[374] Weiss, 'Nature', p. 185.
[375] Weiss, 'Nature', p. 185.

paradigms 'share the Aristotelian definition of the human being as rational animal' – but whereas posthumanism asserts that biological human nature is itself a cultural concept and 'a product of human rationality', transhumanism takes the position that human rationality is first and foremost a 'product of biology'.[376]

Weiss is of the view that the 'core-concept of transhumanism dates back to Renaissance humanism', and as a philosophy it finds its fullest expression in 'the ideals of the Enlightenment' – as a result of the predominance of a such a 'humanistic' perspective, the human being is fundamentally understood as a rational animal.[377] He says that the Kantian notion of the human as an animal who is able to 'achieve' humanity, and can aspire to 'more' than humanity, reveals that humanism has always had transhuman aspirations. For Kant, this ability to 'achieve' humanity though civilizing processes is understood as an 'emancipation' from nature. Thus we have a model which presents humanity – characterised and defined by our rationality – emerging *from* nature. Where nature itself is defined in biological and embodied terms.[378]

Despite the historical nature of this tendency, Weiss states that it is only with recent developments in biotechnology etc., that serious consideration has been given to the notion that it may be *actually* possible to free ourselves from our biology. Before this, the discourse fell short of seriously doubting the 'stability of humanity's biological basis'.[379] On the most basic of levels, Weiss states that the 'transhumanist position embraces enhancement as ultimate liberation and emancipation from human nature – i.e., the biological boundaries – that obstruct human freedom'.[380]

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376 Weiss, 'Nature', p. 186. This position aligns with Bostrom's notion that the understanding of the human being as 'rational animal' is the most compatible with the idea of becoming post-human – i.e. the focus should always be on our rationality and how best to develop and extend this. Nick Bostrom, 'Why I Want to be A Posthuman When I Grow up', in *The Transhumanist Reader*, pp. 28–53 (p. 45).
377 Weiss, 'Nature', p. 190.
378 Weiss, 'Nature', pp. 190–191.
379 Weiss, 'Nature', pp. 190.
380 Weiss, 'Nature', pp. 196.

As such, transhumanism is revealed to be straightforward continuation of 'classical humanism', and its concept that the human being is 'the animal whose specific essence consists in not having a given essence at all'.[381] From this perspective, we are an animal that is unfinished and incomplete. Essentially free, but tasked with having to resolve for ourselves the issue of what we are to be. This conception of human nature subsequently became the backbone of transhumanist thought: the human being – as we currently know it – is only a 'transitory stage' in the historical evolution of a species, and we must 'achieve' our very real essence by enhancing and upgrading our 'proper' nature, i.e., our biology.[382]

The long outstanding question of human nature is thus now a very contemporary concern, one which is now being addressed specifically in terms of technology and the human/technology relation. The technological developments of late-modernity mean that this is no longer simply an issue of theoretical reflection, but is now also an issue of *practical* concern.

It is within this context that we can assess Thomas D. Philbeck entry in *Post- and Transhumanism*. Philbeck suggests that the spread of 'sophisticated electronic technologies' now ubiquitously extends to nearly all parts of the world, and that this 'technological diffusion', is in effect, 'challenging the ontological models and the foundational claims that we rely upon to define the human being'.[383] Philbeck says that the two paradigms of transhumanism and posthumanism represent the attempt to engage with this 'changing character of the human condition', and that '[t]raditional modes of social engagement and

[381] Weiss, 'Nature', p. 197. The genesis of this idea is usually traced to Pico della Mirandola, an acknowledged 'proto-transhumanist'. See, Francesco Borghesi, Michael Papio, Massimo Riva, eds., *Pico della Mirandola: Oration on the Dignity of Man: A New Translation and Commentary* (Cambridge: Cambridge University Press, 2013).
[382] Weiss, 'Nature', pp. 196–197.
[383] Thomas D. Philbeck, 'Ontology', in *Post- and Transhumanism: An Introduction*, pp. 173–183 (p. 173).

interaction are fading and are being replaced by technological modes of mediation'.[384] In this, I would say that he is clearly correct.

For Philbeck, there is also an observable trend in both paradigms to move away from concepts of 'technological determinism', and the historical tendency to view technology simply in 'instrumentalist' terms. He holds that the 'contemporary practical view' of technology is more nuanced and takes into account the fact that technologies also 'exert a social influence'. [385] According to Philbeck, it is now widely accepted that our technologies 'construct our environments, recommend actions for us, redefine our political structures and personal networks, facilitate social movements, deliver responses to questions that we seek, and have enhanced our ability to contain and access knowledge'.[386]

From this, he draws two important lessons regarding how our understanding of the human condition is currently undergoing significant change: the first is that processes which were previously purely biological and neurological can now be 'outsourced to devices'; and the second is that some of these processes – and the results they yield – are now not achievable by unaided biological and neurological mechanisms/operations alone. He concludes: 'Technologies mediate us, even to ourselves, make us possible, and extend our potentialities, in our present state'.[387] Again, in this he is correct, although I would challenge the notion that transhumanism has freed itself from the instrumentalist conception of technology.

This ongoing process of 'techno-human integration' is the primary subject matter of both transhumanism and posthumanism according to Philbeck – he says that both are committed to the investigation of how human nature is being fundamentally transformed/changed/shaped by technology. Despite the similarity of subject matter though,

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[384] Philbeck, 'Ontology', p. 173.
[385] Philbeck, 'Ontology', p. 173.
[386] Philbeck, 'Ontology', p. 173.
[387] Philbeck, 'Ontology', p. 174.

there is a gulf between the two paradigms – a gulf that he says may in fact be irreconcilable.[388] He sums up transhumanism as the attempt to technologically extend human 'capacities', 'opportunities', and 'potential', toward the goal of allowing us to overcome our inherent 'limitations' – ultimately, transhumanism is concerned with the attempt to 'guide the evolution of the human through technological mediation'.[389]

Posthumanism, on the other hand, represents a conceptual engagement with human nature beyond the 'humanist philosophical paradigm', and challenges the 'dualist ontological framework of Enlightenment humanism', through a rejection of both scientific and social 'realism'.[390] Accordingly, it seeks an 'ontological framework' beyond the 'metaphysical subject object dualism of traditional humanistic selfhood' – and, compared to the 'physiological' concerns of transhumanism, posthumanism is 'fundamentally philosophical'.[391] Both paradigms aim beyond humanism: whereas transhumanism can be seen as a 'contemporary renewal of humanism', posthumanism should be taken as representing a 'break with humanism'.[392]

Posthumanism can be conceived of as an 'umbrella term for a variety of positions that reject basic humanist concepts and values', and can be understood as *post*-humanism.[393] In contrast to this, transhumanism 'amplifies central aspects of secular and enlightenment humanist thought', and can be understood as *trans*-humanism, in the sense that it is an 'intensification of humanism' – it has been described as a form of 'hyper-humanism'.[394] As noted earlier, Max More uses the description trans-humanism as recognition of its philosophical roots in Enlightenment humanism, and transhuman-ism in light of its aim to

[388] Philbeck, 'Ontology', p. 174.
[389] Philbeck, 'Ontology', p. 175.
[390] Philbeck, 'Ontology', p. 175.
[391] Philbeck, 'Ontology', pp. 175–176.
[392] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', in *Post- and Transhumanism*, pp. 5–27, p. 7.
[393] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', p. 7.
[394] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', pp. 7–8.

move 'well beyond humanism in both means and ends'.[395] This is consistent with Philbeck's assessment.

According to the editors of *Post- and Transhumanism* – philosophers Robert Ranisch and Stefan Sorgner – there is a single and identifiable central issue that emerges from the realisation that technology changes and challenges our basic conceptions of the human nature. This single issue is contextualised within both the transhumanism paradigm and the posthumanism paradigm, and given expression in the overarching idea of a 'co-evolution' of the human being and our technology.[396] As a unifying theme, this idea of co-evolution translates from transhumanism as a philosophy to transhumanism as a cultural movement through the application and use of technology itself. In contrast, Ranisch and Sorgner say that one can't easily identify a 'coherent posthumanist movement' in the same way one can for transhumanism.[397] Also, the roots of posthumanism are not obvious either – possible origins can be found in Nietzsche, Marx, Freud, and Foucault, hence it is associated with 'postmodern' or 'continental' philosophy, poststructuralism, feminism, science and technology studies, literary theory and criticism, critical theory etc.[398] The common factor is a 'critical discourse' directed at 'the crisis of humanism' – there are several variations of the term in use, including cultural posthumanism, philosophical posthumanism, critical

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[395] More, 'The Philosophy of Transhumanism', p. 4.
[396] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', p. 8.
[397] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', p. 14.
[398] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', p. 14. See, Gary Aylesworth, 'Postmodernism', *Stanford Encyclopedia of Philosophy* (2015) <https://plato.stanford.edu/entries/postmodernism/> [accessed January 27th 2021]; Stefan Lorenz Sorgner, 'Pedigrees', in *Post- and Transhumanism*, pp. 29–47, p. 41. Sorgner states: 'Posthumanism affirms both perspectivism as well as a this-worldly, and hence fragmentary understanding of human beings', as such, posthumanism is 'an immediate outgrowth of postmodernity, in particular postmoderns such as Deleuze and Foucault, but not postmoderns such as Levinas and Derrida'. Aylesworth says that postmodernism represents a 'critical de-structuring or displacement of the signature concept of modern philosophy', the 'subject', which can be taken to mean 'consciousness', or its associated 'identity, ground, or unity', which is subsequently referred to as 'I'. This is relevant in terms of any concepts associated with the idea that the individual human being can be maintained beyond their current biological limits through technological enhancement, augmentation, or integration of some sort. It is of particular relevance with respect to the idea that a person's consciousness can be uploaded into a machine, as well as to the underlying assumption that the subject's identity, or the 'I' in question, can be preserved if their 'consciousness' can be replicated non-biologically, or transferred faithfully from one physical substrate to another. If the foundational notion of the self that is associated with these ideas is itself questioned in this way, then posthumanism stands in stark contrast to the basic tenets of transhumanism, and represents a 'postmodern' critique of both the desirability and the veracity of its claims.

posthumanism, all of which should be understood as being defined by an opposition to 'techno-utopian discourses'.[399] In essence, posthumanism bears some similarity to the Foucault's notion of the 'End of Man', and is best understood as a 'conceptual' critique of humanism and any associated image or idea of the human being. Ranisch and Sorgner say that, in short, it is a rejection of the claim that 'man is the measure of all things'.[400]

Tirosh-Samuelson distinguishes between three different types of posthumanism – philosophical, cultural, and technological. For Tirosh Samuelson, both philosophical and cultural posthumanism can be seen as an 'anti-humanism', i.e., a fundamental critique of what postmodern thinkers call 'the Enlightenment project', and its associated idea of human nature.[401] She says that posthumanism is generally taken as operating from a 'postmodern' perspective, from where judgments tend to be conceived of as 'interpretations', and any understanding of truth as correspondence is challenged on the most basic level. There is also an associated scepticism with regard to metanarratives and all authoritative truth claims regarding human nature.[402]

In a comparable approach to Tirosh-Samuleson, journalist and bioethicist Andy Miah analyses posthumanism in terms of technological thought, culture, and philosophy. He presents an understanding of posthumanism as a fundamental rejection of humanism as any kind of ethical or 'normative' guide, and as a challenge to the unassumed notion that technological progress is inherently good. The defining characteristics of posthumanism for

[399] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', p. 14.
[400] Ranisch and Sorgner, 'Introducing Post- and Transhumanism', pp. 15–16.
[401] Hava Tirosh–Samuelson, 'Religion', in *Post- and Transhumanism*, pp. 49–71, pp. 49–51. Tirosh-Samuelson shows that the term 'posthumanism' was first used in cybernetics conferences form 1946–1953 during which systems theory was first developed, and subsequently by literary theorist Ihab Hassan (1977) in a philosophical sense to express the need to 'overcome the human race as well as humanism'. Tirosh-Samuelson's understanding of technological posthumanism equates roughly to the understanding of transhumanism that I employ. The other two types of posthumanism she identifies can be subsumed under a single definition if we use the term to indicate an understanding of posthumanism as post-humanism – this allows us to maintain a simple trans- vs. posthumanism distinction.
[402] Sorgner, 'Pedigrees', p. 33. Sorgner states that even if this postmodern 'perspectivism' fails to 'provide us with any knowledge in correspondence of the world', it is nevertheless adopted by posthumanism as the 'most plausible epistemology' because, if all judgements are interpretations, then no 'theory' has so far proved itself to be the 'true' hence, the best we can hope for is to attempt to distinguish between more-or-less 'plausible' or 'implausible' judgements.

Miah are its critical stance towards any 'prominence afforded to humanity in the natural order', the rejection of an overt 'anthropocentric worldview', and the belief that 'the Enlightenment centring of humanity has been revealed as inadequate'.[403]

Miah outlines a brief critical history of posthumanism in which he suggests that 'the history of posthumanism is neither synonymous with the history of technology, nor is it found exclusively within philosophical inquiries into technology'.[404] Although the idea of technological change is a central part of 'contemporary imaginations about posthumanity', Miah holds that this focus on technology is simply a 'historically contingent manifestation of posthuman ideas', i.e., imagining beyond the limits of our humanity predates the development of the technology that might potentially be capable of delivering on such a promise.[405] Miah sees that posthumanism also operates as a way to express 'human insecurity arising from sharing the world with living machines, or the cyborg'; he goes on to suggest that the stories we create 'about the transformation of biology and the rise of machines' – such as *Frankenstein* – 'are imbued with narratives of fear and uncertainty' which, ultimately 'all pose the same question: how do humans differ from non-humans, or more simply, what does it mean to be human'?[406]

Whereas the machine initially 'accentuated the role of the human being as tool user', with tools becoming a way to extend personal power and freedom', they eventually became the 'mediator between humanity and the environment; an artificial skin separating humans from other animals'.[407] Modernity, the industrial revolution, and the division of labour all contributed toward a conceptualisation of the human in terms of 'parts' and 'function',

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403 Andy Miah, 'Posthumanism: A Critical History', in *Medical Enhancements & Posthumanity*, ed. by Bert Gordijn and Ruth Chadwick (New York: Routledge, 2007), pp. 71–94, p. 71.
404 Miah, 'Posthumanism', p. 71.
405 Miah, 'Posthumanism', p. 71. As already shown, the idea of human immortality is a persistent notion that stretches back into our-prehistory. For Miah, the ideas associated with posthumanism are formed by 'such concepts as becoming, alterity, transgressions of boundaries', and take shape through our inquiry into how human nature relates to these concepts.
406 Miah, 'Posthumanism', pp. 80–81.
407 Miah, 'Posthumanism', p. 82.

whereas the computer revolution represented the notion of 'extending human faculties as well as replacing humans and making them more machine-like, physically and cognitively'.[408]

Miah goes on to say that it was what he describes as Darwin's 'biological humanism', that fully 'allowed the human to be reduced to a level of mechanics, a view that pervades contemporary understandings about being human'.[409] He concludes by saying that the contemporary debate surrounding the question of whether human nature can be best described as a result of genetics, and 'inherited' biological qualities, or whether it is more accurate to describe it as being 'socially determined' – the nature versus nurture debate. A debate that has raged unabated ever since.[410]

2.1.3 THE ENLIGHTENMENT'S HANGOVER: DUALISM AND THE MIND/BODY PROBLEM

Incompatible and irreconcilable though they may be, I argue that both transhumanism and posthumanism have the issue of Philosophical Anthropology as their central concern, i.e., the 'problem' of the human being. Any theoretical differences in how human nature is conceived can be seen to be mirrored in conflicting attempts to articulate a possible picture of post-humanity – the post-human of transhumanism is not equivalent to the post-human of posthumanism. Transhumanists use the term post-human with respect to concepts such as species and speciation. This reflects its ontological predilection for Naturalism and as such, there is an active and practical technological component to transhumanism that always accompanies – and helps define – its theoretical engagement with the idea of post-humanity.

In contrast to this, posthumanism represents an attempt at a 'new understanding' of the human being – this new perspective has its roots in a particular 'continental' way of doing

408 Miah, 'Posthumanism', p. 82.
409 Miah, 'Posthumanism', p. 82.
410 Miah, 'Posthumanism', p. 82.

philosophy, one which is characterised by a rejection of what can be described as traditional 'categorical dualities'.[411] Most significantly, posthumanism rejects the idea of the human being as consisting of a 'material body' and an 'immaterial soul or mind' – the anthropological model posthumanist thinkers tend to associate with humanism and the Enlightenment and, by default, with transhumanism. Hence, the posthumanist position holds that – in terms of our relationship with technology and the world – there is 'no clear cut categorical distinction between nature and culture, genetic and environmental influences or nature and technology'.[412] This position, and the focus on a conceptual or philosophical engagement with the idea of post-humanity, reflects posthumanism's preference for Culturalism rather than any form of naturalistic ontology.

Sorgner develops this by describing how the majority of transhumanists would appear to hold a 'this-worldly, materialist, naturalist, relationist or immanent understanding of the world' – a worldview within which the theory of evolution is key to understanding human nature.[413] He says that transhumanists take evolution '*seriously*'. At its core lies a simple yet powerful assumption – the assumption that what has evolved so far, will continue to do so. This belief is combined with a strongly positive outlook regarding the inherent potential of technological development. Taken together, the two lay the foundations for the transhumanist worldview.[414] Sorgner says that transhumanist anthropology operates as the 'basis for a general definition of what transhumanism stands for. *Transhumanism affirms the use of techniques to increase the likelihood of bringing about the posthuman*' (original emphasises).[415]

There are however some differences in opinion in terms of transhumanism's definition of the post-human: for some, the post-human is a completely new species when

[411] Sorgner, 'Pedigrees', p. 32.
[412] Sorgner, 'Pedigrees', p. 33.
[413] Sorgner, 'Pedigrees', p. 30.
[414] Sorgner, 'Pedigrees', p. 30.
[415] Sorgner, 'Pedigrees', p. 30.

compared to the human and a transhuman is simply 'a member of the human species who is in the process of becoming posthuman'; while for others, the post-human is somebody who – while still considered human – possesses 'at least one quality that goes beyond the ones current human beings can possess'.[416] Alternatively, the post-human can be understood in non-biological terms and conceived of as some kind of entity that can exist digitally in cyberspace. From this perspective, the cyborg offers an anthropological model as the 'most likely way of realizing a posthuman, as cybernetic organisms belong both to the organic as well as the digital or mechanical realm of technology'.[417]

This idea that the cyborg can be taken as an anthropological model representing the concept of post-humanity will be developed in more detail later, for now it will suffice to highlight that the idea of the cyborg is a merging of the biological, the technical, and the informational – it represents physical durability, connectivity, and the possibility of an individual being able to realise a multiplicity of *upgradable* physical forms.

Sorgner's analysis allows us to identify two main strands of transhumanism – carbon-based transhumanism and silicone-based transhumanism.[418] According to Sorgner, this distinction reveals that carbon-based transhumanism's approach to technology is not 'categorically different from the use of already known technologies', i.e., human beings are simply 'doing what they have always done, namely they have invented and used techniques for making their lives better or easier' – hence, transhumanism 'does not imply a radical break from traditional human habits', rather it simply represents 'a particular affirmation of the use of technologies for promoting the alteration of the human being'.[419]

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[416] Sorgner, 'Pedigrees', p. 30.
[417] Sorgner, 'Pedigrees', p. 30. This idea of the cyborg as an 'anthropological model' will be developed further.
[418] See also, Nolen Gertz, *Nihilism and Technology*, p. 25. Gertz describes these two strands of transhumanism as 'upgrade-focused transhumanism' and 'merge-focused transhumanism' – the first is concerned with the attempt/desire to 'upgrade *through* technology, the latter with the attempt/desire to 'merge *with* technology' (original emphasis).
[419] Sorgner, 'Pedigrees', p. 31.

Unlike carbon-based transhumanism, silicone-based transhumanism displays a particular focus on 'the technology of downloading one's personality to a computer, such that it can be multiplied, be reintegrated into a new organism or continue living in cyberspace'.[420] Identifying an inherent tension within the idea of the silicon-based conception of the post-human, Sorgner says that the notions of 'uploading' and 'whole brain emulation' – which function according to the idea that a 'software model' of the brain can be generated and 'then run again on a different hardware' – seem to be caught between two contradictory perspectives. On the one hand, there is ontological Naturalism complete with the associated implications of materialism, and on the other hand, there is an apparent a mind/body dualism.[421] Sorgner accurately highlights a tension that lies right at the heart of transhumanism, which – as we will see – is unresolved, and problematically so.

The problem of mind/body dualism hangs – unsolved – in the background of the entire transhumanism discourse. It is intimately linked with the subject/object dichotomy, and the tendency toward instrumentalism. The oppositional perspective generated as a result of mind/body dualism creates a sense of ontological separation between (mental) subject and the (physical) object – a separation that is transferred onto the world, and onto our selves, where ultimately it translates into the question of whether or not some fundamental chasm exists between our minds and the bodies, and if it does, how do we define the relation between the two in terms of volition, and causal efficacy.

Thus, the mind/body problem results from the difficulties that arise when we try to formulate such an ontological relationship between mental and physical phenomena. If the problem is approached from a perspective which aims to address the challenge of explaining the interaction of mental phenomena upon the body, then some form of dualism tends to be the assumed – this can be either a substance or a property dualism. On the other hand, if the

[420] Sorgner, 'Pedigrees', p. 31.
[421] Sorgner, 'Pedigrees', p. 31.

problem is approached from the perspective which aims at explaining how mental phenomena exclusively and exhaustively arise from, or are produced by, the physical processes of the brain, then materialism tends to be assumed.[422]

If, as Sorgner points out, the standard transhumanist position invokes a materialist ontology, then a mind-body dualism is problematic and incompatible with its basic ontological perspective. Materialism, by definition, represents ontological monism and is not compatible with a dualistic position – this is especially true for substance dualism which posits that mind and matter are two distinct substances. Thus, with respect to one of the key ideas of transhumanist philosophy, it would seem that – from the very beginning – there is an obvious difficulty in positing the possibility of uploading a person's consciousness onto a computer if one rejects a mind/body dualism..

Max More does offer a solution to this when he says that *functionalism* rather than dualism should be employed to explain the relationship between the mind and the body. From a functionalist position the fundamental requirement for human consciousness is a material structure that perfectly corresponds with the *functioning* of the human biological brain – this can be ambiguous in terms of what particular physical substrate the structure is composed of.[423]

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422 Edward Feser, *Philosophy of Mind* (London: Oneworld Publications, 2018), p. 250. Feser offers a definition for dualism which can be applied here throughout. 'Dualism holds that mind and matter are equally fundamental aspects of reality, neither reducible to the other. Two main versions are usually distinguished: *substance* dualism, which holds that there are two fundamental kinds of substance, namely mental substance and physical substance; and *property* dualism, which holds that there is only one fundamental kind of substance, namely physical substance, but holds that physical substance nevertheless has two fundamental kinds of property, namely physical properties and mental properties'. p. 224. In his introduction to *The Human Place in the Cosmos*, Eugene Kelly states that 'Scheler's initiative is intended to avoid the problem of how psycho-physical interaction is possible, a question that has plagued Western philosophy since Descartes set forth the concept of mind-body dualism', and, because Scheler's posits an 'isomorphism of psychical and physiological events', Kelly ascribes to him a position of 'property-dualism' which is 'consistent with physicalism' by reference to the fact that Scheler holds that 'mind', or 'psyche', 'does not emerge *from* biological life; it arises *with* the life-impulsion itself' (original emphasis). Kelly, 'Introduction', in *The Human Place in the Cosmos*, pp. xi–xiii.

423 Feser defines functionalism as the position within which 'mental states and processes' are analysed with respect to 'causal relations' that exist between them and the physical phenomena that generate them, the behavioural patterns they themselves generate, and other mental states that may be associated with them. This specific set of causal relations that exists between a mental state and the aforementioned related elements is, according to Feser, constitutive of its 'functional role'. Feser, *Philosophy of Mind*, p. 245. Sorgner states that

The problem of dualism is an outstanding philosophical issue when it comes to any talk of human nature. The 'dual-aspect' of the human being identified earlier means that it is hard to avoid dualistic language when describing the human condition. This does not necessarily entail the adoption of an ontological dualism, but it does highlight that the problem of explaining how the mind and the body relate is a recalcitrant one which – to date – remains intractably elusive.

There is of course some historical context, and Philbeck says that, since the 18th Century, the dominant idea of the human being in Western thought has been that of a 'coherent, rational, responsible, immaterial moral subject and agent'.[424] This notion of human nature is one that promotes and reinforces a subject/object dichotomy where the 'makeup of the individual' is insulated or in some way removed, from the physical world around them – hence, 'artifacts and the natural world have remained "outside" the psychological self'.[425] This 'Enlightenment humanist notion' of the human nature has deep roots in Western thought – it is founded upon an 'ancient dualist perspective' which, according to Philbeck, continues today within the philosophy of transhumanism.[426] Again, Philbeck is correct in his assessment of transhumanism.

The prevalence of the subject/object dichotomy within transhumanism is clear to see. So too is the supposedly outdated instrumentalist conception of technology-as-tool, despite any purported claims of the assumption of more contemporary and sophisticated notions of technology and the human/technology relation. Philbeck says that the dualist perspective is recognisable in the way that transhumanism aims to 'appropriate technology for the goals of

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given 'a functionalist philosophy of mind represents an appropriate description of the phenomena in question', he is open to the possibility that 'it might be possible to consistently uphold a this-worldly anthropology and the option of "uploading" a mind'. Sorgner, 'Pedigrees', p. 32.

424 Philbeck, 'Ontology', p. 177.

425 Philbeck, 'Ontology', pp. 176–177.

426 Philbeck, 'Ontology', p. 177.

humanism's long standing ontological framework'.[427] As such, transhumanism 'embraces' the dualism of early modern thought, and champions the Enlightenment's veneration of 'progress' that is generally associated with it. This is done through the extension of the categories of 'mind' and 'body' as 'ontological structures', but, problematically, it is done in such an unquestioning way that it doesn't actually challenge the problems which arise from these 'dualist metaphysical foundations' – thus, transhumanism uncritically accepts a 'mind-body split' from the very start.[428]

With specific reference to the idea of mind-uploading, Philbeck asserts that this mind/body dualism is reflected in any assumed notion that 'the mind is a separable entity from the material brain', an idea that he says is, 'a presupposition required to perform such a theoretical operation'.[429] Once again, Philbeck is correct about this. We will look at this issue in more detail later through an assessment of Kurzweil's project and the tensions within it that arise from the combination of his methodological, epistemological, and metaphysical reductionism and his transcendent aspirations and future projections.

In contrast to transhumanism, Philbeck highlights how posthumanism fundamentally understands the dualistic Enlightenment conception of the human being as fatally flawed. Not only is it flawed in terms of how it views the mind/body relation, it is flawed in its understanding of human/technology relation.[430] Thus, within the philosophy of transhumanism, there is a separation between the human and the technological – between the natural and the artificial – that stems from its underlying idea of human nature. This separation is the source of a deep tension which remains stubbornly unresolved. The Enlightenment-centric stance establishes a subject/object distinction that defines the limits of transhumanism's ontology, and establishes a separation between the human being as subject

[427] Philbeck, 'Ontology', p. 177.
[428] Philbeck, 'Ontology', pp. 177–178.
[429] Philbeck, 'Ontology', p. 178.
[430] Philbeck, 'Ontology', p. 178.

and the world as object. This throws up a host of philosophical issues and is extremely difficult to reconcile with the emphasis on the merging of human and machine. While it allows for a correlation between the human body and technology, it does so through reduction – a move that reduces human consciousness and free will to strictly physical brain functions, and more generally, biology to the causally determined laws of physics.

Posthumanism is not tied into the same dualistic perspectives that transhumanism is. In fact, Philbeck says that posthumanism can offer a perspective from which the human being is seen as not separable from the technologies we use in the same way that we are from the transhumanist perspective. This then allows posthumanism to avoid the problems that arise with a mind/body dualism and/or subject/object dichotomy, and allows its proponents to offer an assessment of human-technology integration from a point of view which can establish that the 'constitution of the human is a technological constitution'.[431]

As opposed to transhumanism, posthumanism rejects the notion of 'an already defined human for whom technology can function', and seeks to establish technology as a necessary constituent of human nature – the implication of this realisation is that, 'the immaterial subject and material world can no longer be fundamentally distinct'.[432] Philbeck says that ultimately the goal of posthumanism is to dismantle 'a dualistic ontology that has been part of human self-understanding for as long as there has been record' – to do this, 'technology must be understood to be the behavioural way through which we constitute our being'.[433]

The challenge, according to Philbeck is that the dualism associated with humanism seems to offer an intuitively satisfactory account for the way that we naturally experience things as a unified and identifiable 'self', i.e., we feel like 'individual rational subjects and

[431] Philbeck, 'Ontology', p. 178.
[432] Philbeck, 'Ontology', p. 178.
[433] Philbeck, 'Ontology', pp. 178–179.

thus we rarely question the premise'.[434] This experience is often referred to in one form or another as 'folk psychology'.[435] Once again, the point in question refers back to the dual-aspect of the human experience which is the starting point of Philosophical Anthropology.

Hence, transhumanism 'piggybacks humanism's dualist ontology' according to Philbeck, and in doing so, it interprets our experience of agency, through an assumption that it has its roots in a 'discrete self' who, despite being embodied, is nevertheless autonomous. The Cartesian and Platonic traditions are two obvious examples within Western thought of this perspective. A perspective that entails both material and immaterial aspects – where the material is associated with sense perception and the external world (as an 'object') and technological artifacts, while the immaterial is associated with our 'internal characteristics', such as the sense of self, agency, and rational thought.[436]

He goes on to describe the inherent tension within transhumanism in terms of how it is 'immaterial' aspects of human nature that are its ultimate concern, yet, paradoxically, they 'target them via material means such as DNA augmentation and bionic enhancement'.[437] He concludes that transhumanists simultaneously affirm and betray the dualist perspective in their attempt to 'extend the ontological categories that are part of the immaterial constitution of the internal moral agent', while at the same time holding that the 'immaterial realm is dependent upon, and not separable from, the external material world'.[438]

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[434] Philbeck, 'Ontology', p. 179.
[435] Feser defines folk psychology as a way in which we 'refer to our ordinary ways of describing and explaining human behaviour in terms of beliefs, desires, thoughts, experiences and the like'. Feser, *Philosophy of Mind*, p. 245.
[436] Philbeck, 'Ontology', p. 179.
[437] Philbeck, 'Ontology', p. 179.
[438] Philbeck, 'Ontology', pp. 179–180. In response to this, Philbeck shows how Don Ihde's post-phenomenological philosophy of technology offers a strong critique of transhumanism's underlying assumption regarding technology, and its 'ontological naivety' in adopting the subject/object dichotomy, and how Ihde does this through his 'hermeneutic technics', which serves as a rejection of a humanist-dualistic separation of technology from the world. At the same time, Ihde's thought also serves as a way to sharpen the focus on the challenge for the posthumanist paradigm in terms of its response to transhumanism, as he shows how selfhood, agency, and the world and the 'ontological constellations' they form shift and change with different technologies. Ihde highlights how 'technology' and the 'material world' both 'encroach' upon the 'ontological framework' that constitutes the human being and which grounds our notion of human agency – since the Enlightenment, this notion of human agency has predominantly been 'articulated from a humanist framework',

While Philbeck does hold that both the transhumanism and posthumanism paradigms 'recognise that what it means to be human is in large part determined by the possibilities that the material world of artifacts affords', an outstanding question remains, where within the complex network of human-machine-world do we locate 'agency'?[439] Posthumanism ultimately argues for 'a more 'distributed' sense of agency in terms of whether it is us or technology which is the primary source of agency within the human/technology relation. This allows the human to be considered as one 'object' amongst many within the 'ontological constellations' that exist between the human being, technology, and the world – and this helps to collapse the subject/object dichotomy.

Even so, Philbeck says that despite this, the posthumanist paradigm fails to offer a viable alternative to the transhumanist ontology.[440] For even if the human being is integrated fully into a 'network of relations', which allows for an anthropological model based on some form of equivalence between the person and the artifact, this model only works from a 'third person perspective', and it breaks down as soon as we adopt 'a first-person point-of-view' – in other words, the 'self reappears as a source of motivation and a unique producer of initial causes'.[441]

Philbeck concludes that, 'transhumanism relies on outdated notions from a crumbling humanist paradigm', but 'posthumanism has yet to figure out what a new paradigm might look like', with neither having 'a firm grasp on the new ontology that is developing before our eyes due to our continuing deepening integration with technology'.[442] He states that both paradigms highlight the fact that 'our technologies are the conditions of our existence', and that our technologies determine us as much as we determine them, they are a significant part

and the legacy of this is apparent within transhumanism. See, Don Ihde *Technology and the Lifeworld: From Garden to Earth* (Bloomington: Indiana University Press, 1990). Ihde's definition of technology as 'material culture' is adopted and employed in what follows.

439 Philbeck, 'Ontology', p. 181.

440 Philbeck, 'Ontology', p. 180.

441 Philbeck, 'Ontology', p. 180. This is an issue I hope to resolve through recourse to Philosophical Anthropology.

442 Philbeck, 'Ontology', p. 181.

of what makes us human – '*technê*, as both artefactual and symbolic production, exists as the condition for our capacity to conceive ourselves and perhaps even to think, in general'.[443]

Thus, we have a starting point, but we are left with a dearth in terms of a paradigm that can respond to the idea of post-biology and transhumanism so as to challenge the problematic dualistic assumptions that underpin them, while at the same time being capable of accommodating a perspective which accepts that it is correct to assume a co-evolution and a co-constitution of the human and the technical.

The issue I believe, is one of reductionism. For the fact remains that, regardless of what the actual ontological structure of ultimate reality is, and regardless of how mind and body are actually related metaphysically, we can at times adopt what we experience as a subject-object point of view – even if we are mistaken to draw definitive metaphysical and epistemological conclusions from this perspective, we can operate according to the structural dynamic of this experience, and generate valid knowledge about the world from it. The problems arise when all other considerations are reduced to this grounding.

The question of what is the best way to characterise our relationship with technology persists also. How are biology and technology similar or dissimilar in an ontological sense? How much agency does the human person actually have if we are at least partially constituted by technology? Technology shapes us according to its character and use, so technologies themselves must be the source of some amount of agency. We have already come to the conclusion that standard 'instrumentalist' conception of technology is outdated, and transhumanism though has failed to slip out of its grip and seems to still employ the associated instrumentalist conception of technology-as-tool. This perspective also seems to be the prevalent one employed by engineers and technologists beyond any explicitly 'transhumanist' context.

443 Philbeck, 'Ontology', pp. 181–182.

To hold that technology is value-neutral – especially now in the Information Age – is not a tenable position. Information technology is our epoch defining technological paradigm, and given the levels of programme-dependent interconnectivity inherent in so much of our daily lives as a result of this, it is inaccurate to describe technology as essentially value-neutral. It is well documented that computer programming is susceptible to the biases of its programmers.[444]

Such algorithmic bias reveals that technology cannot be value-neutral, value-open is indeed a better way to conceptualise it, especially if we accept that the human and the technical are co-evolving and are co-constitutional. If technology is so fundamental to the human condition that an explicitly 'anthropological' perspective is needed – it must be a perspective capable of steering a course between posthumanism and transhumanism, and a perspective that can bridge the gap between the ontologies of Naturalism and Culturalism that inform their perspective worldviews.[445] Before we do that – a short digression. We must

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[444] Joy Buolamwini, 'How I'm Fighting Bias in Algorithms', *YouTube* <https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms?language=en> [accessed 17th April 2022].

[445] It should be noted that Sorgner offers a potential solution to this problem. He holds that, from an anthropological perspective, both transhumanism and posthumanism strive beyond the model of the human being as understood by traditional humanism – the human being made up of both material and immaterial parts – obviously with one being an attempt at a continuation and the other being an attempt at a clean conceptual break. While there may be some common ground with respect to this issue, the differences between the two paradigms are obvious and Sorgner says they can be condensed to a few pertinent issues relating to 'the use of language, style and methodology' – Transhumanism is characterised by a 'linear way of thinking', which relies heavily on 'technical' language, and a 'scientific' methodology, while posthumanism employs a 'hermeneutic' methodology, and uses 'metaphorical' language. Sorgner offers a possible synthesis between the two paradigms and advocates dialogue between the two philosophical traditions they tend to mostly operate out of – the Anglo-American scientific culture for transhumanism, and the continental literary culture for posthumanism – in an attempt to 'further a way of thinking that which lies beyond humanism'. He names this synthesis 'metahumanism', and suggests that its thought 'lies beyond a dualist understanding of humanism', and can be situated 'in between post- and transhumanism'. The aim according to Sorgner is 'to move beyond an understanding of the world which affirms categorical dualities like that between subject and object and matter and spirit', and at the same time take both paradigms, and the problems they attempt to address, seriously – He concludes: 'Metahumanism can be understood as affirming both a weak version of trans-as well as a weak version of posthumanism'. Sorgner, 'Pedigrees', pp. 34–44. See also, The Metahumanist Manifesto which was jointly written by Jaime del Val and Stefan Lorenz Sorgner in 2010, <https://metabody.eu/metahumanism/> [accessed 28th January 2021]; <https://metabody.eu/metahumanist-manifesto-10-years-after/> [accessed 28th January 2021]. For a brief outline of the differences between trans-post-meta- and antihumanism, see Francesca Fernando, 'Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms: Differences and Relations', *Existenz*, 8/2 (20130), 26–32 <https://existenz.us/volumes/Vol.8-2Ferrando.pdf> [accessed 28th January 2021].

engage a little with the philosophy of technology, and clarify what we mean when we use the term *technology*.

2.2 TECHNICS AS MATERIAL CULTURE

2.2.1 PHILOSOPHY OF TECHNOLOGY

Postphenomenologist and philosopher of technology Don Ihde states that the philosophy of technology is a relatively recent 'sub-specialization in philosophy'. The historical 'narrative' of its development contains what he calls a 'dominant' or 'textbook' account of exactly where we should place the philosophy of technology within the *history* of philosophy more generally.[446] Ihde understands the philosophy of technology as a way to explore the relationship between technology and science; a way to investigate the different conceptions of technology with respect to how they fit within the relation between philosophy and science; and how the history of technology relates to the histories of philosophy and of science.[447]

Ihde begins by establishing that historically there has been a 'very long-standing and deep prejudice which links philosophy and science in a *theoretical* moment and preference', one which displays a clear and unfavourable bias against the 'practical' nature of technology. One of the results of this has been the 'late arrival' of philosophy of technology within the historical Western tradition.[448]

This neglect of the issue of technology within philosophy is traced by Ihde to the classical Greek period and Plato's veneration of theory and its legacy within Western thought. This is particularly pronounced when we talk about the relationship between philosophy and science. Ihde recounts how science was 'separated' from philosophy in the

[446] Don Ihde, *Philosophy of Technology: An Introduction*, (New York: Paragon House Publishers, 1993), p. 3.
[447] Ihde, *Philosophy of Technology*, p. 3.
[448] Ihde, *Philosophy of Technology*, p. 3.

19th Century, and by the 20th Century had become extremely successful and autonomous. This was, in no small part, a result of how the sciences had been made use of by the 'applied' disciplines with such success during the industrial revolution.[449] Ultimately, Ihde says that this situation evolved into the establishment of a dichotomy between the 'pure'/'theoretical' sciences and the 'applied' sciences or 'engineering disciplines'.[450]

For Ihde, the success of the sciences was recognised respectively within the three dominant approaches to philosophy in the 20th Century: Pragmatism; Positivism; and Phenomenology. Notably for Ihde, all three paradigms shared the 'recognition that science and scientific methods had risen to the fore of rational and critical thinking', while at the same time, it generated 'success in the explosion of knowledge heretofore unknown in human history'.[451] Hugely influential for this ascendency, was technological development. According to some commentators, it was at this time that science became fully a 'technoscience' which drove and developed 'modern technology', and according to this standard account, modern technology is understood as being qualitatively different from 'ancient' or 'traditional technologies'.[452]

As a 'domain specific' subfield of philosophy, philosophy of technology is still a relatively new field of enquiry.[453] It has been characterised by a variety of different approaches and styles and according to philosopher Thomas A.C. Reydon there is a lack of 'established general consensus' in terms of its constitution as a 'clearly delimited academic domain of investigation' and what its main aims, topics, and guiding questions are, hence he describes it as 'a variety of philosophical endeavours that all in some way reflect on

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[449] Ihde, *Philosophy of Technology,* pp. 4–15.
[450] Ihde, *Philosophy of* Technology, p. 15.
[451] Ihde, *Philosophy of Technology*, p. 16.
[452] Ihde, *Philosophy of Technology*, p. 17.
[453] Thomas A.C. Reydon, 'Philosophy of Technology', *Internet Encyclopedia of Philosophy* <http://www.iep.utm.edu/technolo/> [accessed 10 April 2017].

technology'.[454] In his 1993 publication, *Philosophy of Technology: An Introduction*, Don Ihde offers a working definition of a philosophy of technology – the criteria for philosophy of technology are that technology must be 'foreground phenomenon' and analysis must 'illuminate features of the phenomenon of technology itself'.[455]

Ihde states that it was first with Hegel (post-Kant) that the explicit attempt to do 'philosophies of…' began. This was where a certain subject matter was very specifically approached by philosophers 'thematically', and then critically interpreted and assessed in those terms, i.e., the philosophy *of* religion, the philosophy *of* history etc.[456] Hence, with respect to the philosophy *of* technology, we can identify characteristic themes and modes of critical analysis by different thinkers at different times. Technology has been described as both the 'stepchild' of philosophy, and its 'grandfather – either title relegates it to the fringes – or beyond – of the philosophy of science. Despite this, technology's 'insistent presence' has meant that a 'clearly definable sub-disciple exists which can be understood as the analysis and critique of concepts, methodologies, implicit epistemologies and ontologies of technological praxis and thought'.[457] Ihde holds that, under the influence of logical positivism, the philosophy of science's long association with, and overt emphasis on physics, in particular in its theoretical form, reveals the classical Greek prejudice which links both philosophy and science to 'theory' in an exaggerated way – hence, philosophy of science has tended to see 'modern' technology as 'essentially different from all ancient or traditional technologies', and as being 'largely derived from modern science'.[458] Ihde states that the conception and 'institutionalization' of engineering as 'applied science' is an 'instantiation of this belief'. [459]

[454] Reydon, 'Philosophy of Technology'.
[455] Ihde, *Philosophy of Technology*, p. 38.
[456] Ihde, *Philosophy of Technology*, p. 14.
[457] Don Ihde, *Technics and Praxis* ((Dordrecht/Boston/London: D. Reidel Publishing Company, 1979), p. xi.
[458] Ihde, *Philosophy of Technology*, pp. 19–20.
[459] Ihde, *Philosophy of Technology*, pp. 19–20.

It is Plato's legacy, according to Ihde, that has seen the valuing within the Western epistemological tradition of knowledge associated with the mind, the abstract, and the ideal over practical knowledge associated with the body and the material. This has meant that the philosophy of science, until very recently, 'tended to hold that technology – in its contemporary and high-technology forms – derives simply from theoretically and formally constructed science as a theory activity'.[460] As way of explanation for the priority of theory over practice, Ihde says that the only 'sense of experiment' that the ancient Greeks had was in terms of 'speculation', rather than measurement, verification, or instrumental manipulation. He says that Greeks were not 'strong in technological or engineering feats', and states that most of their 'technologies were, in effect, captive to their aesthetics' – this is evident in how their architecture in stone continued to use the forms and aesthetic details of previous eras where the buildings were constructed from wood.[461]

Ultimately, Ihde takes the position that, no matter how well conforming to aesthetic values a product of Greek craft/art was, *technê*, for the ancient Greeks, never achieved the same status as the 'purely contemplative or ideal related *theoria* of the philosopher'.[462] Also, of importance here is how well *technê* translates as technology. For the Greeks, '*technê* was simultaneously a craft and an art object' – there was no separation between art and technology – in fact, 'intrinsic to the judgement of any such object was not simply its utility, but also its beauty'.[463] This is a view of technology/craft that is 'aesthetically determined', and it is this 'narrow view of technology' – constrained by Greek sensibilities such as 'proportionality' – that is perhaps the reason why 'Greek technology never matured or proliferated'.[464]

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[460] Ihde, *Philosophy of Technology*, p. 22.
[461] Ihde, *Philosophy of Technology*, p. 23.
[462] Ihde, *Philosophy of Technology*, p. 26.
[463] Ihde, *Philosophy of Technology*, p. 26.
[464] Ihde, *Philosophy of Technology*, p. 26.

Thus, it was only in the Hellenic or Helleno-Roman period - or what Ihde calls the 'post Aristotelian period' – that we can observe the '*very first anticipants of technoscience*'.[465] The Hellenic period was, in Ihde's account, a 'time of great technological and experimental development', and he locates its focal point in Alexandria and the 'post-Aristotelians' as exemplified by Archimedes – the first steps toward the development of 'experimental' methods that began to specifically link 'scientific activity' with the use of existing technologies were taken at this time.[466] Ihde says that, in our time 'it is inconceivable to think of science without its technologies', for it is the 'wedding of science/technology' that has become technoscience as we understand it today.[467] He states that until the 20th Century, 'the phenomena of technology remained a background phenomenon', despite the fact that the Middle Ages was actually a 'virtual technological revolution', one whose innovations 'anticipated' the 'later industrial revolution'.[468] Despite this, philosophy in the Middle Ages being a little 'preoccupied' with theological concerns, paid little direct attention to technology itself.[469]

Ihde holds that it was with the Renaissance that the 'pre-cursors of modern science' became as 'equally fascinated by technologies as by nature' – he says that the great 'Renaissance artists' were oftentimes also 'engineers' as much as 'artists-scientists'.[470] Ihde brings Galileo to mind and references his endeavours – through the use of 'instruments and experimental devices for experiment' – to make and implement a '*technologically embodied*

[465] Ihde, *Philosophy of Technology*, pp. 7–8.
[466] Ihde, *Philosophy of Technology*, pp. 7–8. Ihde states that the first engineering treatise was produced during this period (Strato, 269BC '*Mechanics'* wrongly attributed to Aristotle). Saying that, it would be wrong to assume that were was anything around at that period that was anything like 'science' as we would recognise it today.
[467] Ihde, *Philosophy of Technology*, pp. 25–26
[468] Ihde, *Philosophy of Technology*, pp. 24–26.
[469] Ihde, *Philosophy of Technology*, pp. 24–26.
[470] Ihde, *Philosophy of Technology*, p. 25

science'. He states, 'Galileo was not a Greek sculptor, but a modern prototype for technoscience'.[471]

Ihde goes on to suggest that it was a move away from the 'narrower ideology of the Greeks' in the 'multicultural' Hellenic and Roman periods, that finally allowed for the proliferation of technology. Similarly, in the Middle Ages technological 'borrowings' from other cultures (such as the windmill from India/Iran) were 'developed' and 'modified' for European 'power purposes'.[472] Ihde says that it was in the Middle Ages that the first 'engineering fantasies' were expressed – he references Roger Bacon and his futuristic imaginations of 'machines of flight'.[473] Bacon argued that human art 'could successfully reproduce', and even 'surpass', nature's products, even if they were developed only through 'imitating' natural phenomena. This 'raising' up of human art to a high level of appreciation was a forerunner of the Renaissance's 'appreciation of the human being and their creative efforts'.[474]

It is widely accepted that Francis Bacon represents the first 'modern' technological thought. His ardent techno-optimism persisted well into the 19th Century as the predominant perception of technology.[475] With Bacon, the 'contemplative' ideal of classical approaches was transformed into the 'instrumental and interventionist science of the modern period' – which, based as it was on experimentation, was by necessity, technological in nature.[476] Credited with establishing the association between knowledge and power, Bacon represents 'a distinct movement away from the pure theory and contemplative ideals of the Greeks', and a move toward seeing the objectives of knowledge as not to simply *know* nature, but rather to

471 Ihde, *Philosophy of Technology*, p. 25.
472 Ihde, *Philosophy of Technology*, pp. 21–27.
473 Ihde, *Philosophy of Technology*, p. 27.
474 Franssen, 'Philosophy of Technology'.
475 Franssen, 'Philosophy of Technology', p. 3.
476 Ihde, *Philosophy of Technology*, p. 27.

challenge it.[477] The idea that the application of power is the purest path to knowledge represented a distinct move away from both the Greek and scholastic perspectives.[478] Such knowledge as was gained this way was subsequently seen to be both 'true' and 'useful', and Ihde holds that it is 'here that we begin to have the makings of a science/technology linkage which only much later will become a major theme in the philosophy of technology'.[479]

Early modern science is thus intimately linked to technology – firstly through the emphasis on instrumentation in the Renaissance, and secondly in the expression of 'Baconian science'.[480] Despite this, Ihde states that Bacon was destined to take a back seat to Descartes in the standard history of the early-modern period. Descartes' deductive arguments and 'geometrical method' became predominant – hence, even today, 'much of the instrumental and technological side of actual scientific practice is overlooked'.[481]

Ihde notes that it is with Ernst Kapp in 1877 that the first use of the term '*technikphilosophie*' is to be found. He states that Kapp's 'neo-Hegelian response to technology was largely one of admiration' within which technology itself functioned as way to realise the Hegelian dialectic.[482] Ihde goes on to say that it was to be 'another neo-Hegelian' – Karl Marx – who is one of the first to develop a complex '*praxis*' orientated philosophy. *Praxis* orientated philosophies are what Ihde understands as a 'type' of philosophy which is characterised by a re-valuation of theory and its subsequent relating to 'more basic levels of action and materiality'.[483] Marx's 'inversion' of Hegel's understanding of *Geist* as 'a progression in human and social self-awareness arising out of a historical

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477 Ihde, *Philosophy of Technology*, p. 28.
478 Ihde, *Philosophy of Technology*, p. 28.
479 Ihde, *Philosophy of Technology*, p. 28.
480 Ihde, *Philosophy of Technology*, p. 28.
481 Ihde, *Philosophy of Technology*, p. 28–9.
482 Ihde, *Philosophy of Technology*, p. 29.
483 Ihde, *Philosophy of Technology*, p. 29.

dialectic of ideas', argues that 'ideas, ideology, always relate to a set of concrete, material conditions', i.e., that 'it is out of practices that ideas are formed'.[484]

Ihde also accredits Marx and Kapp with introducing 'the phenomenon of technology [into] philosophical consideration in a positive way'.[485] He says that Marx 'relates philosophy quite directly to technology 'through the idea that '*material modes of production*' – which he presents as an example of the aforementioned practices through which ideas are produced/formed – are themselves 'shaped by technologies'.[486] What is significant for Ihde about this is that, with Marx, technology was no longer a 'background' issue but became an issue of primary concern. He identifies Marx's 'praxis-centre, mode-of-production analysis of society', as 'one of the primary sources for one side of what would become philosophy of technology'.[487]

Philosophical reflection on technology in the early to mid-20th Century was shaped by WW1 and WW2 due to the use of advanced technological capability to conduct warfare. Ihde states that 'histories of engineering still rate that period as the highest period of *technological innovation* in history'.[488] Post-industrial revolution, the intensification of technological developments, and its destructive capabilities, established 'technology as a force too important to overlook' – thus, particularly in Europe, philosophers 'began to make technology and technological civilization a primary theme of their reflections'.[489] Thus, for Ihde 'much of the European reaction to technology was *negative*', and it was from this negative perspective that some of the central issues of modern concern about technology emerged: technology as 'artificial'; technology as a form of 'calculative and analytical thinking' that is essentially 'modern'; technology as 'autonomous' and no longer under

[484] Ihde, *Philosophy of Technology*, pp. 19–30.
[485] Ihde, *Philosophy of Technology*, p. 30.
[486] Ihde, *Philosophy of Technology*, p. 30.
[487] Ihde, *Philosophy of Technology*, p. 31. This 'tradition of analysis' ultimately understands technology as being 'embedded in a wider social and political praxis' – this situates the associated analysis outside a narrow focus on simplified oppositions such as practice vs. theory technology/engineering vs. science.
[488] Ihde, *Philosophy of Technology*, p. 32.
[489] Ihde, *Philosophy of Technology*, p. 32.

human control; technology as 'replacing' or 'supplanting' nature (culture vs. nature – artificial vs. natural); technology as representative of a 'technocratic ideology' that is totalitarian in nature and expressed in terms of power and political domination; technology, in its 'modern' form, as capitalist/corporate/industrial, bound to science, 'instrumental' in its rationality and driven by the dynamic of 'scientific-technological progress itself''.[490]

What all of this represents for Ihde is that philosophy – at this point in history – began to treat technology as a phenomenon worthy of serious reflection. Even so, he says that up to this point it still doesn't amount to what he would call properly call 'philosophy *of* technology', more so a case of 'philosophy *and* technology'.[491]

2.2.2 HUMANITIES PHILOSOPHY OF TECHNOLOGY (HPT) VS. ENGINEERING PHILOSOPHY OF TECHNOLOGY (EPT)

Philosopher of technology Carl Mitcham states that as well as an awareness of its own history, a proper philosophy of technology must be able to clearly set out and identify a set of 'systematically integrated issues'. In light of this, he says that there are two existing traditions that that can be said to satisfy the above criteria. The two traditions are 'mutually informing and affirming', yet fundamentally distinct. The first can be described as consisting of 'scholars in the humanities' – especially phenomenologists – who are trying to 'understand modern technology within a hermeneutic or interpretive framework', while the second can be seen as an attempt by 'engineers and technologists' themselves to create a technological philosophy.[492] Mitcham's analysis explicitly strengthens the dichotomy between what he

[490] Ihde, *Philosophy of Technology*, pp. 33–37. Ihde references José Ortega y Gasset, Martin Heidegger, Nicolas Berdyayev, Jacques Ellul, Herbert Marcuse,
[491] Ihde, *Philosophy of Technology*, p. 37.
[492] Carl Mitcham, *Thinking Through Technology: The Path between Engineering and Philosophy*, (Chicago: The University of Chicago Press, 1994), pp. 12–13.

calls 'humanities philosophy of technology' (HPT) and 'engineering philosophy of technology' (EPT).

EPT is the elaboration, by engineers and technologists, of a 'technological philosophy', and HPT is the 'effort by scholars from the humanities, especially philosophers, to take technology seriously as a theme for disciplined reflection'.[493] Accordingly, EPT 'tends to be more pro-technology and analytic', while HPT tends to be 'somewhat more critical and interpretive'.[494] Mitcham holds the position that, within the philosophy of technology, the thought of 'engineer-philosophers' has been traditionally somewhat neglected.

According to Mitcham's account EPT is 'the firstborn of the philosophy of technology twins', and he identifies 'two early anticipations' of the term – 'mechanical philosophy' and 'philosophy of manufacturers' – which he says also infer the historical priority of EPT.[495] He acknowledges Ernst Kapp (1808-1896) as the first to employ the term 'philosophy of technology', and places him within the tradition of EPT. He says that Kapp drew on Hegel's dialectical method to develop a theory of history as the 'differential record of human attempts to meet the challenges of various environments' and to 'overcome dependence on raw nature'.[496] Mitcham sees this as Kapp's attempt to give Hegel a 'materialist grounding'. He says that Kapp 'sought to relate history to (Ritter's new science of) geography' through an exploration of the idea that geographical factors exerted an influence on 'sociological orders'. Kapp attempted this through an assertion that the Hegelian

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[493] Mitcham, *Thinking Through Technology*, p. 17.
[494] Mitcham, *Thinking Through Technology*, p. 17.
[495] Mitcham, *Thinking Through Technology*, p. 19. Mitcham describes 'mechanical' philosophy as natural philosophy which 'uses principles of mechanics to explain the world'. The term 'philosophy of manufacturers' is attributed by Mitcham to Andrew Ure (1778-1857), a Scottish chemical engineer who he says can be seen methodologically as an 'ancestor to operations research, systems theory, and cybernetics', pp. 19–20
[496] Mitcham, *Thinking Through Technology*, pp. 21–23.

dialectic could be harnessed in such a way as to facilitate the 'colonization' and transformation of our both our external environments and our internal selves.[497]

Mitcham states that Kapp's thought on the way that humans changed and transformed their environment was nurtured and developed during the time that he lived 'as farmer and inventor' after immigrating to central Texas to live as a pioneer settler. In Texas, Kapp led a life of 'close engagement with tools and machinery', and upon returning to Germany and academia, he 'revised' his previous 'philosophical geography' – a revision that was undertaken through 'reflection on his frontier experience'.[498] As a result he decided to formulate a philosophy of technology in which tools and weapons are understood as different kinds of 'organ projections'.[499]

Kapp's insight was that the intrinsic relationship that arises between tools and organs – although it is more one of unconscious discovery than of conscious invention – is that in the tool the human continually produces itself. Since the organ whose utility and power is to be increased is the controlling factor, the appropriate form of a tool can be derived from that organ. Hence, a 'wealth of spiritual creations thus springs from the hand, arm, and teeth. The bent finger becomes a hook, the hollow of the hand a bowl; in the sword, spear, oar, shovel, rake, plow, and spade one observes, the adaptation of which hunting, fishing, gardening, and field tools is readily apparent'.[500]

It is Kapp's hands-on experience with tools and the implements associated with farming and the experience of frontier life that qualifies him for inclusion in EPT according to Mitcham. He states that it is of note that Kapp does not see this process of organ projection as necessarily a 'conscious' process, and in many cases it is only after the fact that 'morphological parallels' are actually recognised as such. Analogies of extension can be

[497] Mitcham, *Thinking Through Technology*, pp. 21–23.
[498] Mitcham, *Thinking Through Technology*, p. 23.
[499] Mitcham, *Thinking Through Technology*, p. 23.
[500] Ernst Kapp in Carl Mitcham, *Thinking Through Technology*, pp. 23–24.

drawn between railroads and human circulatory system; the telegraph and the human nervous system; and between language and the state.[501] Mitcham says that the strength of Kapp's thinking about technology lies in the way that it 'it strongly projects the technological way of looking at the world into a variety of traditionally nontechnological domains'.[502]

Hence, EPT represents for Mitcham a philosophical engagement with technology from 'within' – technology itself is understood as being 'foundational' as a ground for a host of different types of action and thinking. He says that this conception of technology reflects an understanding of the human being that is characterised by a 'technological way of being-in-the-world'.[503] In contrast, he sees HPT as 'the attempt of religion, poetry, and philosophy to bring non-or-transtechnological perspectives to bear on interpreting the meaning of technology'.[504] So, even if EPT enjoys 'primogeniture', it must be acknowledged says Mitcham, that HPT 'may nevertheless claim priority in the order of conception'.[505]

In this way Mitcham establishes a foundational principle for HPT – the claim that it was the humanities that conceived technology (especially modern technology), rather than technology conceiving the humanities.[506] Even so, he says that claim of the 'primacy of the humanities over technologies' is still not necessarily a principle that is 'self-evident', nor one that is without challengers – most pertinently in ultra-modern and ultra-highly technological cultures.[507]

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501 Mitcham, *Thinking Through Technology*, p. 24.

502 Mitcham, *Thinking Through Technology*, pp. 20–38. Mitcham goes on to include German philosophy professor Fred Bon (born 1871); Russian engineer Peter K. Engelmeier (1885 to ca. 1941); German chemical engineer Eberhard Zschimmer (1873-1940); and German philosopher, physicist, entrepreneur, and inventor Friedrich Dessauer (1881-1963), as representing an early collection of thinkers who, in various different ways, formulated what Mitcham characterises as 'philosophy of *technology*' as opposed to merely '*philosophy* of technology'. It is the first-hand experience of tools, invention, technology and engineering that situates these thinkers within EPT, and Mitcham says that these early ideas, and how they relate to issue of practical know-how and practical perspectives, can be traced through various figures up to the 1980s.

503 Mitcham, *Thinking Through Technology*, p. 39.

504 Mitcham, *Thinking Through Technology*, p. 39.

505 Mitcham, *Thinking Through Technology*, p. 39.

506 Mitcham, *Thinking Through Technology*, p. 39.

507 Mitcham, *Thinking Through Technology*, p. 39.

For Mitcham, it was 'obvious' to Aristotle that 'making was not an end in itself', but rather was always to be seen as subordinate to our understandings of the good.[508] And as shown already, this 'traditional' understanding of the nature and significance of human artifactual production was fundamentally challenged by Francis Bacon. Bacon's drive to 'turn human attention toward technology and to invest human energy in its pursuit', along with 'the subsequent appearance of technological societies', has meant that the HPT appears historically as 'a series of rear guard- attempts to defend the fundamental idea of the primacy of the non-technical'.[509] Mitcham says HPT's claim of primacy is buttressed by the observation that Bacon's overall endeavour 'was itself undertaken by philosophical and rhetorical means' – hence the argument, that it was the humanities that conceived modern technology rather than the other way around.[510]

Mitcham concludes by saying that it is the Romantic movement that represents the initial expression of the 'modern defence of the humanities as larger and more extensive than the technological'.[511] Romanticism, according to Mitcham, venerates the attempt to transcend or at least challenge the limits placed on human development by the Enlightenment idea that 'scientific and technological progress automatically contributes to the advancement of society.[512] Romanticism articulates the possibility of human beings existing in some more natural sense 'outside' civilization rather than in it. The human is in possession of 'some vital faculty of mind' such as 'imagination', which allows access to deeper and more profound truths than the 'rational intellect' affords.[513]

[508] Mitcham, *Thinking Through Technology*, p. 39.
[509] Mitcham, *Thinking Through Technology*, p. 39.
[510] Mitcham, *Thinking Through Technology*, p. 39.
[511] Mitcham, *Thinking Through Technology*, p. 39.
[512] Mitcham, *Thinking Through Technology*, p. 40.
[513] Mitcham, *Thinking Through Technology*, p. 40. The legacy of this 'romantic critique' of modern technology is a 'rich and varied tradition', within which technology is understood suspiciously as a phenomenon which makes aspects of life and the world become opaque and distant from us – within it, Mitcham places Karl Jaspers (1883-1969); Gabriel Marcel (1889-1973); Lewis Mumford (1895-1990); José Ortega y Gasset (1883-1955); Jacques Ellul (1912-1994); and Martin Heidegger (1889-1976); all of whom he says are representative of HPT.

What the above aims to reveal is that the split within philosophy of technology between HPT and EPT mirrors the line of demarcation between transhumanism and posthumanism. It also aims to show that the prevalence of the instrumentalist conception of technology within transhumanism is something that extends in a much more general sense to engineers and technologists in all fields in such a way so as to represent the default position regarding the nature of technology itself. The instrumentalist conception of technology segues nicely with the unreflective and philosophically uncritical *use* of technology – the successful undertaking of engineering as a activity does not require a more critical or nuanced understanding of technology. For our purposes though, we will need to move beyond such a simplified and out-dated conception of technology. We require that a specifically *anthropological* perspective be taken on both the essential nature of technology itself and the human/technology relation.

2.2.3 AN ANTHROPOLOGICAL PERSPECTIVE ON TECHNOLOGY

The world we live in is a world of human-made things – artifacts that we live with and through, and which make the human world a 'technical world', just as much as it is a 'natural world'. This is the world in which we experience the human condition – the world which we have made, and which makes us.[514] We have, since our earliest days, employed technical artifacts to adapt to and overcome the challenges of our physical environment, and we have always mediated our place in the natural world through our tools. Our technology has also been a well-spring for our metaphorical interpretation of ourselves and the world. Both our cognition and our physical action are shaped to a significant degree by our technological

[514] Peter Kroes, *Technical Artefacts: Creations of Mind and Matter*, (Dordrecht: Springer, 2012), p. 1.

production. Thus, to understand the technical world and the nature of technical artefacts is to better understand the human condition.[515]

Technical artifacts are the product of human innovation, creativity, imagination – first and foremost they were – and are – the products of invention as a response to practical problems faced by the human being. Philosopher of technology and engineer Peter Kroes offers a definition of a technical artifact based on this assessment: the 'material (physical) means that people make and use for solving practical problems'.[516] This description fits with what we have said earlier about technology being an anthropological response to an existential situation – a response to an initial *problem*. The notion of 'making' or 'creating' is of central significance obviously, and Kroes describes the engineer – in contrast to the scientist – as an 'actor', rather than a 'spectator', a 'discoverer', or a 'theorist'.[517]

Thus, Kroes concurs with what we have already established, the engineer is orientated toward changing the material world with the aim to 'adapt that world to the practical needs and desires of humans' – it is in this fashion that the technical world is constructed around us, and by us.[518] This is not simply physical engagement with the natural world – physical work alone is not sufficient for artifactual production. For Kroes, artifacts are 'creations of human mind', just as much as they are the result of the physical manipulation of matter, i.e., human *intentions* are a vital constituent of technical artifacts.[519]

While it is true that that a 'found' natural object can function as a tool and – if used intentionally – can assume the status of artifact by virtue of it being put to such use, such a found object does not compare to the an 'engineered' technical artifact. The mark of intentionality left on such an implement is fleeting and only derives from use, not from an idea of intended functionality or design. Technical artifacts have a 'for-ness' to their nature.

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515 Kroes, *Technical Artefacts*, p. 1.
516 Kroes, *Technical Artefacts*, pp. 1–2.
517 Kroes, Technical Artefacts, p. 2.
518 Kroes, *Technical Artefacts*, p. 2.
519 Kroes, *Technical Artefacts*, p. 3.

A practically orientated aspect that differentiates them from other physical objects. This for-ness can be described as the artifact's 'technical function'. Hence, Kroes says that technical artifacts are 'physical constructions with a (practical) *function*' (original emphasis)[520]. Because the practical function of a technical artifact reflects the intentions of the designer/manufacturer of the artifact, it can be said that technical artifacts can also be described as 'creations of mind and hand' – they are the product of both 'mental work' and 'physical work', and combine inventive ideas with the skilled physical manipulation of matter.[521] Creative ideas are 'materialized' and 'embodied' in our artifactual production and are recognisable as the mark of intentionality that describes the artifact's 'technical function' or its 'for-ness'.[522]

An artifact's technical function relates directly to its physical structure and is expressed through the particulars of that structure through its (correct) usage and purposeful application. There is a constraining dynamic between the artifact's physical structure and its technical function – specific structures are required to express a particular function, likewise, particular functions can only be expressed by specific structures. At the same time, an artifact's technical function is also directly related to its intentional aspect as a reflection of the intentions of the designer and/or manufacturer. Thus, Kroes assigns the designation, 'creations of mind and matter'.[523]

This combination of physicality and the mark of apparent intentional agency highlight a certain kind of uniqueness when we try to grasp the nature of technical artifacts themselves. As a physical object, a technical artifact is explainable through recourse to physical laws. But, this explanatory reduction seems unable to account for its intentional aspect – there are

[520] Kroes, *Technical Artefacts*, pp. 3–4. While it could be argued that the objects associated with biological systems also display a type of 'for-ness', one cannot ascribe the same sense of intentionality to whatever their function is. Unless of course one posits the existence of a creator God through some form of argument from design.
[521] Kroes, *Technical Artefacts*, p. 4.
[522] Kroes, *Technical Artefacts*, p. 4.
[523] Kroes, *Technical Artefacts*, p. 5.

no physical laws that fully describe the aims and aspirations of the intentional agency behind an artifacts design and manufacture. Accordingly, a view based solely within a scientific or engineering framework cannot accommodate the full range of essential features that technical artefacts seem to display. Similarly, if we adopt a perspective based in the humanities, and which offers a framework capable of sophisticated explanations and descriptions that elucidate the way that technical artifacts reflect human desires (sometimes negatively, and sometimes positively), and are best understood in terms of human means and ends, the result will probably be that such an explanatory framework will lack the capacity to accommodate the physical and structural aspects of our artifactual production.[524]

Kroes says that both perspectives are essential for a robust description of technical artefacts and he concludes from this that technical artifacts can be defined in terms of their 'dual nature': 'Somehow the physical and intentional conceptual frameworks have to be combined in order to account for the specific dual nature of technical artefacts. They are hybrid objects combining physical and intentional features'.[525]

Archaeologist and anthropologist Michael Chazan's comes to a similar conclusion. His basic premise is that artifacts are 'hybrids' – both 'natural' and 'cultural'. As such, they are an necessary component of human evolution.[526] He defines an artifact as not simply an 'object' that bears the mark of human action or manufacture, and instead says that a better definition is one that understands an artifact as a 'status' which is ascribed to an object rather than a 'property' which is ascribed to an object. A status that can recede, for example, if the mark of human agency is not 'maintained'. Thus, the identity and classification of an object as an artifact is not simply a matter of the 'physical processes that maintain traces of human

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[524] Kroes, *Technical Artefacts*, p. 5.
[525] Kroes, *Technical Artefacts*, p. 1.
[526] Michael Chazan, *The Reality of Artifacts: An Archaeological Perspective* (New York: Routledge, 2019).

action, but also this identity is dependent on the intervention of the person who identifies it as such, and this identification is historically contingent and might vary between individuals'.[527]

Human beings impose function on objects when we manufacture artifacts, and this function cannot be performed simply as a result of the physical properties of the object – some human interaction is required for the function to be realised. Hence Chazan says that we can define an artifact as an object of the material world that carries a 'status function' as the result of intentional human action (action that is undertaken within a given conceptual background). Saying that, the status function itself is not an 'absolute property' of the artifact, rather it is 'a state of being that results from human action'.[528] Understood in this way, artifacts can be seen as 'elements of the material world that have become enmeshed in human temporality' – it is this that gives them their 'hybrid identity'.[529]

Artifacts are material objects that have been 'absorbed into humanity', and the status of artifact lasts as long as that relationship is maintained. Artifacts are the interplay between human intentions and the physical actuality of manipulated matter. Chazan describes it as a 'dialectic of human intention and material affordance' – a process which isn't a one-way relation.[530] The 'flow' works both ways, and through the act of the object being 'absorbed' into the human person in the act of 'acquiring the status of artifact', the human person is

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527 Chazan, *The Reality of Artifacts*, p. 5. Chazan uses the example of a rock and a prehistoric stone tool found in the ground together. The only thing that marks the tool as different from the rock is the physical mark of human agency and manufacture. But, if this mark is not discernible then what is there left to differentiate the two? Even if the marks are discernible, they only become a definitional factor if correctly identified by a collector/observer – until then the object in the ground is no different to any of the rocks around it, except for one characteristic, it possesses the physical 'affordances' to *re-become* an artifact, but this will not happen until these affordances are recognised and interpreted on this way. Hence, Chazan says that process represents both the recovering and creating of artifacts, and the object can be seen to have different cycles as an artifact – an initial cycle when it was produced, and a much later one as an artifact of archaeology. Two different process, a million years apart, having in common the transformation of an object from the status of a natural object to the status of artifact. The process of an object becoming an artifact though human action is encapsulated in the concept of *chaîne opératoire* (this roughly translates as 'operational sequence'), which was originally developed by André Leroi-Gourhan. See, André Leroi-Gourhan, *Gesture and Speech*, trans. by Anna Bostock Berger (Cambridge: Cambridge University Press, 1993).

528 Chazan, *The Reality of Artifacts*, p. 7.

529 Chazan, *The Reality of Artifacts*, p. 7.

530 Chazan, *The Reality of Artifacts*, p. 7.

likewise 'absorbed into the artifact'.[531] Thus, Chazan concludes that artifacts as – 'objects that are a hybrid between human and non-human' – have been 'a component of the evolutionary context of humanity for over two million years'.[532] As a result, a 'world with artifacts is the world in which we became, and continue to become, human' – artifacts are a 'critical component in the process of becoming human'.[533]

Aligning with this position, Ihde describes how our use of technology is *always* 'non-neutral' – *Technics and Praxis* (1979).[534] This approach the human/technology relation is essential if we are to move beyond the simple instrumentalist conception of technology. Ihde's underlying premise is that it is always the case that 'the use of technological artifacts transforms experience in some way'.[535] Our use of technology – even of the simplest of tools – 'mediates' the relation between person and the world/environment in a fundamental way.

Technological mediation is an experience which involves some form of perceptual transformation, be it visual, olfactory, auditory, tactile, vestibular, proprioceptive, or gustatory, and is 'a mediation which in some way employs, encounters, or engages some form of material technological artifact'.[536] Ihde gives the most basic of examples – using a stick to reach some fruit in a tree: the stick mediates one's relation with the fruit through an extension of physical reach, by altering the perceptual aspects of getting the fruit compared to not using the stick, and through a change of available options in terms of selection.[537]

Thus we can establish a working-definition of technology suitable for our needs. Most significantly, Ihde's definition determines that '*there are no human cultures which are pre-*

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[531] Chazan, *The Reality of Artifacts*, p. 7.
[532] Chazan, *The Reality of Artifacts*, p. 10.
[533] Chazan, *The Reality of Artifacts*, p. 10. This is an important point and is one which will be developed in more detail later through Scheler's concept of *Geist*. For now we just need to establish an anthropological perspective on technology from which to establish our analytical framework.
[534] Ihde, *Technics and Praxis*, p. 53.
[535] Ihde, *Technics and Praxis*, p. 53.
[536] Ihde, *Technics and Praxis*, p. 53.
[537] Ihde, *Technics and Praxis*, pp. 53–54. Ihde describes a number of types of mediated experience that we can have with technology, and the relation between person and artifact can be a direct relation or a background relation. Direct relations are *focal* experiences, where we experience *through* or *with* the technology used, and background or field relations are an experience *among* technology.

technical'.[538] As such, his definition is sufficiently broad to include historic, pre-historic technologies and pre-Modern technologies. By necessity it includes a 'concrete component', or 'material element' – this component must be employed as part of human *praxis*, and there must exist a '*relation* between the technologies and the humans who use, design, make or modify the technologies in question'.[539] Such a definition is according to Ihde, 'anthropologically-philosophically broad enough that most forms of *material culture* will be seen to be related to technology'.[540]

Ihde's anthropological perspective establishes all human technology as encapsulated under the umbrella of *technics – technics as material culture*. Thus, we now have an anthropological perspective on technology and the human/technology relation that includes our biological heritage and *all* of our material production. Such a perspective is essential. For it is necessary that we are able to accommodate both the 'natural' and 'artificial' aspects of the human condition.

2.2.4 TECHNOLOGY: NATÜRLICH!

Adopting such a perspective is important I think, when we reflect on the fact that because transhumanism assumes a naturalistic ontological position, the human being's true nature or essence is taken to be biological. As such, any attempt at liberation from nature – biology – is an attempt at liberation from ourselves. Thus, we have a fundamental opposition between ourselves and our technologies. As shown, this is reflected in our hangover from the Enlightenment and the persistence of the instrumentalist conception of technology, and the

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538 Ihde, *Philosophy of Technology,* p. 48.
539 Ihde, *Philosophy of Technology,* p. 47. Ihde's definition does not extend to 'any calculative or rational *technique*' as some definitions of technics do.
540 Ihde, *Philosophy of Technology,* p. 48. This definition does not insist that technology 'needs to be made or manufactured per se' – as such it includes what he describes as 'found technologies', which Ihde differentiates from 'proto-technologies', which describe the same kind of 'found' tool-use in non-human species.

lingering problems associated with Cartesian dualism the subject/object dichotomy. It is no surprise then that the two defining characteristics of transhumanism are the persistence of transcendent themes into late modernity, and the engineering perspective extended to all aspects of human existence, are caught in an essential tension. The language and aspirations of transcendence are coupled uneasily with the underlying presuppositions of reductionism.

Human material production describes an ongoing and increasingly intimate merging of the biological and the technological. Within this, the line between human and machine remains undefined, and the nature of each appears – as yet – to be undetermined (to some degree or other). While we may not be able to offer conclusive definitions of either that will satisfy everyone, I think we can recognise that this dynamic process of merging between machine and flesh can be constituted in terms of *extension* and *mediation*.

Extension and mediation are concepts which seem to capture our relationship with technology and the world. As theoretical resources, the concepts of extension and mediation can help us to describe and understand a system that is essentially constituted as *both* natural and artificial. They can also help us understand that system fundamentally as a *process* that is ongoing, dynamic, and displays incredible complexity. As concepts, mediation and extension also allow us to orientate ourselves in terms of a relational ontology that is holistic in nature and assumes an equal significance is to be afforded to each component of the human being's dual-aspect. Thus, when we speak of mediation and extension, it must be more than simply *physical mediation and extension* – it must also be cognitive and spiritual.

Technology extends and mediates both human experience and human understanding – both of the world and of ourselves. As a system, the human technology relation is recursive. It is a self-referential process where the products of our material production feed back into the system itself, shaping and influencing our further development (this is the very same dynamic that the AI researchers depict when they describe self-learning machines). There is nothing that we do that is outside of this process. Thus we need a non-reductive account that is holistic in nature and allows for emergent phenomena and genuine novelty that appear to describe the dual-aspect of the human being – a dual-aspect that is mirrored in the hybridity of our artifacts.

From its earliest days the philosophy of technology has identified the significance of the concept of extension. Of particular interest is the way that Kapp begins by stating that his philosophy of technology is based on the belief that 'the emergence and increasing perfection of artifacts originating with the human hand are the primary condition for the development of human self-consciousness'.[541] In other words, it is our artifactual production that provides the framework within which we interpret ourselves. What we make, mediates our most fundamental of experiences and, in turn makes us.[542] Kapp's philosophy of technology describes human culture as being – in an essential way – 'technologically conditioned', i.e., it is a process of fabrication and extension, undertaken as a technically mediated 'operation'.[543]

There is no such thing as the human outside of culture, i.e., there is no such thing as the human being outside technics *as* material culture, i.e., there is no such thing as the human being outside technology – it is our technology that establishes the 'epistemological precondition' for the very *idea* of the human being.[544] As established in the previous section, technology is an issue of Philosophical Anthropology, it is both constitutive of, and constituted by, our nature and how are in the world.

It is not surprising then that philosophical reflection on technology can be traced back to the Ancient Greeks, and that the foundational themes that emerged then have persisted as issues of concern through the Middle Ages, and into Modernity. Notably amongst these is the

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541 Ernst Kapp, *Elements of a Philosophy of Technology: On the Evolutionary History of Culture*, trans. by Lauren K. Wolfe, ed. by Jeffrey West Kirkwood and Leif Weatherby (Minneapolis: University of Minnesota Press, 2018), p. 3.
542 Jeffrey West Kirkwood, and Leif Weatherby, 'The Culture of Operations: Ernst Kapp's Philosophy of Technology', introduction in, Kapp, *Elements of a Philosophy of Technology*, pp. ix–xlvi, p. x.
543 Kirkwood, and Weatherby, 'The Culture of Operations', p. x.
544 Kirkwood, and Weatherby, 'The Culture of Operations', p. xi.

analogous understanding of human made artifacts – and the processes that produce them – and the natural world. Thus, artifactual production went hand-in-hand with reflection on metaphysical issues such as cosmogenic explanations; first principles and causation; intelligibility; cosmic laws and regularities; design and the metaphysical status of Mind and ideas how they relate to the material world.

Of equal importance is reflection on the distinction between the *natural* and the *artificial* and the relationship between practical activities and theoretical contemplation and the nature of their interaction within the human arts. For the ancient Greeks, the use of technology was tempered by the notion of *hubris*. Their technology ultimately never developed to the point where it could be seen to as a direct challenge to nature – it was never a source of power strong enough to allow humans to fundamentally change the natural order. Philosopher Umberto Galimberti says this is a result of the fact that the ancient Greek conception of nature understood its 'governed by necessity' and hence, 'unchangeable'. This stands in contrast to the Judeo-Christian conception – where nature is something given to us to dominate and control.

It is here that the seeds of the modern conception of nature were sown. For even though there was a major re-assessment of how we orientated ourselves to the world as a response to the emergence of modern science in the 17th century, nevertheless Galimberti says that modern science was in fact built on 'theological metaphors', and was conceived through a 'theological vision' of redemption.[545] Science – as Francis Bacon stated – is redemptive. Mirroring humanity's pre-scientific move – through Christ – from original sin to salvation, we moved – through scientific research – away from ignorance and toward progress.[546] Thus, a previous religious move from sin to salvation paved the way for, and helped facilitate, a later parallel move during the Scientific Revolution. From then on,

[545] Umberto Galimberti, 'Man in the Age of Technology', *Journal of Analytic Psychology*, 54 (2009), 3–17 (pp. 5–6).
[546] Galimberti, 'Man in the Age of Technology'. p. 7.

technology was no longer simply a tool for human use, and the foundation was laid for a conception of technology as the possibility and context for 'modification' of not just the world, but also of ourselves.[547]

What is significant about this is the shift that Galimberti identifies, away from the Greek attempt at the contemplation of natural world toward the scientific method, which aims for mastery over it. Key to this is the fact that Galimberti equates the 'essence' of science with technology – for him there is no distinction between the two. He rejects a concept of 'pure' science and understands the scientific method as being characterised by the notion of manipulation and the aim of transformation rather than any concept of contemplation. For Galimberti, this means that the scientific gaze always 'implies a technological intention' and – as techno-science – its ultimate end is its 'own maximum development'.[548] In this way, science presents itself as the highest form of rationality achieved by humanity. Consequently Galimberti equates humanism with science and he states, 'the essence of humanism is science', and 'science is the essence of humanism', for it is only through science that humanity can achieve mastery and dominion over the natural world.[549]

In this way, the Aristotelian distinction between nature (*physis*) and the artifactual products of human beings (*technê*) was adopted and adapted by Christian thought. Nature was understood to be God's creation, which – post-Fall – the human being has become estranged from. Thus, there was a fundamental shift in our understanding of the relationship between us and the natural world. The idea that the human was made in God's image establishes the notion that humans share some God-derived features – such as freedom – which translates to the way in which we conceive of our relationship with the natural world. Weis states that, within the 'three great monotheistic traditions (Judaism, Christianity and

[547] Galimberti, 'Man in the Age of Technology', pp. 5–6.
[548] Galimberti, 'Man in the Age of Technology', p. 7. The issue of whether or not there is a distinction between science and technology is a matter of debate and is dealt with in more detail in Chapter 3.
[549] Galimberti, 'Man in the Age of Technology', p. 7.

Islam) the relationship of human beings to nature has taken three main forms: dominion, stewardship, and co-creation'.[550]

The notion of 'human co-creation' is a well-established idea in Christianity and 'is especially important in Judaism' according to Weiss.[551] As such, he says that the 'human being is seen as being as natural as everything else and therefore a fundamental part of creation […] if the human being is part of created nature, his products are as well'.[552] Weiss concludes that this 'vision of the God-nature-man relationship' has been secularised within transhumanist thought – with God being eliminated from the equation. He quotes biotechnologist and prominent transhumanist Gregory Stock:

> To some, the coming of human-directed change is unnatural because it differs so much from any previous change, but this distinction between the natural and the unnatural is an illusion. We are as natural a part of the world as anything else is, and so is the technology we create […]. Remaking ourselves is the ultimate expression and realization of our humanity.[553]

Philosopher Gernot Böhme takes a similar view, and states that the 'double meaning' attributed to the term 'nature' in both a philosophical and an everyday sense, translates directly to our understanding of human nature, i.e., human nature as our 'essence', and human nature as an indication of our being 'natural' as an embodied part of the natural world. Hence, since antiquity, human nature/human self-understanding has been approached in terms of the dichotomies of human vs. nature, nature vs. culture, nature vs. technology etc., and our sense of ourselves has been divided between a natural part and a rational part – one

[550] Weiss, 'Nature', p. 197.
[551] Weiss, 'Nature', p. 198.
[552] Weiss, 'Nature', p. 198.
[553] Gregory Stock, *Redesigning Humans: Choosing our Genes, Changing our Future* (New York: Mariner Books, 2003), p. 197, quoted in Weiss, 'Nature', p. 198.

given to us as fixed, and the other as characterised by being open to development through education, moral consideration, virtue etc.[554]

Understanding ourselves in this way though, has led to the view that human nature – as our 'essence' – is what distinguishes us from other non-human animals, i.e., we possess rationality as well as being part of the natural world. In this way any attempt at 'self-formation' has inherently come to be understood in terms of it being an 'overcoming' of the 'natural' part of ourselves.[555] Thus, from this dichotomous perspective, we can only become what we truly are – rational beings – by emancipating ourselves from the natural world.

Following Weiss and Galimberti, Böhme says that this notion was given shape within the Christian worldview and the idea that we should understand ourselves as first among God's creatures, to whom dominion over nature was given. This then developed into what Böhme describes as a programme of technological domination by the human being over the natural world, and can also be seen in the 'ideological-cosmogonic programme of nature coming to itself in the human being', as associated with Jakob Böhme, Schelling, and more recently, Pierre Teilhard de Chardin.[556]

Hence, we have a conception of the human being both in terms of the dominion of nature, and in terms of the 'completion of creation' – we are creatures of God, of the natural world, but at the same time above it. Böhme concludes by noting that previously what was understood to be the 'natural' part of us was assumed to be 'constant', meaning that even though the rational part of us – as our 'essence' – could be subject to change and development, our biology was predetermined and rigidly fixed. This though, has now

[554] Böhme, Gernot, 'On Human Nature', in *On Human Nature: Anthropological, Biological, and Philosophical Foundations*, (Berlin, Heidelberg: Springer, 2002), pp. 3–14, pp. 3–4.
[555] Böhme, 'On Human Nature', p. 4.
[556] Böhme, 'On Human Nature', p. 5.

changed and the 'project of human self-formation now also encompasses what is nature in the human being.[557]

It is in this way that transhumanism tries to resolve the inherent tension between its naturalistic ontology and its transcendent themes. Even though human nature is reduced to biology, the rational part of that nature has sown the seeds for an enduring aspiration for liberation. This is liberation from the finite limits of nature: understood as both the material, finite world of change we live in, and as human nature or our essence – which, for transhumanism *is* our biology. From this perspective, we stand in opposition to nature, yet we are still natural, we are reducible to biology, yet it is the biological that we must transcend.

Without recourse to the supernatural God – or the option of positing an immaterial soul – the limits of nature can only be transcended from within. If it is to be technology that will allow us to transcend the limits of nature, then technology itself must be considered natural. This position, in and of itself is not essentially philosophically problematic, but it does become a problem if one is committed to a conventional reductive Naturalism which recognises an ontological distinction between the natural and the artificial.

To maintain coherence, transhumanism must try and dissolve that distinction – traditionally this has been done through the use of machine metaphors to describe nature, both the essential nature of human beings and the natural world. Biology then, becomes technology – best approached from an engineering perspective – and the problem of the human being, including our transcendent aspirations, becomes an engineering problem. As noted earlier, the field of synthetic biology – which was taken as a paradigmatic example of late-modern technology – displays an observable reversal of those metaphors. It is not just a case of mechanistic metaphors, concepts, and principles being applied to biology, but rather a situation where biological principles are informing engineering practices and being used

[557] Böhme, 'On Human Nature', pp. 5–6.

metaphorically and conceptually to describe technological dynamics, processes, and methodological approaches and objectives.

This serves to further highlight the on-going intensification of the human/technology relation and brings to the fore the need to try and collapse the ontological distinction between the human being and technology, and between the natural and the artificial. The false dichotomy between subject and object that characterises the instrumentalist conception of technology erects a barrier between ourselves and the world. So too does the inherent naturalistic reductionism of the transhumanist paradigm – it props up the instrumentalist conception of technology as a natural perspective.

Saying that, the tendency within the humanities to have little or no hands-on experience with technology is likewise problematic. As argued in the last section, we must engage with the engineering perspective, for if technology is understood *as* material culture, then that perspective is rooted in a foundational aspect of our being in the world.

What is important in the historical narrative is the identification of complex relationships that exist between the theoretical and the practical, the natural and the artificial, between design and creation, between the creator and the created, between the mind and the world – all foundational, and outstanding, issues of philosophical concern – and how these complex relationships are played out through the process of material production which is as old as we are. The artifact is a indeed a 'hybrid' – it is both cultural and natural – it is constituted by and through the relationship of inorganic matter to human cognition and conceptual thought and to our physical being and our sense of identity.[558] The artifact's dual-aspect reflects our dual-aspect – for we too are hybrids.

In this way, the artifact cannot be separated in any meaningful way from our understanding of human evolution.[559] Hence, reflection on the manner in which function

[558] Chazan, *The Reality of Artifacts*.
[559] Chazan, *The Reality of Artifacts*.

shapes identity and categorisation, and how it is related to principles of design, intentionality, and adaptation are relevant to both reflection on technology and processes of biological evolution. Human production of material culture marks the interpenetration of *both* our bodies and our minds with the material world – it describes a *mediation* between us and the world through technological *extension*.

This is an important point: we should note that the very concept of *natural* as a fundamental category is challenged – in an essential way – by the very notion of transcending biology. Thus, we might be well advised to recognise that what is assumed to be *natural* for other non-human species, is not necessarily what is natural for the human being.

2.3 PHILOSOPHICAL ANTHROPOLOGY AS A PARADIGM

2.3.1 BETWEEN NATURALISM AND CULTURALISM

Previously Spahn referred to the Scheler, Plessner, and Gehlen as constituting what he described as 'classical' Philosophical Anthropology, and he highlighted the way that the initial concern of the paradigm was to offer a response to Darwinism, and the challenges to traditional concepts of the human being that the Darwinian revolution posed.[560] In a similar sense, philosopher Jos de Mul has recently articulated the need for what he calls Philosophical Anthropology 2.0. De Mul suggests that just as classical Philosophical Anthropology was responding to the Darwinian challenge to our self-understanding, Philosophical Anthropology 2.0 can be taken to represent a comparable rejoinder to Neo-Darwinism, the phenomenon of Technological Convergence, post-biology, and the late-modern philosophical challenges of a radically reassessing the human condition in

[560] Spahn, 'Technology', p. 136.

technological terms.[561] Clearly such an undertaking requires an understanding of the human/technology relation that is broader and more flexible than that which a simple instrumentalist conception of technology assumes.[562] As argued, a more fundamental and co-constitutional conception of the human/technology relation is needed, i.e., a conception based in Philosophical Anthropology.

If the use of technology is indeed a fundamental aspect of human nature, then this implies that 'technological transformation' itself is 'natural'.[563] According to philosopher of technology Mark Coeckelbergh we change ourselves and the world around through the use of technology *because* we are the type of being that changes themselves and the world around them through the use of technology – this is part of human nature. It is not something that happens in 'spite of' our biological heritage, the 'human being, including its bodily aspects is shaped and transformed by technology' as matter of course.[564] Coeckelbergh argues that we are – and always have been – 'intwined' with our technologies and the non-human aspects of the world around us, hence, he argues that we need to reject any notion that there is a radical separation between culture and biology, humans and technology, and culture and technology, and assert that our material artifactual production 'shapes our existence and experience: they mediate our experiences and our actions'.[565]

This theme is also central to *The Techno-Human Condition* (2011) by Braden Allenby and Daniel Sarewitz. They say that transhumanism is ultimately concerned with the idea of 'technological *change*' (original emphasis) – that is, technologically driven change as it refers to the human being and how we relate to our environment, and how this change has resulted

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561 Jos de Mul, 'Philosophical Anthropology 2.0', in *Plessner's Philosophical Anthropology*: *Perspectives and Prospects*, ed. by Jos de Mul (Chicago: Chicago University Press, 2014), pp. 457–476. This obviously aligns with the research aims of my thesis – whereas de Mul has focused on the work of Plessner to develop a response to the current context, I engage with Scheler.
562 Spahn, 'Technology', p. 132.
563 Coeckelbergh, *Human Being @ Risk*, p. 27.
564 Coeckelbergh, *Human Being @ Risk*, pp. 27–28.
565 Coeckelbergh, *Human Being @ Risk,* p. 32. Coeckelbergh refers to Peter-Paul Verbeek here. See, Peter-Paul Verbeek, *What Things Do: Philosophical Reflection on Technology, Agency, and Design* (University Park: Pennsylvania State University Press, 2005).

in a situation where 'notions of the human, the technological, and the natural seem to become ever more fuzzy and problematic'.[566] As already shown, there is a tendency for technology and biology to be equated within transhumanism, so we can assume from this perspective that 'technological' change as it refers to the human being is, in principle, essentially the same as 'biological' change – or can be taken to be something which happens in tandem with, and/or is a continuation of, biological change as it refers to the human being. If biology and technology are understood in such intimately integrative and equivalent terms, then the question arises, when did this integration begin? Is there an identifiable initial merging between the biological and the technical which now finds such radical expression in the concept of post-biological evolution? There is no reason to surmise it is a recent development that could only occur with the development of bio-technologies, cybernetics, and late-modern technology. This suggests that technology is not simply something we have recently added to the equation when we talk about evolutionary biology.

If the human/technology relation is indeed co-constitutional, then the technologically driven changes to the human condition that we are witnessing now have deep historical and pre-historical roots – rather than describing some new and unprecedented upheaval, they actually represent an intensification of an already existing human/technology relation. It is this line of thinking that leads Allenby and Sarewitz to suggest that that the human being must be understood in terms of 'a technology induced evolutionary program that has been going on more or less since the origins of mankind'.[567] This is a process they say, that defines us. It is the on-going and 'continuing expansion of the human desire to understand, modify, and control its surroundings, its prospects, and its self' a desire which is expressed in our

[566] Allenby and Sarewitz, *The Techno-Human Condition*, p. x.
[567] Allenby and Sarewitz, *The Techno-Human Condition*, p. 2.

deep rooted and instinctual inclination to 'couple to the technologies that surround us ever more intimately'.[568]

If we assume this is correct, then it is clear that the issue of technological change is an all-encompassing concern which cannot be separated from the issue of our biology and must be taken as an integral part of any discussion about evolution. A discussion that obviously has the problem of the human being as its focal point – for it is the human being who is asking these questions, and it is the human being that aspires to control and direct the evolutionary process itself. The issue of human nature and where we fit in the world, is the axis around which the complex of the human/technology relation spins – thus, *the question concerning technology is an issue of Philosophical Anthropology*.

Thus, Spahn asserts that technology is 'in one respect as old as humankind', and that 'reflection on the anthropological function of technology is probably as old as human self-reflection itself, since the ability to use tools and create cultural products has always been seen as a unique human feature'.[569] This 'anthropological' assessment of the human/technology relation reveals that many methodological approaches and practices employed by anthropology assume or identify the 'general structure of technology in *all* human history and how this is related to our biological condition' (my emphasis).[570]

In terms of historical development, Spahn identifies three 'stages' of philosophical reflection on technology – the first of which he describes as 'Greek Scepticism'. He says that it wasn't until the early modern period – when the Christian worldview of human being's right to dominion over the earth found its expression in Baconian science – that nature was conceived of as something that we could to exploit for the purposes of power. Thus we had a move away from the scepticism of the Greeks toward a conception of technology that was more explicitly positive. This conception was given expression and reached its historical

568 Allenby and Sarewitz, *The Techno-Human Condition*, p. 2.
569 Spahn, 'Technology', p. 132.
570 Spahn, Technology', p. 132.

zenith, in what Spahn labels 'Enlightenment Optimism' – the second of the three historical stages. Emerging as a reaction to this techno-optimism, and the last of the three stages is what Spahn calls 'Romantic Unease' – conceived of as a counter to the Enlightenment perspective, the Romanticism's assessment of technology was born through the need to develop an alternative way of conceptualising both our use of (modern) technology and its essence.[571]

Romantic Unease seems to pervade the Continental tradition in philosophy. Contextualised as it is by being rooted in, and characterised by, hermeneutic methodologies; a wariness of grand narratives; critiques of ontologies of power; and concern about the existential threat from the instrumentalising nature of technology itself. Posthumanism – with its critique of Enlightenment ideals and the ideological assumptions of humanism – can be situated within this category along with HPT.

Buoyed by Enlightenment Optimism, the other side of the divide can be seen as the Analytic tradition in philosophy. A tradition that accords privileged significance to the methods and assumptions of the natural sciences; venerates the faculty of human reason; and is confident in our ability to have positive and 'objective' knowledge about the world. Transhumanism – as a philosophical and cultural movement – can be situated within this category along with EPT.

Hence, the antagonisms which exist between the Analytic and Continental traditions; between EPT and HPT; and between the existential and ideological orientation of Enlightenment Optimism and Romantic Unease, can be seen to apply respectively to the two paradigms of transhumanism and posthumanism. Following Spahn's division, we can assess transhumanism and posthumanism by assigning them opposing positions either side of the divide. Transhumanism can be taken as representative of the Analytic Tradition with its focus on human rationality as the best way to understand our relationship with the world, and its

[571] Spahn, Technology', p. 132.

strong empirical bent coupled with its adherence to the scientific method as our best bet to understand and explain the world objectively.

Posthumanism, on the other hand, can be understood to represent the Continental Tradition and be concerned with the notion of the primacy of an interpretive or pre-rational stance against the world, which is best approached according to the logic of interpretation and assessed along hermeneutical lines. In response to this dichotomy we can turn to Philosophical Anthropology as a way of negotiating between the two approaches to the ongoing issue of the human/technology relation and post-biological evolution. To do this I employ the analytical framework established by sociologist Joachim Fischer.

Fischer suggests that Philosophical Anthropology steers a course between thought founded on a prioritisation of the biological aspects of our nature, and thought founded on the prioritisation of the cultural aspects of our nature. As such, it is a 'third way between Darwinism and Foucaltism'.[572] Between the Naturalism of Darwin and the Culturalism of Foucault and Dilthey, Fischer positions Philosophical Anthropology as a *philosophical paradigm* – a bridge capable of uniting both traditions without denying either one.[573] Key to this for Fischer is the fact that Philosophical Anthropology is concerned with theorising the human *via* theorising biological life – he refers to Scheler, Plessner and Gehlen as representative of the 'core identity' of the paradigm.[574]

Of note, is the fact that Fischer is explicit in his identification of an 'internal theoretical reference to biology' as being the 'pivotal point in Philosophical Anthropology for

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[572] Joachim Fischer, 'Philosophical Anthropology: A Third way between Darwinism and Foucaltism', in *Plessner's Philosophical Anthropology*: *Perspectives and Prospects*, pp. 41–56, p. 41.
[573] Fischer, 'Philosophical Anthropology', p. 41.
[574] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen'. Fischer differentiates between 'philosophical anthropology' as a subdiscipline in philosophy and 'Philosophical Anthropology' as a philosophical paradigm. The subdiscipline can be seen to be concerned with the systematising of historical philosophical anthropological thought, while the paradigm can be understood as being characterised by a particular approach to the concept of the human being. The paradigm includes Scheler, Plessner, Gehlen, Rothacker, and Portman. The subdiscipline is comparable to other subdisciplines of philosophy such as epistemology, metaphysics, or ethics, and the paradigm can be understood in the same way as other 20th Century approaches to philosophy such as Existentialism, Phenomenology, Structuralism etc.

all three authors'.[575] He states that 'mind' or spirit (*Geist*) is the irrefutable starting point for all three thinkers, even so, the focus is not 'subjectivity', rather it is the 'factual existence of life', which for the human being involves biological embodiment – hence the starting point is not from 'within' our physical bodies, but, critically, it begins by taking a 'distanced, biologist's view of the organism', apprehending, first and foremost, 'the living body in its medium or environment'.[576]

What is significant for Fischer is that all three thinkers associated with the paradigm begin by 'considering the living body, placed at a remove, within its environment, and then proceed through classification of the various types of life (plants, animals), to arrive at the end-point, which is the mind'.[577] He states: 'Crucially, they do not posit a teleological view of the relationship between body and mind (as in German idealism), neither do they reduce the phenomenon of mind to an evolutionary continuation of life (as in the paradigm of evolutionary biology since Darwin)'.[578]

Fischer's conception of the paradigm of Philosophical Anthropology sees it as a response to a historical 'radicalization' and splitting in two of the Cartesian worldview to form the two foundational blocks for the emergence of the competing paradigms of Naturalism and Culturalism – with Naturalism providing the conceptual resources of the natural sciences, its view that the culture/nature distinction is one that is 'in' nature; and Culturalism informing the social sciences, and holding the opposing view that the culture/nature distinction is made by culture itself.[579]

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[575] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', p. 153.
[576] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', pp. 153–155.
[577] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', p. 155.
[578] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', p. 155.
[579] Fischer, 'Philosophical Anthropology', pp. 42–44. According to Fischer, both in fact represent a 'continuation' of classical Cartesian Dualism. He says that due to a strange kind of inversion, the Evolutionary paradigm now champions the natural physical 'thing' while Culturalism takes the 'mind' as its subject matter.

What is most useful about adopting this approach is how the paradigm of Philosophical Anthropology allows for the analysis of cultural and social factors in what Fischer describes as the contemporary 'Biological Epoch' – dominated as it is by the thinking of Evolutionary Biology. Fischer shows how Philosophical Anthropology can function as a mediator that can 'relativize' the Darwinian outlook while, at the same time, working to both 'liberate' and 'limit' Culturalism's sociocultural perspective. He says this is possible because Philosophical Anthropology is not 'naturalistic', yet it makes a generous concession in favour of biology. At its core is a philosophical biology capable of responding to evolutionary Naturalism, yet it also 'conditions' the social and cultural sciences in a way that incorporates both 'theoretical worlds'.[580]

For Fischer, Philosophical Anthropology aims neither to 'follow' evolutionary theory, nor to 'evade' the issues that arise due to our biological context – it is not wholly naturalistic yet it does not 'shy away' from biology.[581] Thus, it provides a very useful framework within which to situate transhumanism and through which an investigation into the idea of post-biological evolution can be conducted.

The theoretical resources and the strategic advantages a position like this offers our current investigation are obvious. The culture vs. nature debate does not necessarily entail choosing either one at the expense of the other; explanations from nature can be engaged with without recourse to theological or teleological pre-suppositions; the basic context of biology can be accepted as a starting point, yet it does not have to be reductionist and can be expanded to incorporate socio-cultural phenomena via the human/technology relation.

The shift within Naturalism and biology due to Darwin's influence, from a 'physics of inanimate things' to the study of 'organic mechanism', was, in a similar way, accompanied by the 'linguistic turn' within Culturalism which replaced the thinking subject of the historic–cultural constructivism associated with Dilthey, with the idea that language itself is an intersubjective medium. In this way, he argues that Cartesian Dualism can be seen to provide the basis for evolutionary biology to 'explain' not only life, but the sociocultural world, as well as facilitating Culturalism's ability to 'explain' the natural sciences and the evolutionary process as a 'cultural interpretation' or a 'scheme of special historicity'.

[580] Fischer, 'Philosophical Anthropology', p.44.

[581] Fischer, 'Philosophical Anthropology', p. 44.

This is particularly useful if we accept that the investigation into transhumanism is first and foremost focused on the increasingly intimate interpenetration of biology and technology. Of particular note is the way in which Fischer identifies the centrality of the relationship between Philosophical Anthropology as a paradigm, and an inherent 'philosophical biology'. Such a relationship is of key importance to our enquiry – it defines the imperative that Fischer highlights as a necessary first step, the need for us to take 'philosophical' responsibility for a biology that 'interprets' the human being.[582]

For Fischer this *is* the task of Philosophical Anthropology in the Biological Epoch. Obvious parallels can be drawn between that task and the theoretical challenges of transhumanism's claim to be on the path to transcending biology as they usher in the post-Biological Epoch and it is for this reason that I argue that Philosophical Anthropology can function as a synthesis between the competing paradigms of transhumanism and posthumanism.

The focus of Philosophical Anthropology is a non-reductive approach to the dual-aspect of the human being – the aim is to assess how this is the case, and to study the ways in which the human being is a part of the natural evolved world of biological life *and* open to reflections on the nature of ultimate Being and the cosmos. The problem of the human being is rooted in our dual-aspect – the source of human restlessness and our search for meaning. The antagonism between the two aspects of our nature is also what throws up the persistent problem of dualism – we experience the physical side of our nature as finite, yet our thoughts can grasp at infinity.

Our increasingly sophisticated ability to manipulate matter brings with it a sense of metaphysical confidence, but an ontological reduction to materialism eliminates free will and risks explaining consciousness away as an illusion or at most an epiphenomenon of physical

[582] Fischer, 'Philosophical Anthropology', p. 44.

processes. We can control, calculate, and measure with precision material things, yet it is the intangible part of us that we refer to when we imagine the possibility of the soul or the self, surviving death. Or, alternatively, when we speculate about it being possible – through technologically enabled longevity – to avoid the soul or the self being extinguished by death in the first place.

The strength of taking Philosophical Anthropology as an approach to the matters at hand lies in the fact that it allows us – at least initially – to bracket metaphysical and epistemological conclusions regarding mind and matter/mind and body etc., and begin without presuppositions by investigating how the two aspects interact and combine within the human being. With respect to epistemology, the fact is that we *can* actively adopt subject/object perspectival dichotomy – even if we are mistaken to assume it accurately describes the proper relation between our minds and the world. We do not have to endorse this position as the primary or foundational way we can know, or be in, the world – we can acknowledge this and still interact with the knowledge that can be generated from it as an assumed or secondary point of view. Thus, we can take seriously, and engage with, the results of late-modern technology, while at the same time arguing against reductionist tendencies and a simplified instrumentalist understanding of technology as inadequate to explain the complexity of the human/technology relation.

Similarly, with respect to metaphysics, we don't necessarily have to adopt some form of dualism to investigate the dual-aspect of the human being. Preconceived ideas and assumptions can be bracketed to enable a genuine enquiry into the nature and limits of the self to be undertaken without having to deny or affirm either a metaphysical monism of either materialism or idealism or some form of metaphysical dualism. Whether or not one reaches a final decision that either affirms or denies a particular metaphysical position is another matter to be worked-out in due course.

It is in this respect that I argue that Fischer's notion of Philosophical Anthropology as a paradigm can be adapted to allow us to theorise about the human being via theorising about the increasingly intimate interpenetration of biology and technology. By engaging with the engineering perspective that predominates within transhumanist thought, we can see how the problem of the human being might easily be approached from a rational, problem solving perspective which automatically assumes a subject/object dichotomy and employs an instrumentalist conception of technology – a mechanistic perspective that is Cartesian in character.[583] And while this perspective may be mistaken or problematic in terms of epistemology and metaphysics, it is still significant with respect to the contemporary debate – even if it is only the lingering effects of transhumanism's Enlightenment hangover.

As a philosophical paradigm, Philosophical Anthropology allows us to engage with this perspective – without wholly endorsing or completely rejecting it – while drawing attention to the problems it presents. As a philosophical paradigm, Philosophical Anthropology is also able to inclusively incorporate cultural considerations – which otherwise might be side-lined – as a way to limit and counter the reductionism of the mechanistic position. As Fischer himself puts it, Philosophical Anthropology allows us to take a 'sideways glance' at the subject object dichotomy.[584] Following this, we can see that the task of Philosophical Anthropology at the start of the post-biological epoch is to develop a *post-biological philosophy* which can take philosophical responsibility for a *biology that interprets itself through technological extension and mediation*.

There is an inherent hermeneutic and self-referential character to this investigation – a dynamic of self-interpretation which can be seen to be reflected in the rejection of reductionism, and the perspective of the human being as a holistic system. A system which includes culture and biology, is both empirical and transcendent, physical and intentional. A

[583] See, Rachel Armstrong, 'Alternative Biologies', in *The Transhumanist Reader*, pp. 100–110 p. 100.
[584] Fischer, 'Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen', p. 153.

system whose being includes a subjectively experienced sense of self as the focal point of a complex of inner *and* an outer life – both of which are mediated and extended technologically.

2.3.2 BETWEEN HPT AND EPT

Fischer model also serves us well as a way to bridge the divide between EPT and HPT despite the two traditions having different origins and conflicting worldviews, and despite the essential tension that characterises the relation between the two.[585] Broadly speaking, we can agree that the humanities tradition is correct to point out the potential dangers of technology and unrestrained technological development. Romantic Unease does seem to accurately capture at least some of the factors that seem to be at play within transhumanism and the discourse surrounding human enhancement technology and post-biology. Despite this, without first-hand practical experience of technology and engineering the humanities critique is in danger of being too one-sided and unnecessarily negative – what Mario Bunge called the 'romantic wailings about the alleged evils of technology'.[586]

Regardless of the potential dangers of technology, engineers offer a perspective and wealth of experience that cannot be dismissed. And – as the example of Kurzweil shows – they also wield significant power and influence. What the humanities critique does highlight are the dangers of an the engineering perspective which inevitably proposes a 'technological fix' for *all* human problems.

The historical fact of the success of science, engineering, and technology has given rise to the situation where engineers display a tendency to 'commonly regard questions raised

[585] Mitcham, *Thinking Through Technology*, p. 62.
[586] Mario Bunge quoted in Mitcham, *Thinking Through Technology*, p. 37.

by others as distracting or beside the point.[587] Hence the value of the HPT and its starting point of the 'non-technical aspects of the human world', and its attempt to 'bring non-technical criteria to bear on the question of technology'.[588] The danger of an unreflective engineering worldview is manifested in the tendency of engineering philosophers of technology to attempt to 'translate' all human activities into the language of technology, and to the human world in its entirety in technological terms.[589]

Philosophers of technology from within the humanities tradition who take a 'hermeneutic' approach, tend to see the question of the human being as 'the most fundamental question – perhaps one that cannot ever be definitely answered'.[590] This primacy given to addressing the 'question' of the human being and our 'hermeneutic impulse', means that the humanities tradition always attempts to 'translate', 'learn', and 'interpret', any new and different 'language' it encounters in terms of human nature and the human condition – even if these acts of 'translation' are likely 'to leave a residue of untranslated and untranslatable meaning'.[591] Thus, in a sense, the humanities critique of technology is founded in the view that the 'language' of technology is understood as a 'language without roots in a particular time or place' – as a result, essential features of the human being are 'obscured and diminished'.[592]

Mitcham points out that proponents of EPT might well respond by saying that HPT is so often seemingly a 'philosophy of anti-technology', which cannot speak and refuses to learn the language of technology – content as it is to 'close itself off in romantic subjectivity from technological aspects of the human – aspects that are fundamental to constituents of the

[587] Mitcham, *Thinking Through Technology*, pp. 63-64.
[588] Mitcham, *Thinking Through Technology*, p. 62. Mitcham understands hermeneutics 'in its original development' as manifested in the thought of Schleiermacher and Dilthey as the 'attempt to reach out for sympathetic understanding via humanities disciplines rather than for logical explanation via scientific and technological ones'. Ibid. p. 63.
[589] Mitcham, *Thinking Through Technology*, p. 64.
[590] Mitcham, *Thinking Through Technology*, p. 64.
[591] Mitcham, *Thinking Through Technology*, p. 64.
[592] Mitcham, *Thinking Through Technology*, p. 64.

contemporary techno-lifeworld, if not the human world at all times and places'.[593] Hence, a standard critique of HPT from EPT – and the analytic tradition in general – is that the humanities are 'too speculative' and display a tendency to be 'based on too narrow if not nonempirical foundations'.[594]

In response to this, Philosophical Anthropology serve as a 'middle way' between EPT and HPT. By acknowledging the concerns of the humanities yet being willing to take seriously – not only the ideas of technologists and engineers – but also their empirical findings, Philosophical Anthropology can serve as bridge between the two traditions. In doing so this will to help facilitate the incorporation of key concepts from the philosophy of biology which – in light of the idea of post-biological evolution – must be included in a philosophy of technology that intends to seriously engage with transhumanism and the concept of the Technological Singularity.

As physicist, systems analyst, and philosopher Armin Grunwald states: 'The philosophy of technology has always (explicitly or implicitly) been interested in the anthropological dimension of man's relationship to technology. The philosophical question of our concept of technology can't be treated separately from that of our concept of humanity. The philosophy of technology, therefore always has a more or less strongly pronounced anthropological component'.[595] He goes on to say that: 'The technicalization of humans and of our perception of humanity is decided about in the use of language, in the choice of metaphors, how these ideas are transported linguistically', in other words, the 'cultural self-image of human beings, e.g., the self-characterization of humans as cybernetic machines or as

[593] Mitcham, *Thinking Through Technology*, p. 64.
[594] Mitcham, *Thinking Through Technology*, p. 64.
[595] Armin Grunwald, 'Philosophy and the Concept of Technology: On the Anthropological Significance of Technology', in *On Human Nature: Anthropological, Biological, and Philosophical Foundations*, (Berlin, Heidelberg: Springer, 2002), pp. 179–194, pp. 179–181. Grunwald says that it is necessary to view technology as having both a 'material' aspect, and a 'procedural' aspect, i.e., technology is about both artifacts and technical processes. This idea is what the German term *Technik* alludes to in its usage as denoting both 'technology' and 'technique', and the way that it is used to describe a whole host technical, artistic, and technological actions.

data processing robots […] influences these developments decisively'.[596] Thus, the boundary between the 'technical' and the 'non-technical' is not 'ontological in nature, but rather pragmatic and gradual, and is open to the influences of culture'.[597] As such, it falls firmly within the remit of Philosophical Anthropology.

2.3.3 THE POST-BIOLOGICAL PARADIGM SHIFT?

Finally we must take into consideration the context within which all of the above plays out – evolution. If we take the idea of evolution seriously then we must acknowledge that the basic assumptions of transhumanism have merit – there is no reason to think that the human being represents some sort of full stop in evolutionary terms. If historical evolution is a cosmological process of increasing complexity that stretches – in a temporal sense – from the Big Bang to intelligent, technologically sophisticated, and self-aware life, then the dividing line between different life forms must not be some insurmountable barrier that immutably separates and delimits ontologically discrete entities. This logic applies equally to the distinction between organic and inert matter, as well as to the dividing line between the natural and the artificial. Thus, the inherent character of evolution means that change is necessarily built into the system.

Depending on the level of abstraction, that change can be cosmological in scale or measured in days, weeks, or years. This means that the one process of evolutionary change can be described as the change from inert matter to organic life, or as the change from single-celled life to complex organisms, or perhaps as the change from star dust to self-

[596] Grunwald, 'Philosophy and the Concept of Technology: On the Anthropological Significance of Technology', p. 190.
[597] Grunwald, 'Philosophy and the Concept of Technology: On the Anthropological Significance of Technology', p. 192.

consciousness. The process of evolution extends from cosmology to biology, thus we should acknowledge again that the basic tenet of transhumanism – what has evolved will continue to evolve – is valid. The implication of this is that – in principle – there is nothing to preclude evolutionary change describing a transition from biology to post-biology.

This is fairly straight forward, but what makes things a little bit more complicated is that with the idea of post-biology, the evolutionary change we are attempting to describe is change that hasn't happened yet. Thus, the discourse around evolution is now situated within the realm of our imagination. Obviously it is also now explicitly technological in nature – for whatever trajectory our future evolutionary path takes it will almost certainly be determined by technological developments (this includes the possible extinction of not just human life but all life on earth as we know it).

Also, with the idea of post-biology, evolution is now the object of intelligent design. Thus, the evolutionary change it describes is engineered change – change driven by design. In this way we can see that the very idea of post-biological evolution has its genesis in the engineering. The idea of post-biology implies that the object of engineering *is* biological life, but as the NBIC paradigm reveals, this is a project that is conducted by, for, and through the human being. As such, the human being is the locus of post-biological design realisation – as both its subject, and its object. This means that the idea of post-biological evolution describes a recursively structured process – by definition it refers back to the question of human nature by virtue of its self-directedness.

This means that – with the human being – evolution has become a self-referential and a self-designing process. It is no surprise then that the idea of post-biological evolution presents problems that are potentially beyond the scope of traditional ethical frameworks. With transhumanism, we see that engineering is less and less being understood as simply technological production – it is the means through which we now express and explore our understanding of human nature. For some, it is the medium in which to explore the possibility of a post-human nature.

It is for these reasons that both transhumanism and the question concerning technology are issues of Philosophical Anthropology. Also an issue of Philosophical Anthropology is the idea of a post-human future. Describing as it does, a co-evolution of the human and the technological, this is a future that is the *current* concern of engineers. Engineers whose perspectives must be taken seriously and given proper philosophical consideration. As argued, this can be done within a paradigm of Philosophical Anthropology. Interdisciplinary by definition, such a paradigm-based analytical framework allows for the investigation to specifically focus on evolution as a cosmological, biological and technological phenomenon which has become the object of engineering design.

For example, Kurzweil understands our current historical juncture as the early transitional phase of the post-biological paradigm. He describes evolutionary change in terms of 'epochs' and technologically driven 'paradigm shifts' – which he describes as our ability to respond to and solve *problems*, i.e., technological problems. In this respect, it makes sense to establish Philosophical Anthropology as a paradigm which has the problem of the human being as its central concern.

We can also incorporate Thomas S. Kuhn analysis in *The Structure of Scientific Revolutions* (1962). Kuhn offers us a working definition of a scientific paradigm which fits nicely with the framework of Philosophical Anthropology. For Kuhn, a scientific paradigm is a universally recognised set of scientific achievements that – for a time – provide model *problems* and *solutions* to an established community of practitioners. Normal science can become a 'paradigm' if its research is based upon one or more past scientific achievement, which a particular scientific community acknowledges as supplying the foundation for its further practice, and where past achievements and canonical texts 'define' the legitimate problems, and methods of a particular research field for succeeding generations.[598]

What Kuhn calls 'normal science' often suppresses novelties because they are subversive to its basic commitments. These novelties and anomalies can move to centre stage when there is a 'break down' in normal science and they can 'subvert' normal practice and expectations which can lead to new commitments and new modes of practice. This can lead to scientific revolutions which, according to Kuhn, are 'extraordinary episodes', in which a 'shift' in professional commitments occurs.[599] Scientific revolutions alter the scientific imagination in ways that ultimately transform the world within which science is done, and new revolutionary theories imply changes to the rules that governed the prior practice of normal science that has been founded on scientific research and work that is already done.

For Kuhn, new revolutionary theories are more than just the 'development' of what has already come before and require a 'reconstruction' of previous theories and a 're-evaluation' of previous fact.[600] Scientific revolutions also generate an associated 'controversy' – these intrinsically revolutionary processes are seldom the work of one person, and Kuhn says that there is also an accompanying shift in the 'problems available for scientific scrutiny' as well as in their standards of evaluation.[601]

This is what is of interest here – if we see transhumanism and post-biological evolution in terms of paradigms, then it allows for insight into the attempt to provide techno-scientific solutions to the *problem* of the human being. Where *problem* is understood in the same sense as it is in Philosophical Anthropology. Doing this can also help to highlight the limitations of approaching biology reductively. Most importantly though, this paradigm-based analysis can show how radical ideas develop and circulate on the fringes of mainstream

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[598] Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 2012).
[599] Kuhn, *The Structure of Scientific Revolutions*.
[600] Kuhn, *The Structure of Scientific Revolutions*.
[601] Kuhn, *The Structure of Scientific Revolutions*.

research and development, and how they can span a multitude of disciplines in both the natural and social sciences as well as the arts, before transitioning into the mainstream and potentially becoming hegemonic.

CONCLUSION

Even though there are some serious philosophical issues plaguing transhumanism, there are some key aspects of its philosophy that hit on some basic and undeniable truths. Despite the general validity and accuracy of the critique from posthumanism, the explicitly ideological aspects of transhumanism do not in fact diminish its influence – the transhumanist vision is a powerful and seductive one that is capable of touching a deep emotive core within us. If an idea can penetrate the cultural imagination to a sufficient degree, then it is capable of driving change and influencing our historical development, regardless of whether or not it is true or false.

While there are certainly unresolved tensions at the heart of the transhumanist position that are rooted in the implicit dualism it can't seem to shake off, it should be acknowledged that it is very hard to avoid using dualistic language when we talk about such things as human nature. Even the use of dual-aspect to try and characterise the experience of being human is a step too far for some. The mind/body problem is a philosophical cul-de-sac – a well-known dead end with no apparent through road. At present, I don't think there are any solutions to it that will satisfactorily address the issue across the board or achieve any kind of consensus. Perhaps the best way to look at it is that it's only a problem, *if* it's a problem, so to speak. I would imagine that it is more of a problem if one's ontological stance is incompatible with a mind/body dualism yet implicitly assumes it, or if one wants to maintain the idea of free-will while being committed to an ontology that is incompatible with such.

Also, if one insists on criteria of quantifiable verification as a determinant of ontological validity, then the mind/body problem would indeed present *as* a problem. On the other hand, it is probably less of a problem if one is willing to reserve judgement on it, acknowledge that it represents an explanatory gap that lacks a ready solution – either presently or permanently. I assume also, if one is religious and believes in an immaterial soul, then there is no problem.

With respect to what is *natural* for the human being, I think we should acknowledge that it is the human being and – as far as we can tell – the human being alone that is asking these questions. It is problematic to deny what appear to be obvious distinctions between humans and non-human species. Our use of complex technology certainly seems to mark us as unique on the planet – of course, the conclusions that we can draw from this are not, and should not be fixed, and there is no reason why this distinction should become the basis for a chauvinistic approach to everything that is non-human.

Posthumanism is correct to challenge outstanding, outdated, and problematic assumptions and consequences associated with uncritically adopting a particular interpretive stance on this issue. A dose of healthy scepticism and humility regarding what we think we know might be the best path to take, one that can perhaps help us maintain a less damaging approach to the world and takes a position of learned ignorance as its point of departure. Even so, the fact remains that as far as we know other non-human species do not exhibit some of the characteristics and capacities that we do.

There is a tendency within posthumanism to neglect the fact of our biology. If we adopt Philosophical Anthropology as a paradigm, it is the place to begin. Even if the human being is a construct, and everything we think we know about ourselves and the world is mistaken, it is a construct that we created – that in and of itself says something. For just as the very idea of human nature is contested, so too is the ultimate object of concern for transhumanism. For even though transhumanism assumes ontological Naturalism, it is not our biological nature that is the object of salvation. It is the less defined and quantifiable part of our dual-aspect – what some would say is probably the ultimate construct – what at one time we would have called the soul, but now are more inclined to refer to as the self.

In this regard, I think that the centrality afforded to the principle of design is telling – who or what does the designing? Design implies Mind, and as we have already pointed out, the last time design was a significant component of evolutionary theory it was a metaphysical or theological principle. But even if we understand it strictly in engineering terms, the assumption that we can transfer engineering principles directly to the realm of biology, is problematic in and of itself.

CHAPTER 3: MAX SCHELER'S *THE HUMAN PLACE IN THE COSMOS*

INTRODUCTION

In a 1926 essay entitled, 'Man and History' ('*Mensch und Geschichte*'), Scheler argued that the preeminent and most pressing philosophical task of his era was the issue of Philosophical Anthropology. He stated then that the 'views concerning *the essence and origin of man* have, at no other time, been less sure, less determinate, and more varied, than in our own', hence, in 'approximately ten centuries of history, this is the first in which man finds himself completely and utterly "problematic", in which he no longer knows what he is and simultaneously *knows that* he does not have an answer'.[602]

Scheler developed this idea and gave it fuller expression as part of his evolutionary metaphysics of the human being in *The Human Place in the Cosmos* (*Die Stellung des Menschen im Kosmos*). Published a year before his death, the text begins from a starting point that identifies the very *concept* of the human being as being inherently ambiguous.[603] For Scheler, the consequences of this ambiguity ran deep, with profound implications that touched on every aspect of human experience.

Thus, Scheler recognised that – when we talk about human nature – there appears to be two different understandings of the human being in play at the same time. Despite explicitly assuming the predominant modern notion of the human understood as an 'animal', we also seem to simultaneous assume and employ the term in a completely different sense as part of our 'everyday language'. As a result, we use the term to refer to the human being naturalistically – which is obviously the underlying anthropology of the natural sciences, but

[602] Max Scheler, 'Man and History', in *Philosophical Perspectives*, trans. Oscar A Haac (Boston: Beacon Press, 1958), p. 65.
[603] Scheler, *The Human Place in the Cosmos,* p. 6.

at the same time, we also use the term in reference to what Scheler calls an 'essential' concept of the human being.[604] It is with this *essential* conception of human nature that the problem lies.

There is no universally accepted answer to the foundational question *what is the human being*? This outstanding question is perennially unresolved and often neglected, but of fundamental and persistent significance. Human reflection on the human condition is a defining feature of the experience of being human. The issue of human nature has always been a contentious one – as obstinate as it is old. It resists definitive resolution, and persists alongside us as an elusive target – only ever partly captured by the multifarious historical self-images that the human being has constructed of itself. The question of the human being is primary. It is also essentially problematic. Without consensus, our constructed self-images remain incomplete. Their lack of determinacy a paean to the intractable *problem* of the human being – not only do we not know what we are, but we also know that we don't know.

It is unsurprising then when Scheler translator and archivist Manfred S. Frings states that Scheler directed his philosophy towards two major goals: the resolution of the human being's place in the cosmos, and the determination of the *Ens a Se* (the primordial source of Being/Ground of Being) in both religious and philosophical terms.[605] Thus, Philosophical Anthropology is for Scheler the 'philosophical discipline which is the foundation for all sciences having man as their object [...] and which deals with the metaphysical, psychic, physical, and spiritual origins of man, the fundamental directions and laws of his biological, psychic, social, and historical development, as well as with the determination of man's vital, physical, psychic, and spiritual spheres'.[606]

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[604] Scheler, *The Human Place in the Cosmos,* p. 4.
[605] Manfred S. Frings*, Max Scheler: A Concise Introduction into the World of a Great Thinker, (Milwaukee: Marquette University Press, 1996)*, p. 1.
[606] Frings, *Max Scheler,* p. 7.

3.1 WHAT IS THE HUMAN BEING?

3.1.1 BETWEEN THE REAL AND THE IDEAL

Scheler identified what he called a ‘tricky ambiguity’ intrinsically contained within the ‘concept’ of the human being (*der Mensch*).[607] This ambiguity refers to the use of an already recognised notion of the human understood as an ‘animal’, who is characterised and identified as a ‘unity’ in terms of such defining traits as upright posture, large relative size of our brain, opposable thumbs, etc., and the simultaneous use – in ‘everyday language’ – of the same basic term, but this time understood as something ‘totally different’.[608] The nature of the dichotomy of this ‘analogous double meaning’, reveals that the term which establishes our position in the animal kingdom, is at the same time understood in a different sense – as ‘something which is completely *‘opposite’* to our general understanding of the concept of ‘animal’. So, depending on context, the term can be substantially different in both origin and meaning.[609]

Scheler posits three established, yet ‘irreconcilable ideas’, that the essential concept of the human being refers to:

1: The God-created being of the Jewish-Christian tradition.

2: The ancient Greek notion that defines the human being according to our self-awareness and our capacity for reason.[610]

[607] Scheler, *The Human Place in the Cosmos,* p. 6.
[608] Scheler, *The Human Place in the Cosmos,* p. 6.
[609] Scheler, *The Human Place in the Cosmos,* p. 6.
[610] Scheler, *The Human Place in the Cosmos,* p. 6. This capacity also allows leads to the understanding that we are a ’unique’ species, occupying a ‘special place’ in being, possessing speech and having the ability to grasp the intelligibility of a natural order or *logos* and recognise it as the ‘reason above the human being that underlies the whole universe and with which the human being alone is in a state of participation’. Scheler says it is this allows us to grasp the ‘what’ of things.

3: The underlying concept of the human being that is to be found in the natural sciences – the human as 'a late stage in the evolution of our planet', distinguished 'only by degree of complexity of the energies and abilities that he has inherited from ancestors in the animal kingdom and that are found in subhuman nature'.[611]

Scheler's initial reaction to these three distinct ideas of the human being was to recognise that – taken together – they lacked 'any underlying unity which could provide us with a common foundation'; thus he says that we have a 'theological, philosophical, and a scientific anthropology before us but which, as it were, have no concerns with each other: *yet we do not have one uniform idea of the human being*'.[612]

The lack of a single uniform idea of the human being was also highlighted at the time by the fact that the 'ever-growing number of special disciplines which deal with the human being conceal, rather than reveal, his nature' – and it was this that led Scheler to the conclusion that, 'in no historical era has the human being become so much a problem to himself as in ours'.[613]

The theological anthropology of a God-made being, the philosophical anthropology of a rational animal (defined by reference to a principle of intelligibility), and the scientific anthropology of an highly developed member of the animal kingdom as a late stage of evolution, all refer to the same thing but seem to stand in such stark and irreconcilable contrast. Thus, regardless of how accurate any of the specific images might be – the very

[611] Scheler, *The Human Place in the Cosmos,* p. 6. In 'Man and History', Scheler posits five historical manifestations of the essential concept. The idea of religious faith, or the notion of the human being created – body and soul – by a personal God; The ancient Greek idea of the human, or the idea that there is a fundamental break between the human being and non-human animals; The naturalistic, positivistic, or pragmatic idea of the human being; The idea that the human being is a decadent being, or the 'Dionysian Man' of the vitalistic and romantic traditions; The idea of the human being as a sick animal, or Nietzsche's *Übermensch.*

[612] Scheler, *The Human Place in the Cosmos,* p. 6.

[613] Scheler, *The Human Place in the Cosmos*, pp. 5–6. This insight into the historical background mood, coupled with his understanding of the significance of the underlying question and his initial point of enquiry, led Scheler toward a 'new attempt to submit an outline of a philosophical anthropology with the widest foundation possible', i.e., an investigation into the *'essence of the human being in relation to plants and animals'* and into the metaphysics of the human being with regard to our '*special place in the cosmos'.*

existence of such disparity in the study of the human serves in the end, only to 'conceal' our true nature.[614]

So, how does this translate within the current context? We have already established a far-reaching and persistent tension within transhumanist thought. A strong commitment to the scientific method and worldview, coupled with a veneration for the capacity of human reason, means that invariably transhumanist thinkers are metaphysically tied to a strong form of materialism and – in terms of epistemology and methodological assumptions – will more than likely adopt an associated reductionist stance. Such a commitment stands in sharp contrast to the centrality accorded to transcendental themes and aspirations, notions of uploading human consciousness into machines, and the concept of post-biological or non-biological life.[615]

Ultimately, this tension stems from the idea that our 'minds' can be freed from our physical form. Hence, it seems that from the beginning the problem that transhumanism is faced with is the problem of an ancient and outstanding philosophical dualism which has its roots in an image of the human being that dates back in the Western tradition to at least Plato, i.e., the human being defined in terms of a finite body and infinite mind.

Scheler translator Hans Meyerhoff describes how this very tension lies at the heart of Scheler's thought. He describes it in terms of a simultaneous 'impressive unity and a fatal split', that is characteristic of Scheler's work over-all.[616] Any lasting unity in that body of work was, according to Meyerhoff, 'constantly threatened by deeply divided intellectual loyalties', stemming from the fact that the 'major intellectual influences upon Scheler were

[614] Scheler, *The Human Place in the Cosmos*, p. 5.
[615] Saying that, there does appear to be a recent increase in the visibility of religious transhumanism. See, Newton Lee, ed., *The Transhumanist Handbook* (Cham: Springer, 2019).
[616] Meyerhoff, 'Translator's Introduction', in *Man's Place in Nature*, p. xii.

twofold and antagonistic' – i.e., 'phenomenology', and what were collectively understood as the 'philosophies of life'.[617]

Meyerhoff goes on to state that 'an increasing recognition of the material and social conditions determining human existence' led Scheler to the realisation that the human being's place in 'nature' needed to be a central concern of philosophy.[618] These 'material factors' – or *Realfaktoren* – include the material conditions of everyday life in combination with our biological drives and instincts. Scheler's thinking at this time was shaped by his realisation that established 'naturalistic theories of culture and history' were in fact correct to grant autonomy (*Selbständigkeit*) to these *Realfaktoren*. Thus, he understood that they were in fact 'necessary conditions' that were subject to their own causality, constituted actual physical conditions, while also playing a role in determining 'the fate of ideas in history'.[619]

Despite this realisation, Meyerhoff says that Scheler still attempted to 'remain faithful to his idealistic and phenomenological past as well' – this meant that he continued to assert that the 'spirit of man and its products' or *Idealfaktoren*, could not be wholly reduced to these material conditions.[620] Rather than being the ultimate source for the 'contents and meaning of a spiritual cultural', material factors were understood by Scheler to function more like 'principles of selection', which serve as the determinants of *how* 'spiritual potentialities' are historically realised.[621]

Meyerhoff sees this as an attempt by Scheler to 'mediate between materialistic and ideal conceptions of history' – a mediation that was inherently problematic and difficult to maintain, due mainly to Scheler's insistence that ideas could have an 'objective, independent

617 Meyerhoff, 'Translator's Introduction', pp. xii–xiii. Meyerhoff holds that these two approaches to philosophy are evident throughout Scheler's work, and initially, are 'concealed and repressed' in his earlier phenomenologically-based work on religion, ethics, and psychology up until *circa* 1921, before the 'naturalistic tendencies of his thought reassert themselves increasingly in his works on sociology, history and philosophical anthropology form 1921 until his death' in 1928, p. xvi.
618 Meyerhoff, 'Translator's Introduction', p. xx.
619 Meyerhoff, 'Translator's Introduction', pp. xx–xxi.
620 Meyerhoff, 'Translator's Introduction', p. xxi.
621 Meyerhoff, 'Translator's Introduction', p. xxi.

status of their own'.[622] Even so, Scheler insisted that despite being autonomous and independent, these 'products of spirit' were at the same time 'pure' – so much so, that they were impotent when compared to the vital and active 'forces of nature', and were thus lacking their own 'positive creative power'.[623] The implication of this was that if ideas are to affect historical change they must 'align themselves with material conditions and instinctual forces', whose energy they can acquire and convert into spiritual energy through a process of 'sublimation'(*Vergeistigung*).[624] Ideal factors are in this sense 'impotent', they can only direct/re-direct, speed up/slow down the real factors of life – unless linked to real factors, such ideal abstractions simply remain 'utopian'. Whereas real factors do not determine the 'content' of ideal factors, they can 'promote' or 'hinder' whether or not they are actualised.

Thus, Scheler began to develop his 'dualistic' conception of the human being and the concomitant development of human history.[625] From this perspective, 'neither ideas and moral values by themselves, nor power and interest groups nourished by drives alone […] can independently from one another have an effect on the course of human history'.[626] As he said himself, 'ideas which do not have behind them specific interests of groups tend to make a fool of themselves in history'.[627] The ultimate determinates of the 'actual course of things in man's finite considerations are the fortuitous *units of coincidence* between ideas and values on the one hand, and drives, vital urges, and dynamic tendencies and interests, on the

[622] Meyerhoff, 'Translator's Introduction', p. xxi.
[623] Meyerhoff, 'Translator's Introduction', p. xxi.
[624] Meyerhoff, 'Translator's Introduction', p. xxi.
[625] Ernest Kilzer and Eva J. Ross, 'The Sociology of Knowledge', *The American Catholic Sociological Review*, 14/4 (1953), 230–233 (p. 231). Real factors are the object of *Realsoziologie*, in contrast to ideal factors as the object of *Kultursoziologie*. To have historical efficacy, ideal factors must become 'linked' to real factors, and this could be done through the mediation of a 'cultural élite' who are the' meeting ground of both real and ideal factors and who transmit ideals to the rest of society'.
[626] Max Scheler, 'The Idea of Peace and Pacifism: Part 1', *Journal of the British Society for Phenomenology*, 7/3 (1976), 154–166 (p. 3).
[627] Scheler, 'The Idea of Peace and Pacifism: Part 1', p. 3.

other'.[628] In other words, whatever 'happens in historical time happens by way of ideas and drive-life simultaneously'.[629]

Scheler scholar and translator Zachary Davis says that there was a 'political transformation' in Scheler's thinking in the 1920s that was linked to these developments. This transformation came about as a result of 'his work in the sociology of knowledge and, more importantly, philosophical anthropology', according to Davis.[630] Key to this transformation in his political thought was Scheler's major discovery at the time, i.e., '*the interplay between the real and spiritual factors of history*' (my emphasis).[631] It is probably also significant that around this time Scheler renounced theism (somewhere in and around 1923).[632] Scheler scholar Eugene Kelly describes this as being characteristic of Scheler's later thought, and says that it represents the 'phenomenological method', being turned toward 'ontological ends'.[633]

According to Kelly, the later Scheler offers us 'an ontological doctrine of two fundamental agents in the cosmos, Spirit (*Geist*) and Urge (*Drang*), that is nevertheless 'consistent with Scheler's phenomenology, for he maintained always that essences are ideal, and become real only insofar as they are "carried by" perceptual objects: they are experienced upon or with things' – thus the 'pure facts that are visible in the cosmos, spirit and life-urge, are also functional in the human being'.[634] The 'external realm' is given to the human being within the experience of resistance, thus cognition is initially 'directed' by the

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[628] Scheler, 'The Idea of Peace and Pacifism: Part 1', p. 3.
[629] Scheler, 'The Idea of Peace and Pacifism: Part 1', p. 4.
[630] Zachary Davis, 'The Values of War and Peace: Max Scheler's Political Transformations', *Symposium*, 16/2 (2012), 128–149 (p. 138).
[631] Davis, 'The Values of War and Peace', p. 138.
[632] Eugene Kelly, 'Max Scheler', in *The Routledge Companion to Phenomenology* (London: Routledge, 2011), pp. 40–49, p. 40. Spader states that from this 'new position', the personal God of theism was replaced with a single *Ens a Se* or the Ground of all Being (*Grund der Dinge*/*Weltgrund*). Spader, *Scheler's Ethical Personalism*, p. 184.
[633] Kelly, 'Max Scheler', p. 41.
[634] Kelly, 'Max Scheler', p. 48.

drives 'toward those specific features of the world that correspond to them'.[635] Despite this, the human being – as a bearer of spirit – is able to 'distance themselves from the external realm' in a 'leap of spirit beyond the drives', this corresponds to our ability to say 'no' to them and our capacity to 'spiritualize the urge'.[636] *Geist* is part of the 'ideal realm', and *Drang* is part of the 'real realm' – this is determined by the 'Laws of the Order of Efficiency of Ideal-Factors and Real-Factors', a 'law' that pertains to the interdependence that exists between real and ideal factors, factors that describe both the 'objective' spiritual and vital conditions of history, and the 'subjective' spiritual and vital drive-structures of the human being. [637]

Hence, of 'that which becomes', *Geist* determines only the 'constitution of its thusness', i.e., it is a factor of 'determination', not of 'realisation'.[638] This means that for the ideal to become real it must incorporate 'drives' or 'interests', so that it may re-direct vital power toward the 'possibility of actualisation'.[639] Thus, real conditions control what 'types' of ideas become actualised. Ideas that cannot redirect vital energy remain powerless and 'pass away' without being realised.[640] In other words, they make a fool of themselves in history.

This clarification of Scheler' position is important if we want to understand both his philosophical anthropology and metaphysics of his later work which is where he developed these ideas in a more 'speculative manner' – a move that was not universally endorsed. Davis and Steinbock say the following: 'Scheler has been often criticized for taking this metaphysical turn, a turn apparently defying his earlier phenomenological investigations and a turn taken at a time that many were declaring to be the end of the metaphysics and

[635] Kelly, 'Max Scheler', p.49.
[636] Kelly, 'Max Scheler', p. 49.
[637] Spader, *Scheler's Ethical Personalism*, p. 188.
[638] Spader, *Scheler's Ethical Personalism*, p. 189.
[639] Spader, *Scheler's Ethical Personalism*, p. 189.
[640] Spader, *Scheler's Ethical Personalism*, p. 189.

metaphysical systems'.[641] They give reasons for this though, stating that for Scheler, it was essential to 'counteract the forces found in the mindsets that underpin those positive sciences that render metaphysical and philosophical investigations meaningless. More importantly, this metaphysical turn was also necessary to grasp more profoundly the crisis haunting modernity'[642]. Similarly, editor Werner Stark states in in the preface to *The Nature of Sympathy* that Scheler's 'doctrine of spirit' was his proposed solution to the 'idealism' vs. 'materialism' dichotomy. [643]

Metaphysically speaking, the interaction between the real and the ideal is a dynamic process of becoming that describes the Ground of Being becoming aware of itself – Being bending back on itself as a becoming God. As Stark points out, this is not some theistic metaphysical scheme. Scheler is explicit in stating that whereas theistic religion is the longing for salvation and security, metaphysics is the path to 'truth' about the nature of ultimate reality.[644] Thus, philosopher Alexey Alyushin states that with such an undertaking, Scheler was attempting to treat spirit in a 'scientific' manner. Doing so allowed him to avoid 'any esoteric or religious connotations that his particular term may involve' and meant that Geist could be understood and defined in terms of the 'ability to withstand and deliberately redirect biological imperatives and instinctive drives, up to the point of purposefully throwing away one's own life' – an ability that 'constitutes the essence of the human being that differentiates him qualitatively from all animals'.[645]

This explains why Scheler's understanding of *Geist* at this stage in his thought was one that saw it as powerless in and of itself – i.e., as 'unable to create and realise anything in

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[641] Zachary Davis and Anthony Steinbock, 'Max Scheler', *Stanford Encyclopedia of Philosophy*, (2018) <https://plato.stanford.edu/entries/scheler/> [accessed 10th April 2022].
[642] Davis and Steinbock, 'Max Scheler'.
[643] Werner Stark, 'Editor's Introduction', in Max Scheler, *The Nature of Sympathy*, p. xxviii.
[644] Stark, 'Editor's Introduction', p. xxix.
[645] Alexey Alyushin, 'Self-Sacrificial Behavior and its Explanation in Terms of Max Scheler's Concept of Spirit', *Integrative Psychological and Behavioral Science*, 48 (2014), 503–523 (p. 503).

the world on its own'.[646] As a result, *Geist* must rely on its 'parasitic relation' to the real factors of history if it is to exert any 'realising power' – for its only 'inherent' power in terms of its 'relation to the world' is the ability to 'guide and channel the real factors according to deeper, personal values such as culture and the holy'.[647] Davis describes this process as the 'spiritualisation of power'. This is a process wherein power – as a fundamental life drive and vital expression of humanity – is transformed by 'deeper cultural values' and, as a result this transformation, begins to function as the realising factor of those values.[648] Politics can be understood in these terms, i.e., power functioning as 'a real factor of human social and cultural coexistence' embedded within 'the drama and development of history' and competing political ideals, values, and theories.[649]

According to Davis, it was around the time of his political transformation that Scheler began also to situate *Drang* within this process of history. Thus, life itself goes through 'distinct movements', both on an individual level and a collective level – something that is expressed within human existence as a development of culture and social organisation from one based initially in the drive for propagation, then in the drive for power, and finally in the nutritive drive.[650] This historical development unfolds as a result of the 'law of the power drive', with each stage reflecting a shift in the object of power itself. This process is a development of *life*, it is not the result of 'spiritual influence' – life develops this way regardless of historical values or ideas that may come about.[651]

The influence of spirit on such a process is only in the manifestation of particular historical expressions that these pre-existing power driven movements, i.e., the different phases can each be articulated in a number of ways and take expression in a number of forms,

[646] Davis, 'The Values of War and Peace', p. 138.
[647] Davis, 'The Values of War and Peace', p. 138.
[648] Davis, 'The Values of War and Peace', p. 138.
[649] Davis, 'The Values of War and Peace', pp. 138–139.
[650] Davis, 'The Values of War and Peace', p. 139.
[651] Davis, 'The Values of War and Peace, p. 140.

while still describing the same basic development of life. Thus, Scheler gives us the basics of a philosophy of history as an 'account of how spiritual ideas and values have been realised through the law of the power drive' – ideas and values 'do not move history, but rather determine the form it takes through its natural development'.[652]

What is important here is the change within Scheler's thought from his theism – which was built upon a conception of God as a creator God, a God of power – to a position where the divine, as spirit, is powerless (at least in the creative sense). Thus, God, as such, does not have the power to create the world, and as a 'non-creator God', is ultimately dependent on the world for any form of realisation. The implications of this are that human action itself becomes the realising factors for spiritual values and ideas – human becoming *is* the context within which the spiritual is realised. As a result, we have a 'becoming God', one that 'realises itself in and through the world', one that – by necessity – manifests the reality of a 'world that must change', and one that reveals that history does 'not determine the future course of humanity'.[653]

This assertion of the possibility of human self-determination through becoming finds expression in *The Human Place in the Cosmos*, where Scheler states that the outcome of the philosophical enquiry that begins with the metaphysical question, Why is there something rather than nothing?, is the realisation that the world is in flux. Being is a becoming – its meaning, the meaning of God, and the meaning of the human being are, as yet, undetermined.[654] Davis says that this notion of a becoming God 'raises more questions than it answers', but ultimately what is important is that the shift that underpinned his political transformation – the re-assessment of the divine/spirit – was a 'philosophical one' rather than a 'religious' one.[655] Hence, the concept of *spritualisation* is the idea that best captures the

[652] Davis, 'The Values of War and Peace', p. 140.
[653] Davis, 'The Values of War and Peace', p. 145.
[654] Davis, 'The Values of War and Peace', p. 145.
[655] Davis, 'The Values of War and Peace', p. 149.

essence of Scheler's later thought – it describes 'a becoming God and world', and also describes the 'process wherein the human being fully realises itself'.[656] In other words, the dynamic relationship between macrocosm and microcosm.

It is in this way that the Ground of Being reflects the microcosm in the human being. There are 'essential connections' that exist between certain aspects of the human being's spiritual acts and vital functions, and certain aspects of ultimate Being. Thus, understanding the nature of the human being is key to grasping the nature of ultimate reality. Saying that, the Ground of Being is not dependent on the 'contingent existence' of finite humanity and our conscious minds, so it must precede us. Nevertheless, our reality and nature as acting-beings is ascribable to the Ground of Being.[657]

This reality is first given to us as 'resistance'(*Widerstands*) to striving and the experience of vital energy, thus, ultimate reality is first and foremost an absolute impulsion, drive, or urge, i.e., *Drang*. In the same way that our vital drive is accompanied by a concomitant spiritual aspect, *Drang* also has its spiritual corollary as *Geist*. In a comparable manner, the Ground of Being possesses both a spiritual and an impulsive aspect – the two primordial phenomena of *Geist* and *Drang*.[658]

Thus, according to Scheler biographer Francis Dunlop, *Geis*t and *Drang* are the 'infinite attributes' of the 'eternally unchanging' essence of the Ground of Being – taken together they are 'jointly responsible for all creation' and are 'constitutive of human beings'.[659] The relation between *Geist* and *Drang* is antagonistic and oppositional, but at the same time it is that very antagonism which unifies the two in and through their opposition. The real and the ideal relate to each other through a kind of necessary and co-constitutional complimentary tension. *Drang* strives toward the 'Idea', so as to provide 'form' for the

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[656] Davis, 'The Values of War and Peace', p. 149.
[657] Dunlop, *Scheler*, p. 72.
[658] Dunlop, *Scheler*, p. 73.
[659] Dunlop, *Scheler*, p. 77.

products of its spiritually 'blind' impulsion, and *Geist* 'awaits' the drive-force of *Drang* so that its 'ideal form' may be 'translated into reality'.[660] *Geist* is essentially powerless, but as *Drang*, the *Ens a Se* is power.[661] *Geist* and *Drang* are bound together – they need each other, and in a sense they are always already 'searching for what the other can offer'.[662]

Geist and *Drang* are both 'attributes' of the same Absolute Being. In the human person, they are both attributes of the same living beings. For Scheler, the person is a unity of spiritual acts.[663] Persons are 'correlates' of the 'world', i.e., the world, as the 'realm of material values', is the 'correlate of all possible spiritual acts'.[664] The person gives 'spiritual meaning and value to the vital functioning of an individual human animal' – in this way, each person is the correlate of their own world or microcosm.[665] The world is 'the sum of all objects', as such, the person cannot be reduced to, or known as, an object. For Scheler, persons are not 'objective substances' in the Aristotelian sense. Their being is wholly *in* their 'acts'. But because they found their own acts, there must be something that is not those acts – hence, to some degree or other they can be understood as 'act-substances', i.e., their spiritual acts 'inform' their vital functions, and those vital functions are a part of the world.[666]

In this way, we can see that the spiritual act is an 'ascetic' act. It is made possible by the human being's capacity to say 'No' to life, i.e., we can re-direct vital energies toward spiritual or ideal goals. To re-direct vital energy toward *Geist's* service, spiritual ideas and values are 'held out' like 'bait' before the 'lurking' drive-impulse. This is a process within which the person directs drive energy or guides it (*leitet*) toward 'spiritual values'. This can

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[660] Dunlop, *Scheler*, p. 77.
[661] Dunlop, *Scheler*, p. 78.
[662] Dunlop, *Scheler*, p. 77.
[663] In should be noted that Scheler's concept of the person is not the self – the person is not I/Ich/self/ego, all of these concepts are grounded in the person.
[664] Dunlop, *Scheler,* p. 23.
[665] Dunlop, *Scheler*, p. 23.
[666] Dunlop, *Scheler*, p. 23.

be done by channelling or steering (*lenkt*) the physical manifestations and expressions of vital urges and impulses toward ascetic ends through acts of 'sublimation'.[667]

3.1.2 TOWARD A SCHELERIAN PHILOSOPHY OF TECHNOLOGY

Reflection on technology within the phenomenological tradition has by and large neglected Scheler's thought according to sociologist Ryan Gunderson. This is despite Heidegger's thinking on the matter being significantly influenced by what Gunderson calls Scheler's 'critical analysis of the value surrounding modern technologies relation to nature' – especially Scheler's assessment how modern technology has facilitated a 'subordination' of life to the values of utility, i.e., how modern technology has served to promote and sustain the 'ethos of industrialism'.[668] For Gunderson, Scheler is quite clear that it is the 'ethos' of industrialism that has been the root cause in determining that modern technological has been used in this respect. It is here also that we can find the source of our modern understanding of the environment as 'a machine to be controlled for human aims'.[669]

Gunderson says that any attempt to take a broad perspective on Scheler's thought must recognise the 'intellectual development' of that thought and take into consideration the contrasts that exist between its different stages. Thus, Gunderson argues that the sometimes contradictory relation between values and technology espoused by Scheler can be understood as a contradiction that reflects the 'dissimilarities and tensions between the first and second

[667] Dunlop, *Scheler*, p. 78.
[668] Ryan Gunderson, 'Environmental Knowledge, Technology, and Values: Reconstructing Max Scheler's Phenomenological Environmental Sociology', *Human Studies*, 40/2 (2017), 401–419, (pp. 401–402). https://www.researchgate.net/deref/http%3A%2F%2Fdx.doi.org%2F10.1007%2Fs10746-017-9439-3 [accessed 18 June 2020].
[669] Gunderson, 'Environmental Knowledge, Technology, and Values', pp. 401–4022. Scheler defines ethos in *Problems of a Sociology of Knowledge* as a 'prevailing' and 'valid' set of rules for 'spiritual acts of value preference'.

periods of his intellectual development'.[670] While it is beyond the scope of our current investigation to assess the contradictions between earlier and later Scheler and come to any definitive conclusions regarding his thinking on technology as cross the *entire* range of his work, we must – if we intend to lay the grounds for a Schelerian philosophy of technology – acknowledge the importance of the relation between technology and values for Scheler. As Gunderson points out, Scheler's value theory – or axiology – had a significant bearing on his analysis of technology.

Throughout his work, Scheler posited that there is an intuitionally-accessible, objective, and hierarchical structured sphere of values.[671] Here 'objective' means, 'nonrelative' and 'noncontingent' – values do not exist *per se*, but have an 'independent functional existence,' in the sense that they become 'extant', if and when they 'enter into function with something else'.[672] By way of illustration, Scheler compares values to colours – both do not exist within things, but only exist when functioning with something. In the same way that a colour 'independent' from its 'corporal bearer', a value is independent from the bearer of that value.[673] Values can be both individual and collective, and there are five kinds of 'value-modalities' or value ranks – values of the holy, spiritual values, life or vital values, sensible or pleasure values, and values of utility.[674]

For our purposes we can recognise that the two value modalities from this hierarchy of values that Scheler focuses on within his evaluation of modern technology are those of life values and utility values. On the most basic level, tool/machine making is underscored by utility. Similarly economic goods can be understood as bearers of utility. In this way, the technologist and entrepreneur-industrialist are conceived off by Scheler as representative of

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670 Gunderson, 'Environmental Knowledge, Technology, and Values', p. 403. Gunderson says that *Problems of a Sociology of Knowledge* is Scheler' 'first major work of his second period of productivity'.
671 Gunderson, 'Environmental Knowledge, Technology, and Values', p. 404.
672 Gunderson, 'Environmental Knowledge, Technology, and Values', p. 404.
673 Gunderson, 'Environmental Knowledge, Technology, and Values', p. 404.
674 Max Scheler, *Formalism in Ethics and Non-Formal Ethics of Values: A New Attempt Toward the Foundation of an Ethical Personalism*, trans., by, Manfred S. Frings, and Roger L. Funk (Evanston: Northwestern University Press, 1973), pp 81–110.

the 'personal essence' of the 'process-action-and accomplishment-orientated acts' which are performed in the attempt to 'realize utility values'.[675]

With the success of industrial capitalism came an assertion and promotion of utility as the primary value of modern Western societies. Thus, the ethos of industrialism ultimately represents the subordination of life values to utility values.[676] Technology obviously played a major role in this, but the industrial use of technology to promote utility over life actually 'perverts' the proper role of technology in society. In other words, according to Scheler's scheme, technology should 'serve' life and work towards its 'expansion' – a situation that is reversed with the *modern* technology of industrial capitalism.[677]

The predominance of the ethos of industrialism created a scenario within which the success of capitalism became such that the promotion of utility over values of life not only negatively impacted on human life and our immediate environments, it also began to determine the way that modern humans comprehend and approach the natural world as a whole.[678] Gunderson states that the overall result of this is the expansion of technology over life. The 'machine' has come to dominate life – with the human being becoming more and more a cog in our own machine.[679] The ethos of industrialism that underpins this reversal of values, and – because it applies to both technology and the natural environment – it is also the source of the 'modern mechanistic worldview'.[680] *Modern* technology then is both the 'source of our strength' and what disenfranchises us from nature. Approached as such, technology is reductively understood and simply perceived as a tool – a tool that allows us to control and overcome nature, and utilize it as mere resource for our benefit and pleasure.[681]

[675] Gunderson, 'Environmental Knowledge, Technology, and Values', p. 405.
[676] Gunderson, 'Environmental Knowledge, Technology, and Values', pp. 407–408.
[677] Gunderson, 'Environmental Knowledge, Technology, and Values', pp. 407–408.
[678] Gunderson, 'Environmental Knowledge, Technology, and Values', pp. 407–408.
[679] Gunderson, 'Environmental Knowledge, Technology, and Values', p. 407.
[680] Gunderson, 'Environmental Knowledge, Technology, and Values', p. 407.
[681] Timothy J. McCune, 'The Solidarity of Life: Max Scheler on Modernity and Harmony With Nature', *Ethics & the Environment*, 19/1 (2014), 49–71 (p. 60).

Saying that, it should be noted that that Scheler understands technology as a means of diminishing strife', i.e., it *should* make things easier for us.[682] Technology in this sense should serve the ends of life, but because history is the developing interplay between real and ideal factors, our relationship with technology will always be a reflection of our value preferences, and be expressed in how these become manifested historically. So, despite the fact that that the phenomenon of technology itself *begins* in the life-drive of the human being, technology itself can work *against* our vital interests.

To understand this we must take metaphysics into consideration and remember that *Drang* suffuses all entities – it has both a universal and an individual aspect. It also fluctuates continuously between 'becoming' and 'un-becoming', within a continuous and simultaneous vital and organic expansion and contraction of all living beings.[683] This constant ontological strife establishes two fundamental laws: all 'movement' originates from *Drang* and is – in principle – 'reversible'; all 'modification' originates from *Drang* and is – in principle – 'irreversible'.[684] Thus, *Drang* 'propels' life into an unceasing process of self-movement and self-modification, through a continuous movement between becoming and un-becoming at any of its 'phases'.[685] This fluctuation between becoming and un-becoming is manifest in the human being, in and through the three main human drives: propagation; power; nutrition.[686]

As such, there is an 'ambivalent' character to our relationship with technology. In one sense, it reduces 'resistance', and as a result, it reduces our 'suffering'. But in other ways it actually adds to our suffering – particularly in regard to the 'modern' tendency to formally categorise the world through scientific scrutiny, mathematical mapping, and the precision and

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682 McCune, 'The Solidarity of Life', p. 60.
683 Frings, *The Mind Of Max Scheler*, p. 187.
684 Frings, *The Mind Of Max Scheler*, p. 187.
685 Frings, *The Mind Of Max Scheler*, p. 187.
686 Frings, *The Mind Of Max Scheler*, p. 188.

control afforded by modern technology. Thus, even though technology has successfully 'de-realized' the world, it has also helped to alienate us from it and strip it of meaning.[687]

Ultimately, this is a consequence of the '*ethos* of industrialisation', an ethos which represents a 'distortion of values', and within which nature becomes commodified and objectified.[688] The mechanistic worldview associated with that ethos assumes the reduction of things to the sum of their parts – it promotes a conception of the world *as* a machine.[689] In this way, modern capitalistic societies have a tendency to reduce nature to a mechanism that we can control and dominate.

While the natural world does have 'mechanical-like dimensions' (as is proved by 'what science and technology can *do* with nature'), and mechanical like qualities, these are not its *only* characteristics – hence, Scheler's thought is a reflection on the dangers of what Gunderson describes as 'one-sided technical-mechanical thinking without a metaphysical counterweight'.[690] This idea is explored by Scheler in *Problems of a Sociology of Knowledge*, where he says that 'mechanical-technical' thought took hold historically with Galileo, Descartes, Hobbes, Leonardo, Dalton, Kepler, and Newton among others and became established in the early modern period as a 'necessary apparatus' of 'control' – offering 'potentially unlimited' control of nature for 'desired ends' and the means to achieve progress toward human goals.[691] This mechanistic perspective is reflected in the way that science – for the 'sake of controlling nature' – seeks to 'predict only the positional value' of things in a 'spatio-temporal' sense. This is also a preliminary concern of all technology also – technology seeks to 'dissect things, recombine them into a more desired spatio-temporal connection and thereby predict what will happen after such interventions in the course of

687 McCune, 'The Solidarity of Life', p. 60.
688 McCune, 'The Solidarity of Life', p. 60.
689 Gunderson, 'Environmental Knowledge, Technology, and Values', p. 408.
690 Gunderson, 'Environmental Knowledge, Technology, and Values', Sociology', p. 409.
691 Max Scheler, *Problems of a Sociology of Knowledge*, trans., by Manfred S. Frings (London/New York: Routledge, 1980), pp. 49–52. Scheler scholar Kenneth Stikkers states in the introduction to this 1980 translation that Scheler's sociology of knowledge – or what he describes as 'value sociology' – is foundational for understanding Scheler's metaphysics.

nature'.[692] Hence, Scheler posits that 'technology' and 'positive science' have a single root (despite their obvious conditioning by the mind), which is a 'gradual extension' of the capacity for 'practical-technical intelligence'.[693]

For Scheler, both humans and non-human animals share practical intelligence, so here he is asserting that animal tool-use and human technology are both an extension of that shared attribute. Even so, this is not an indication that he holds human technology to be equivalent to tool-use in non-human species. Even if there is a common source in the life drives, without the interplay of ideal factors associated with the human being, and the essential feature of our capacity for ideation, tool use in non-human animals simply does not develop to the level of complex technology as displayed by humans. Even if it originates within the drives, human technology displays the same 'essential psychic-spiritual difference', that exists between humans and other non-human animals.[694] Even though it shares its source with non-human species, i.e., organically-bound practical intelligence, human 'technical pragmatic thinking' is directed toward what Scheler calls 'exact' investigation in a way that is exclusive to human beings.[695]

Crucially for our investigation, this directedness indicates that *real factors associated with drives can be engaged by ideal factors.* Thus, Schelers analysis of technology and science reveals a struggle between a 'spontaneous metaphysical spirit', and the powers of revealed religion, exact science, and technology. And as the predominance of capitalism in the West reveals, this is a struggle that the spontaneous metaphysical spirit has almost always lost. Scheler says that the roots of this struggle can be found in the 'practical' Roman 'spirit of domination', and he interprets this in terms of it being a victory over 'the more

[692] Scheler, *Problems of a Sociology of Knowledge*, p. 80.
[693] Scheler, *Problems of a Sociology of Knowledge*, p. 80.
[694] Scheler, *Problems of a Sociology of Knowledge*, p. 80. Modern technology as a way to 'expand power' is intimately linked – as a function – with the 'earthly activities' of economics and politics, pp. 83–84.
[695] Scheler, *Problems of a Sociology of Knowledge*, p. 90.

contemplative and purely theoretical attitude of the mind'.[696] Such an outcome was not a necessity though. In the East, it was the sage, with their 'metaphysical mind', which helped metaphysics win-out over religion and science according to Scheler. In contrast to the West, 'Eastern' metaphysics is characterised by 'self-cognition' and 'self-redemption'. Also, Asia/the East didn't develop (in his time) 'rational science and 'specialisation' or 'industrial technology of production'.[697]

Scheler says that the Reformation killed off any trace of 'magic techniques', and eliminated from Protestant culture, all tensions between techniques of magic and positive technology, and as a result 'Western' metaphysics tends to be the product of 'city' thinking – it rests on a 'different consciousness of the self', and 'interpretation' of the human being than Eastern philosophy does. In the West, a conception of the human being developed, as a 'sovereign being' that is above all nature.[698] Accordingly, there is an observably 'lack of spirit' with respect to 'industrialism and technology'.[699]

It should be clear then that Scheler's position shows us that our technology is ultimately a reflection of metaphysics – *a product of the interplay between real and ideal factors*. It is also clear then, that Scheler's critique of industrialisation is a critique of *modern* technology rather than any kind of 'essence' of technology itself. This critique reflects his concern regarding how 'modern capitalistic society came into being', and it lays 'the greatest stress on the shift in values', associated with the end of the medieval period, and the 'opening centuries of the modern period'.[700]

This understanding is one that fits with our earlier description of technology as value-open. Understood this way, Scheler offers an antidote to reductionism in terms of how we

[696] Scheler, *Problems of a Sociology of Knowledge*, p. 91.
[697] Scheler, *Problems of a Sociology of Knowledge*, p. 91.
[698] Scheler, *Problems of a Sociology of Knowledge*, pp. 91–98.
[699] Scheler, *Problems of a Sociology of Knowledge*, p. 99.
[700] Werner Stark, 'Introduction', to Max Scheler, 'The Thomist Ethic and the Spirit of Capitalism', trans. by Gertrude Neuwirth, *Sociological Analysis*, 25/1, (1964), 4–19.

understand both biology and technology which clears a space for reflection on how *Geist* relates to both. In 'The Thomist Ethic and the Spirit of Capitalism', Scheler explores how Scholasticism contributed to the emergence of capitalism and in it he identifies Franciscanism rather than Dominicanism as the 'harbinger of the scientific age'.[701] Saint Francis saw the 'creator' through, and behind, creation itself – even as 'material creation' – hence the act of creation received a 'new significance' in terms of our understanding of the world.[702] This led to the early modern understanding of scientific analysis and technological exploration as being understood as a kind of 'sequel' to, and 'rationalised form', of Francis's love of God.[703]

Scheler also states that with Francis Bacon there exists an observable and 'intimate spiritual continuity between the external trend of an increasing application of technical devices in production', and 'the same trend toward an inner control of drives'.[704] Hence, the most significant factor in the formation of the capitalist spirit was 'an unrestricted will to work and acquire', which had both 'temporal' and 'genetic' priority over all other striving for wealth or possessions.[705] This is illustrated by the way that the 'Calvinist type' doesn't *want* wealth, i.e., it is the act of 'acquiring' wealth, of 'earning' wealth, and 'deserving' wealth, that is the ultimate objective.[706] An objective that became the 'primary volitional content in the attitude of the puritanical businessman – though it was often disguised as 'duty-bound action'.[707]

Scheler holds that in this way the 'spirit of new bourgeoisie came to ever clearer and more outspoken expression' and it 'progressively discarded the religious and dogmatic masks

[701] Stark, 'Introduction' in 'The Thomist Ethic and the Spirit of Capitalism'.
[702] Stark, 'Introduction' in 'The Thomist Ethic and the Spirit of Capitalism'.
[703] Stark, 'Introduction' in 'The Thomist Ethic and the Spirit of Capitalism'.
[704] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', p. 16.
[705] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', p. 16.
[706] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', p. 17.
[707] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', p. 17.

which – at the time of its origin – it had chosen as its disguise'.[708] The same spirit of bourgeoisie was 'the motive power of religious innovation driving reformers and their followers' – hence, the 'religious metaphysical despair of modern man is everywhere the root and origin of the endless drive to work which flows forth to the outside world'.[709]

As such, technology for Scheler is not then a 'subsequent application of a 'theoretical' and 'contemplative' science, rather it reflects the 'will to control and direct' nature – i.e., it 'co-determines the methods of thought and intuition as well as the goals of scientific thought'.[710] Within the complex of the ensuing systematisation of positive science, the structural arrangements of 'production techniques', and 'human work', exist as 'parallel forms of positive-scientific thought' – neither of which are the origin of the other, nor a 'variable' that is 'independent of the other'.[711] For Scheler, the 'independent variable' that determines both of these forms is whatever the '*prevailing drive-structure' of the leaders of a society i*s. It must be noted that these structures are intimately linked to the leaders' ethos, and – as the determining 'independent variable' – they represent a 'unity' between the drive structures and the accompanying 'values and ideas' that characterise and give definition to that society.[712] So even if technology is rooted originally in the life drives, it is clear that it can be directed beyond the service and promotion of those drives.

Again, we need to recognise that Scheler talking about 'modern' technology. While there is a distinction made between modern and ancient technologies, that distinction is not based on any difference in essence of technology itself, nor the anthropological significance of tool-use, nor the relationship between the human and the artifact. Rather, the distinction is a result of a change in drive-structures and new ethos – *a combination of real and ideal factors*. Thus Scheler's critique of modern technology identifies and deals with the central

[708] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', p. 17.
[709] Scheler, 'The Thomist Ethic and the Spirit of Capitalism', pp. 18–19.
[710] Scheler, *Problems of a Sociology of Knowledge*, p. 101.
[711] Scheler, *Problems of a Sociology of Knowledge*, p. 101.
[712] Scheler, *Problems of a Sociology of Knowledge*, p. 101.

issues of concern for HPT, in fact, it anticipates them – Mitcham says that Mumford (1930) and Ortega y Gasset (1933) represent the first wave of HPT, but Scheler was writing in 1924!

Scheler's understanding of technology doesn't specifically distinguish between technology and craft, but because it locates the roots of technology in the same drive conditioned practical intelligence that we share with other non-human species, it is broad enough to include early human tool-use, and proto-technologies within its scope. Any difference is a reflection of the interplay of real and ideal factors, as expressed in human action rather than any difference in essence which can be clarified and assessed with the help of appropriate terminology.

Most importantly, Scheler's position does not exclude the idea that modern technology can be understood as a specific and historical manifestation of technics as material culture. Just as the shift to capitalism and emergence of modern technology represented a 'changing psych-energetic process' for Scheler, so too did the earliest hominin tool-use and all ensuing technological developments since then.

Also, according to Scheler's account technology precedes science – it reflects fundamental psycho-energetic processes that are much older than science itself. Technology then, in its modern form *and* science are the reflection of the capitalist spirit which represented a new will-to-control nature and soul, where knowledge of 'cultivation' and 'salvation' is subordinated to that will, i.e., techno-science. This will-to-control is not to be misconstrued as a 'utilitarian' will to put things to productive use. In the same way as Bacon misconstrued the nature of science and the nature of technology, Scheler holds that Utilitarianism 'misconstrues the proper meaning and rank' of 'spiritual goods' and 'values', while at the same time it also 'misconstrues the driving wheel that put modern technology into motion'.[713] The 'basic value that guides modern technology', is not the 'invention' of

[713]Scheler, *Problems of a Sociology of Knowledge*, p. 130. Here Scheler explicitly uses the term 'modern technology'.

useful machines – modern technology aims at something 'higher' – the construction of 'all *possible* machines'.[714] For it is not the just the idea of utility that drove the centuries of 'inventions and discoveries', it was the '*idea and value of human power and human freedom vis-à-vis nature*'.[715]

Thus, we have an account of technology which serves as a fundamental critique of the techno-scientific will-to-power that is so often associated with transhumanism, but which does not draw an equivalence between this particular manifestation of technology and the *essence* of technology, meaning it is compatible with our concept of technology as material culture, and at the same time challenges the instrumentalist values and mechanistic reductionism that lie *behind* the instrumentalist conception of technology-as-tool.

For Scheler, the power-drive and its growing predominance over nature comes 'before' all other drives, i.e., before utility. In ancient and pre-modern times technology was, according to Scheler, concerned with 'specific' purposes – 'modern' technology represented a change in the direction of this power-drive, away from God and men and toward 'things', and their 'meaningful place in the spatio-temporal system'.[716] This was expressed first in ideas and plans through which nature could be controlled and directed toward 'any' purpose – Scheler references alchemy, automatons etc., as 'playful, impossible, technical experiments', that were simply an attempt to 'make' anything out of anything, in the time which immediately preceded the 'blossoming of the technological age'.[717] The 'age of inventions and discoveries', revealed that this process of re-directing primal drives for power could display a 'sudden leap-like nature', as it replaced fifteen hundred years of domination by the 'theological and biomorphic worldview'[718]

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[714] Scheler, *Problems of a Sociology of Knowledge*, p. 130.
[715] Scheler, *Problems of a Sociology of Knowledge*, p. 130.
[716] Scheler, *Problems of a Sociology of Knowledge*, p. 130.
[717] Scheler, *Problems of a Sociology of Knowledge*, p. 130.
[718] Scheler, *Problems of a Sociology of Knowledge*, p. 130.

In this way, the 'new mechanics' established itself as a 'model and schema for all world explanations' – a model that remained in place until it was superseded by what he describes as 'a new theoretical physics, biology, and philosophy'.[719]

With respect to both science and technology having the same root source, Scheler says that this is shown by the fact the science has, historically, 'stimulated' and 'preceded' technology, at least as often as technology preceded and stimulated science.[720] Hence, Scheler's critique does not reveal *technology* as the root of a techno-scientific will to dominate/will to acquisition. Rather it is the *spirit of capitalism* – the ethos of industrialisation – which is itself rooted in the secularisation of the Christian notion of dominion and Christian eschatology. All of this analysis fits with what we have already discussed, if there is an endless will to power/will to acquisition that drives transhumanism, it is more likely rooted in the secularisation of the Christian world view – which was first given expression by Bacon – than the essence of technology itself.

This perspective also has the advantage of not having to make some romanticised HPT-based distinction between the essence of *modern* and *traditional* technologies and crafts of a more harmonious and eco-friendly age. Any such difference between the two must – from this perspective – be a reflection of human nature, and be delimited by the possible range of expression available to human drive-structures in and through their interplay with human *Geist*.

Scheler shows how modern industrial technology reflects power politics, economics – this is one particular manifestation of technology which is essentially associated with capitalism and modernity. This industrial technology-of-production is 'harnessed' for endless acquisition and domination, it is not the source of it. As such, Scheler's thought offers us a way to acknowledge the issues associated with technological domination, without having to

[719] Scheler, *Problems of a Sociology of Knowledge*, p. 130.
[720] Scheler, *Problems of a Sociology of Knowledge*, p. 130.

insist on a rejection of technology itself. It also allows for the development of a philosophical enquiry that deals with technology as a 'foreground issue', and which illuminates a 'feature of the phenomenon of technology itself' – hence satisfying Ihde's criteria for a philosophy of technology. A Schelerian philosophy of technology offers us a way to look at technology as 'foundational' which assigns primacy to the technical over the non-technical, but which is not just an elaborate anthropologically-tinged EPT. The human being is at all times the focal point – even if we conceive of ourselves in terms of technology – because Scheler 'begins' with biology and understands *Geist* as a principle that opposes life, his thinking on technology does not give primacy to the technical – *nor* does it give primacy to the non-technical. Technics as material culture is a human process – value-open, and understood in terms of extension, mediation, and exteriorization. It represents the interplay of *Geist* and *Drang* in *the same way* that the human being does, *as* the interplay between real *and* ideal factors. The dual-aspect of technology, *is* the dual-aspect of the human being. The mark of functionality that we see in our artifacts is our mark; it is the mark of our intentionality; it is the mark of our design. The complexity and anticipatory sophistication of our technology *is* the mark of our capacity for ideation and abstraction. In this sense artifactual design may have its roots in a response to the experience of the real, but ultimately it is a process which refers to the ideal, i.e., design implies *Geist!*

3.1.3 SCHELER'S ESSENTIAL CONCEPT OF THE HUMAN BEING AS BEARER OF *GEIST*

If we are to approach both the human being and technology in terms of the interplay between real and ideal factors – and understand both as in some way representing a metaphysical expression of *Geist* – then we must begin to consider the relationship between biology, consciousness, and the cosmos. Scheler's notion that *Idealfaktoren* enjoy an objective status that is independent of material conditions is initially reflected upon and developed in his analysis of how consciousness relates to the living body within the process of evolution. He posits an 'isomorphism' of physiology and psychic functions which establishes that consciousness does not emerge *from* organic life but rather arises *with* it.[721]

This isomorphism of physiological and physic aspects of life describes a unity of mind and body within the emergence of organic life from inorganic matter – i.e., the 'ascent of life' is understood in terms of 'physiological impulsion and corresponding psychical structures'.[722] As shown in the introduction, psychic-physical life develops in four-stages within the process of evolution: plant life which displays drive and 'resistance' but no consciousness or awareness; animal instincts which coordinate to satisfy the drives; memory and learned associative behaviour; and practical intelligence which generates the capacity for novel and creative behaviour.[723] Importantly, it must be noted that for Scheler each step of ascending life represents 'a genuine physiological and psychical novelty' which – though dependent on the preceding level – cannot be essentially derived from the levels below it. In this sense, the emergence of consciousness or awareness within biological organisms, is understood as a function of the 'process of advancing life' (which has an organic, physical basis), but it is not reducible to specific biological mechanisms.[724]

For Scheler, such a reduction is simply an indication of Naturalism as an ontological position – an ontology which situates the human being as an inclusive 'subclass' of vertebrates and mammals. By necessity, this entails an associated subordination of the idea of

721 Kelly, 'Introduction', in *The Human Place in the Cosmos*, p. xi.
722 Kelly, 'Introduction', in *The Human Place in the Cosmos*, p. xi.
723 Kelly, 'Introduction', in *The Human Place in the Cosmos*, pp. xi–xii.
724 Kelly, 'Introduction', in *The Human Place in the Cosmos*, p. xii. Kelly states that this conception of the unity of the psychic and the physiological is an attempt by Scheler to address the mind-body problem associated with the substance dualism of Descartes and his attempt to provide an alternative to the 'mechanical' or 'vitalistic' theories subsequently generated by Twentieth Century philosophies associated with ontological Naturalism. In general, such philosophies tend toward *essentially* reducing all psychic events to physical events as mere functions or epiphenomena.

the human being to the *concept* of animal. For Scheler, the problem with this was that even if we are understood as the end stage of evolution and the height of sophistication and complexity of animal form as the 'peak' of all vertebrates and mammals, that 'peak still belongs to that of which it is a peak'.[725] Hence, not only are we committed to being subordinated to the broader conceptual classification of the animal, but we are also relegated to a 'very small corner' of the animal realm'.[726] Hence, on a conceptual level, when we reductively grasp ourselves *naturalistically* we position humanity accordingly within the cosmological scheme of things.

For Scheler, this led to the construction of an 'all-encompassing uniform idea of the human being' that was supported and promoted by the success of the natural sciences. Understood within an evolutionary context, the human being became *homo faber*, or tool maker.[727] What is significant about this is that Scheler saw that all 'evolutionists' – Darwinian or Lamarckian – reject any qualitative or 'ultimate' difference between human and the animal kingdom. Such a move, necessitates the subsequent rejection of – or at least a refusal to assign any value to – a 'metaphysics of the human being', i.e., the idea that humanity might have special place in nature or any exceptional relation to the Ground of Being.[728] Clearly, such a perspective would stand in stark contrast to Scheler's position, be antithetical to the basic premise of Scheler's Philosophical Anthropology, and deny any importance to the question of the human being and our place in the cosmos.

In a 1915 article for *the Journal of the British Society for Phenomenology* Scheler gave an early indication of the significance he would come to attribute to that question. He begins the article – 'On the Idea of Man' – by clearly stating his belief that 'all the central questions of philosophy' lead back to the problem of 'what man is and what the metaphysical

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[725] Scheler, *The Human Place in the Cosmos*. p. 6
[726] Scheler, *The Human Place in the Cosmos*. p. 6.
[727] Scheler, *The Human Place in the Cosmos*, p. 25.
[728] Scheler, *The Human Place in the Cosmos*, pp. 25–26.

position and status is which he occupies within the totality of being, world and God'.[729] The problem of the human being is a persistent issue in Scheler's thinking, and the significance he affords the issue here, is an early indication of the direction his later thought would take and how it would become the guiding question by which he would lay out his evolutionary and metaphysical scheme in *The Human Place in The Cosmos*.

Kelly describes how Scheler's later return to explicitly address this question takes the form of a 'radically experimental speculative metaphysics'. A speculative metaphysics which – founded as it is in his earlier work and his engagement with the natural sciences – aimed to establish a 'comprehensive philosophy of man'.[730] This attempt was also intended to serve as a fundamental critique of the predominance of positivism and its 'scientific outlook' which – hugely influenced by the ideas of Darwin – had facilitated the emergence of a reductive view of the human being whose 'spirit' was merely a 'function' of biology, and whose values were simply a by-product of their vital interests.[731]

Scheler's death prevented the completion of a 'systematic works of metaphysics and philosophical anthropology' – works that he frequently referred to during his later period. Kelly describes it in the following terms: 'the old problem of the unity of man, so long submerged by abstract philosophy and Christian hope, reappears in his theory of the dualism of vital and spiritual principles, which he [Scheler] discovers in the ground of being and thus in man conceived as a microcosm'.[732] In this way, Kelly posits Scheler's metaphysics and philosophical anthropology as the study of 'ancient modes of religious belief', combined with the attempt to 'assimilate the most recent advances in biology and psychology' into a 'broad

[729] Max Scheler, 'On the Idea of Man', p. 184.
[730] Kelly, *Max Scheler* (Boston: Twayne Publishers, 1977), pp. 14-15. Kelly arranges Scheler's 'intellectual history' into three major periods, neo-Kantian, phenomenological, and metaphysical, and he also describes Scheler's metaphysics as 'complex', 'diffuse' and 'ultimately misbegotten'.
[731] Kelly, *Max Scheler*, p.167.
[732] Kelly, *Max Scheler*, p. 15

philosophical outlook'.[733] This endeavour was an exploration of the possibility of natural theology and metaphysics, coupled with a critique of the scientific worldview – all of which was based on a concept of the 'indefinability' of the human person, and irreducibility of human self-consciousness.[734]

Scheler's aim then was to explain how the world came about and what our place in it was. His train of thought runs seamlessly from speculating on human nature straight to speculating upon the nature of ultimate reality and leads him to the conclusion that the human being is a microcosm within which 'both higher and lower forms of being come together in mutual self-creation'.[735] As such, *The Human Pace in the Cosmos* was the attempt to assert a 'speculative metaphysical doctrine' of the huma being, but one which did not 'contradict scientific and phenomenological knowledge'.[736] The notion of the 'microcosm-macrocosm' then is a key concept within Scheler's metaphysical scheme, and it is vital component of his understanding of the human being as a bearer of *Geist*.[737]

As we have already shown, the two primordial phenomena of *Geist* and *Drang* are the 'ontological roots of the universe' according to Scheler's scheme. They are observable in the cosmos and are likewise observable in the human being and thus reveal an essential metaphysical 'isomorphism between the cosmos and the human being'.[738] The macrocosm 'arises out of the chaos of blind drive, the force of life itself, and of impotent spirit' – a twofold process which is replicated and reproduced in the human microcosm'.[739] Thus, Scheler's conceives of us having a 'cosmomorphic' essence.[740] We are in 'possession of sources of a cognition of all that contains the idea of cosmos', hence, we strive to become a

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733 Kelly, *Max Scheler*, pp. 18–19.
734 Kelly, *Max Scheler*, pp. 18–19.
735 Kelly, *Max Scheler*, p. 177.
736 Kelly, *Max Scheler*, p. 174.
737 Eugene Kelly, *Structure and Diversity: Studies in the Phenomenological Philosophy of Max Scheler*, (Dordrecht: Springer Science+Business Media, 1997), p. 200.
738 Kelly, *Structure and Diversity*, pp. 200–201.
739 Kelly, *Structure and Diversity*, p. 202.
740 Max Scheler, *The Nature of Sympathy*, trans., Werner Stark (New York: Routledge, 2017), p. 105.

‘microcosm’, we strive to ‘participate in the All’.[741] As Scheler puts it himself in his essay ‘Philosopher’s Outlook’: ‘We can also say man is a microcosm, i.e., “a miniature world,” because all essential aspects of being – physical, chemical, living, spiritual – are found in and intersect in man. Thus, the ultimate source of the “great world,” the macrocosm, can also be studied in man’.[742]

The human being as a microcosm exhibits – like the macrocosm – aspects of spiritual and vital energy. Existence is first experienced as *resistance* (*Widerstand*) to the phenomenon of vital life. This means that consciousness, first and foremost, begins with the drives. The experience of resistance is an *ecstatic* one – as such, it is an experience which prompts the act of reflection through which the drive-impulse can become capable of consciousness.[743] It is in this way that the human being is able to ‘participate’ in the becoming of the world – the *Ens a Se* can come to ‘consciousness of itself’, in and through the human being. We become conscious of ourselves through *Geist* and its redirection of the ‘brute forces of life’, which fuel our instinctual drives and vital energies.[744]

Geist distinguishes us from other non-human animals, it allows us to grasp the ‘thusness’ (*Sosein*) of things, which – before the ideational act – are purely ‘centres of vital reaction’ (*Reaktionszentrum*) and ‘resistance’ (*Widerstand*). *Geist* is the ‘fundamental capacity of human beings to see the ‘form of things’.[745] This describes our capacity to separate *essence* from *existence*, and it is this act of ideation that allows us to free ourselves from vital concerns.[746]

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[741] Migoń Mieczysław Paweł, ‘Connection of Microcosm with Macrocosm in Max Scheler’s Philosophy: Man, Logos and Ethos’, in *Islamic Philosophy and Occidental Phenomenology on the Perennial Issue of Microcosm and Macrocosm*, ed. A-T. Tymieniecka (Dordrecht: Springer, 2006), pp. 67–95, p. 68.
[742] Max Scheler, ‘Philosopher’s Outlook’, in *Philosophical Perspectives,* p.11.
[743] Kelly, *Structure and Diversity*, p. 182, from ‘Idealism and Realism’, p. 214.
[744] Kelly, *Structure and Diversity*, p. 202.
[745] Robert Sandmeyer, ‘Life and Spirit in Max Scheler’s Philosophy’, *Philosophy Compass*, 7/1 (2012), 23–32 (p. 29).
[746] Spader, *Scheler’s Ethical Personalism*, p. 185.

Thus, *Geist* negates instincts, represses drives, and can deny the will to live – this is the only 'power' that *Geist* possesses in and of itself. This is a 'negative' power in the sense that it is not creative – it cannot 'generate', or 'cancel' instinctual energy, vital drive-forces etc., it can merely negate or redirect them within a process of sublimation.[747] Scheler held that Freud's concept of sublimation was mistaken to posit the 'superego' as a product of life, for how could the drives and spirit be both reducible to the same principle if their ends are claimed to be different? Spirit must be a principle that is in opposition to the drives if we are to talk coherently about it redirecting life drives and energies.[748] Thus Scheler's understanding of sublimation is based a fundamental antagonism and irreducibility of *Geist* and *Drang*, where *the redirection of vital forces toward spiritual ends is possible only because* of *the opposition between the two*.

Thus, when Scheler describes *Drang* in terms of its development as 'psychic-life', all of its stages represent the increasing complexity and sophistication of life as vital-force, where it is psychical aspects of *Drang* that *Geist* redirects through the ideational act.[749] Scheler's scheme was based in the contemporary science of his time, and it asserts that humans and non-human animals share in all four levels of psychic life. Thus, it reveals that 'psyche' is not equivalent to *Geist*. *Geist* is not a phenomenon of life and – unlike intelligence – it is not a product of evolution. *Geist* is what allows us to negate our urge and instincts, to repress life-drives – it is the source of our capacity for objectification. The human being can apprehend more than just 'thing' as an object: we can objectify our own physiological and psychological structures; we 'can think of empty space and time'; we can 'conceive of abstract number'.[750] In contrast, non-human animals have no more than 'vague

[747] Spader, *Scheler's Ethical Personalism*, p. 204.
[748] Kelly, *Structure and Diversity*, p. 200.
[749] Spader, *Scheler's Ethical Personalism*, p. 185.
[750] Stark, 'Editor's Introduction', in *The Nature of Sympathy*, pp. xxv–xxvii.

intuitions of quantity' which, by definition, are always embodied in concrete things' – they are thus always locked in a 'concrete reality' of their 'immediate present'.[751]

The human being – as bearer of *Geist* – can suspend the 'vital urge' that keeps other organisms fixed in their present, and fixed in their environments, i.e., we can say 'no' to life.[752] With the human being, there then appears within the natural world a hitherto absent or unobservable phenomenon whose function is 'self-consciousness', as opposed to the 'awareness' and lower level consciousness displayed previously by organic life. This principle is *Geist*, and it does not have its roots in psychic life, it is a principle that stands in opposition to the vital impulsion that underlies all life, *Drang*. The space that *Geist* opens between our psychical structures and our physiological instincts, allows for human self-consciousness to arise.[753]

Scheler's notion of *Geist* leads him to posit that human culture and spiritual output arise as a result of a re-direction of vital energies through the repression of instinctual forces and life drives rather than in service of them. This position rests on the insight that such an act of sublimation must have its origin *outside* of the drives rather than be simply reducible to a function of biological life. This conception of *Geist* has profound implications for our investigation into transhumanism and the idea of post-biological evolution. How can a principle that aims toward the transcendence of biological life through the redirection of vital energies arise from *within* biological life and have its origins in purely biological functions? How can the ultimate act of sublimation – *techno-scientific sublimation* – have its roots in biological life if it is biological life itself that is sublimated?

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[751] Stark, 'Editor's Introduction', in *The Nature of Sympathy*, pp. xxv–xxvii.
[752] Stark, 'Editor's Introduction', p. xxvii.
[753] Kelly, 'Introduction', in *The Human Place in the Cosmos*, pp. xiii–xiv.

3.2 THE HUMAN PLACE IN THE COSMOS

3.2.1THE BOUNDARY OF THE PSYCHIC *IS* THE BOUNDARY OF LIFE: THE BIO-PSYCHIC STRUCTURE OF THE WORLD

Scheler begins *The Human Place in the Cosmos* by asserting that the 'boundary of the psychic coincides with the boundary of life' – any attempt to elucidate and establish the place of the human being in the cosmos must consider first and foremost the 'bio-psychic structure of the world'.[754] Scheler point of departure is biological life and he states that living things have what he calls a 'double givenness'. As phenomena, living things can be perceived as 'objects for outside observers', while at the same time they possess an 'inwardness' which describes a 'mode of *being-for-themselves*' or an awareness of the self (*sie sich selber inne werden*).[755] This is an essential property of all living things, and as such it is an essential characteristic of organic life – it represents the 'primordial phenomenon of livings beings'.[756]

The 'lowest level' of psychic life is *Drang*. Scheler describes *Drang* as 'impulsion' – a 'steam' that pushes forward and up from the lowest level of life toward the highest stages of spiritual activities associated with *Geist*. By itself, *Drang* is 'devoid of consciousness, sensation, and representation'.[757] At this level of life 'feelings' and 'drives' are yet to be separated, and any sense of 'toward', or 'away from' that can be understood as a mode of impulsion lacks in 'direction and tendencies' – direction comes about *after* the drives have been freed from feelings. Even so, this most basic mode of impulsion is still to be differentiated from the impulsion underlying inorganic bodies, and what Scheler calls their

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[754] Scheler, *The Human Place in the Cosmos,* p. 7.
[755] Scheler, *The Human Place in the Cosmos,* p. 7.
[756] Scheler, *The Human Place in the Cosmos,* p. 7. It is the 'psychic aspect' of life such as autonomy and self-motion that Scheler sees as being the most closely linked to what would be considered 'objective phenomena of life', or any associated concepts relating to the 'structure and forms', of living 'processes'.
[757] Scheler, *The Human Place in the Cosmos,* p. 7.

'force-centres' or 'fields of force' – there is no 'inwardness' with respect to inorganic bodies. and.[758]

The appearance within *Drang* of the first level of 'psychic becoming' – represented by inwardness of organic life – is assigned to plants and vegetative life. Lacking sensation or memory, the only drives that plant life displays are 'a general impulsion towards growth and reproduction', i.e., 'impulsion toward reproduction and death'.[759] Nutrition, pollination, fertilization and other vital processes are not processes that the plant 'choses' to partake in.[760] As the lowest level of psychic life, plants are essentially 'directed' outward, in this sense they are 'ecstatic'. Because they lack a 'conscious' inner state and – being without the 'centre' that animals possess – they display a total absence of any of the related processes of inward reflexion that characterises such conscious inner states. This is what Scheler calls a 'reporting-back of organic states' or the 'reporting-back of life to itself'.[761]

Hence, we have a notion of consciousness as a '*becoming'* – a becoming, in and through a 'primitive re-flexion of sensations', or more accurately, on occasion of an 'occurring *resistance*'.[762] Scheler assert that 'all consciousness has its foundation in suffering, and all higher levels of consciousness have their foundation in increased suffering'.[763] This suffering is 'over and against original spontaneous movements', which are themselves the occasion of resistance.[764] Thus, consciousness begins first with the drives, but is directed upward toward the higher levels of psychic becoming.

Plants lack consciousness as such, and they display no 'wakefulness' in terms of stimulation and sensation. They do nevertheless, exhibit what Scheler calls the '*primordial phenomenon of expression*,' i.e., there is a specific 'physiognomy' to their internal states such

[758] Scheler, *The Human Place in the Cosmos,* p. 7. Scheler denotes the force centres of inorganic bodies as 'trans-conscious phantasmic images'.
[759] Scheler, *The Human Place in the Cosmos,* p. 8.
[760] Scheler, *The Human Place in the Cosmos,* p. 8.
[761] Scheler, *The Human Place in the Cosmos,* p. 9.
[762] Scheler, *The Human Place in the Cosmos,* p. 9.
[763] Scheler, *The Human Place in the Cosmos,* p. 9.
[764] Scheler, *The Human Place in the Cosmos,* p. 9.

as strength, abundance, deficiency etc., all of which can be understood as an expression of the primordial phenomenon of life.[765] Being hierarchically structured, the lowest level of life's 'inwardness' and impulsion are also discernible in animals and the human being at the subsequent stages of the development of psychic life.

The second level of psychic becoming is 'instinct'. At this stage, the defining character of impulsion is still undifferentiated and ecstatic, and is describable 'exclusively' in terms of the behaviour of living things – where 'behaviour' is understood as 'always the object of external observation', and hence subject to description, interpretation, and analysis.[766] For Scheler, behaviour should be conceived of as being 'psycho-physically indifferent', and as such, it is always the 'expression' of some internal state. All internal states directly or indirectly express themselves in behaviour, and because of this behaviour itself must be explained in a 'dual' fashion capable of incorporating both psychological and physiological considerations – without giving precedence or preference to either.

Hence, behaviour is *instinctive* if it displays the necessary characteristics of purposefulness which serves the 'whole' of the organism; if it displays adherence to 'fixed' and unchanging natural rhythms; if it is species typical, rather than individually developed reactions to recurring situations; if it describes reactions not shaped by the number of times an action is attempted; and if it is any rhythmically fixed activity that is triggered by sensation.[767]

Of central importance for Scheler is that *instincts always serve the species*. Instincts are 'already built into the morphogenesis of living beings', hence, an animal can only 'represent' and 'sense' what is *a priori* governed and determined through the relation its instincts have to its environment.[768] Instinctive behaviour is not the same as drive-

[765] Scheler, *The Human Place in the Cosmos,* pp. 9–10.
[766] Scheler, *The Human Place in the Cosmos,* p. 11.
[767] Scheler, *The Human Place in the Cosmos,* pp. 12–13.
[768] Scheler, *The Human Place in the Cosmos,* pp. 13–14.

conditioned behaviour displayed by humans, because drives can be re-directed to work against the good of the organism in a way that instincts simply won't function. As such, instinctive behaviour is more 'primitive' than the associative behaviour and – in terms of their relative genesis – it developed first.

Sophisticated and highly efficient instincts that have developed in non-human animals as a response to environmental considerations are not necessarily an indication of advanced levels of intelligence. This is the opposite to what is found in the human being where highly developed associative memory and intelligence show a correlative of instinctual deficiency.[769] In terms of *Drang*, instincts are environmentally directed and given in perception, and they are characterised by 'increases of specialization of impulsion and its qualities'.[770]

The third level of psychic becoming is displayed in the 'habitual' or associative behaviour that is derived from instinctive behaviour. Associated learning or memory is behaviour that is a modification of previous behaviour of the same type as part of a process that is directed by its usefulness to life – it is characterised by association, reproduction, and conditioned reflex. It is the conditioned reflex that forms the basis of associative memory and Scheler states that the 'laws of association' can be understood as a psychic analogy to that reflex.[771] The efficacy of the 'associative principle' – within the structure of the psychic world – corresponds to a disintegration of the instincts, and to a simultaneous dual-process of 'centralization' and 'mechanization' of organic life. This means that, depending on the effectiveness of the associative principle, the organic 'individual' becomes increasingly 'detached' from its species and increasingly unshackled from the rigid inflexibility and limited capacity for adaptability of lower-level instinctual behaviour.[772]

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[769] Scheler, *The Human Place in the Cosmos,* pp. 15–16.
[770] Scheler, *The Human Place in the Cosmos,* p. 16.
[771] Scheler, *The Human Place in the Cosmos,* pp. 16–17.
[772] Scheler, *The Human Place in the Cosmos,* p. 20.

The development of this associative principle means that an individual organism can potentially adjust to 'new situations' in a way that is not necessarily 'typical' of the species. At this level of psychic life, Scheler suggests that the individual ceases to be a 'passageway of reproduction', and the principle of association becomes an instrument of 'liberation' from instinct. This means that the move from the second to the third level of psychic life establishes an 'entirely new dimension of the enrichment of life' – this is observably as a 'disengagement' of drives from instincts.[773] Drives that are disengaged from instinctual rhythms in animals can become a 'self-determining source of pleasure', and this can be seen as a consequence of the development of an increasing associative intelligence.[774] Despite this, the associative principle remains a 'conservative' principle of 'rigidity and habit', when assessed relative to the next level of psychic life.[775]

The fourth level of psychic becoming is what Scheler calls 'organically bound practical intelligence'.[776] He defines 'intelligent' behaviour as the capacity of a living being to act 'meaningfully' in a situation that is defined within the parameters of a process of trial and error. The acts must be able to be performed 'over and against *new* situations' – situations that are not typical for the individual or for the species. If a situation requires that an individual overcome a task that is presented by the drives, the meaningful act must have an element of 'suddenness' to it and be enacted independently of the number of previous times the individual had the opportunity but failed to perform it.[777] This 'organically bound' intelligence in an individual is observable as either an 'inner or outer procedure', which serves the 'demands of its drives', and aims toward the 'satisfaction of its needs'.[778] For

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[773] Scheler, *The Human Place in the Cosmos,* p. 21.
[774] Scheler, *The Human Place in the Cosmos,* p. 21.
[775] Scheler, *The Human Place in the Cosmos,* p. 21.
[776] Scheler, *The Human Place in the Cosmos,* p. 21.
[777] Scheler, *The Human Place in the Cosmos,* p. 22.
[778] Scheler, *The Human Place in the Cosmos,* p. 22.

Scheler this intelligence is also understood as 'practical', because its 'final meaning always pertains to *actions* through which the organism addresses its drive-goal (or fails to do so)'.[779]

It is only with the human being that this same practical intelligence can also 'pertain to the service of spiritual goals' and elevate itself above the 'cunning' and 'cleverness' displayed by the higher animals who also possess such intelligence. [780] The psychic side of this behaviour involves the 'sudden *insight* into a *context of facts and values*', within a given environment or a novel context.[781] This is an insight into a 'state of affairs' that is based on a 'structure of relations', whose 'foundations' are only partly given in experience, and partly 'complemented in an anticipatory fashion in representation' i.e., in an instance of 'visual intuition' (*Anschauung*).[782] This kind of 'thinking' is not reproductive, rather it is 'productive', and can be characterised by an anticipation that is derived from the 'possession' of a 'set of facts', which had not previously been experienced.[783]

Organically-bound practical intelligence is the root-source for tool-use in animals. Human tool-use is also an extension of this capacity, but as Scheler points out – unlike other biological species – our practical intelligence can aim toward *spiritual* goals. Our modern technology has its roots in practical intelligence-based tool-use, so it too can be directed toward the achievement of spiritual goals.

Scheler differentiates between associative memory and practical intelligence in terms of the comprehension of a situation that is new not only for the species, but more importantly it is new for the individual involved. The 'objectively meaningful' behaviour that occurs, and the 'suddenness' that characterises it, mean that the application of practical intelligence involves what Scheler describes as an 'Aha' experience – a term he credits to Wolfgang Köhler, the German psychologist whose experiments with chimpanzees provided evidential

[779] Scheler, *The Human Place in the Cosmos,* p. 22.
[780] Scheler, *The Human Place in the Cosmos,* p. 22.
[781] Scheler, *The Human Place in the Cosmos,* p. 22.
[782] Scheler, *The Human Place in the Cosmos,* p. 22.
[783] Scheler, *The Human Place in the Cosmos,* p. 22.

support for this concept of practical intelligence.[784] The experiments in question involve tool use, so are of relevance, and deserve a brief description.

The chimps were placed in the kind of 'new' situations that Scheler refers to in terms of the necessary criteria for the determination of whether an animal has the capacity for practical intelligence. A variety of obstacles were set up between them and a 'drive-goal' – such as a piece of fruit. The experiments were set up in such a way that the animals would need to use practical intelligence to overcome these obstacles, and successfully complete (or fail in a meaningful way) the goal toward which their efforts were directed. For Scheler, the way the experiments played out showed that the chimp's abilities to overcome the obstacles in their way was not instinctual and not a product of associative memory or habitual behaviour. He indorsed Köhler's assessment that the results showed that the chimps were endowed with a simple *practical* intelligence.

Importantly, Scheler states that the obstacles were used by the chimps as 'things' – things that could be used to accomplish the task of getting the fruit. Accordingly, when a chimp 'aimed' towards the fruit or drive-goal, its drive-dynamics orientate it towards the obstacles in a way that they become potential 'tools'. Tools that could become – and then be used as – 'things to get the fruit'. Within this process Scheler says that the drive dynamics themselves are turned into an object which are extended into elements of the environment. The specific object that is utilised by the animal obtains a dynamic of 'functional value', by virtue of its being a tool. This functional value has a character of 'meaningful direction', toward the visually perceived goal, and the tool itself assumes a directedness toward the drive-goal in question. Scheler sees this as a 'displacement' of the drive impulse which is re-directed into external elements of the environment.[785]

[784] Scheler, *The Human Place in the Cosmos,* pp. 22–23.
[785] Scheler, *The Human Place in the Cosmos,* p. 24.

This 'restructuring' does not take place due to any conscious and reflective activity that the chimp performs, but Scheler still classifies it as 'true intelligence' and 'invention' – as opposed to simply instinct or habit. He claims this position is validated further by the observation of significant differences in the skill levels and amount of 'talent' that was displayed by individual chimps.[786]

Scheler develops the analysis by suggesting that the principles observed in these 'actions of choice', hold true for the act of choosing itself and the specific 'choices' that are made. The chimps are not just following a 'drive mechanism' and are not simply only motivated by whatever is momentarily predominant in the drives. Neither are they bound only to instinct, association, and reflexes. This insight allows Scheler to assert that animals have 'differentiated' impulses in the drives and – because they possess a 'unitary' nervous system – they have a drive 'centre' that is lacking in plants.[787]

While this might allow a certain extent of 'spontaneous' action or choice, it does not confer upon the animal the capacity for preference among values.[788] It is at this point that Scheler raises a decisive issue that must be addressed as part of his overall inquiry. If, as Scheler claims – and the Köhler experiments seem to show – the chimpanzee as a higher animal does in fact possess practical intelligence, is it nothing more than a matter of *degree* that characterises the difference between animals and humans? If after the positing of practical animal intelligence can there still be justification for the claim that there is an 'essential difference' between the human and non-human animals? The question is, outside the 'essential stages' of developing life presented, is there something entirely different in the human being – something which uniquely belongs to us, and which is not at all part of choice and of intelligence'?[789]

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[786] Scheler, *The Human Place in the Cosmos,* pp. 24–25.
[787] Scheler, *The Human Place in the Cosmos,* pp. 24–25.
[788] Scheler, *The Human Place in the Cosmos,* p. 25.
[789] Scheler, *The Human Place in the Cosmos,* p. 25.

Scheler notes that the answers given to this question are ‘most sharply divided’ amongst those who recognise a qualitative difference, and attribute intelligence and the capacity for choice solely to the human being while denying them to the animals, and those that reject any kind of ‘ultimate’ difference because of the intelligence that animals display. Adherents to both the Darwinian and Lamarckian schools belong in the latter category according to Scheler, and in their view they are united by the idea of the human being as *homo faber*.[790]

Obviously, Scheler rejects both positions and asserts that the essential character of the human being is ‘*far above* mere intelligence and the ability to make free choices’, and that ‘[o]ne could not reach this special place even by trying to imagine the capacities of intelligence and free choices as extending, by whatever measure of quantity, into the infinite’.[791] He goes on to say that whatever the ‘novel phenomenon’ which makes humans what they are is, it is not some ‘late addition’ to the psychic levels of impulsion, instinct, associative memory, intelligence and the capacity to make choices. The simple fact is that for Scheler, any such addition would necessarily belong to the ‘functions’ of the ‘psychic’ and vital ‘spheres’ which are the objects of biology and genetic psychology.[792] Hence, Scheler rejects Naturalism as an inadequate framework to properly grasp the nature of the human being and our relation to the Ground of the World.

The ‘novel phenomenon’, or ‘new principle’ that Scheler identifies as part of his essential concept of the human being must be, according to the logic of his argument, a principle that is ‘beyond’ what we understand – in the widest possible sense of the meaning – as ‘life’ [793] What makes the human being a human being, and determines an essential difference between us and all other life forms, cannot be some new ‘level’ of life for Scheler.

[790] Scheler, *The Human Place in the Cosmos,* pp. 25–26.
[791] Scheler, *The Human Place in the Cosmos,* p. 26.
[792] Scheler, *The Human Place in the Cosmos,* p. 26.
[793] Scheler, *The Human Place in the Cosmos,* p. 26.

Nor can it be a unique manifestation of life that is only evident in the human *psyche*. Thus, the principle in question must in essence be '*opposite anything we call life, including life in the human being'*.[794] Such a principle would constitute a 'genuinely new, essential fact' – one that cannot be reduced to the 'natural evolution' of life itself. Such a fact – if it is to be reducible to anything – must lead directly to 'the one ultimate Ground of all entities of which life happens to be one particular manifestation'.[795]

Scheler acknowledges that the ancient Greeks proclaimed the existence of such a principle as this and that they denoted it as 'reason'. He aspires to offer a more 'comprehensive' conception which encompasses and goes beyond the Greek idea. In addition to the 'thinking' of ideas, and the capacity for the 'intuition' of 'primordial phenomena' and 'essential contents', Scheler's concept is extended to include within it, a range of 'volitional and emotive' acts. Acts such as love, kindness, repentance, and awe, amongst others. This more comprehensive and much more loaded concept is *Geist*.

Scheler explicitly specifies that the centre of acts through which *Geist* appears within all finite spheres *is the human person*. The human person is a *centre of acts* that is differentiated from all *life's* functional centres.[796] This identification of the human person as the bearer of spirit is the cornerstone of Scheler's metaphysics and philosophical anthropology and he offers a clarification in terms of terminology by stating that the concept can be understood in terms of its manifestation in the 'specific functions of knowledge and kinds of knowledge' which *Geist* grants us.[797]

The defining features of a being with Geist, regardless of its psycho-physical makeup, is an '*existential detachment from organic being*', i.e., a 'freedom' and 'detachability' of its centre of existence, from the 'bondage' and 'pressure' of organic dependence on life, and

[794] Scheler, *The Human Place in the Cosmos,* p. 26.
[795] Scheler, *The Human Place in the Cosmos,* p. 26.
[796] Scheler, *The Human Place in the Cosmos,* p. 26.
[797] Scheler, *The Human Place in the Cosmos,* pp. 26–27.

everything that belongs to life. By necessity, this must also include an organism's own 'drive-related' intelligence.[798] Thus, a being with *Geist* is not tied to its drives and to its environment in the same way as ecstatically immersed organisms are. As such, Scheler says such a being is 'non-environmental' or 'world-open'. This means that – as bearer of *Geist* – such a being is able to rise above its basic given centres of 'resistance' and 'relation' to its habitat. This is a capacity that non-human animals – being ecstatically immersed in their environment – simply do not possess.[799] The human being can sublimate and redirect the energies of vital life toward spiritual ends in a way that is not possible for no-human animals – the human being can deny life and say *no* to the world!

3.2.2 SAYING NO TO THE WORLD: CONSCIOUNESS VS. SELF-CONSCIOUSNESS

Scheler states that a being with *Geist* turns its centres of resistance and relation into 'objects' in order to grasp the 'what' of all objects itself. This is done at a remove from the limitations that a system of 'vital' drives and functions imposes on this world of objects and its 'givenness'. Therefore *Geist* is '*matter-of-factness'* (*Sachlichkeit*), and this is determinable by 'what' things themselves are. It is only a living being that 'has' *Geist*, who is 'able to complete such matters-of-factness'.[800] To be a 'bearer' of *Geist* means that a being's 'principle intercourse' with reality itself must be structured – in comparison to animals – in a way that is 'dynamically *reversed'*.[801]

This reversal must be understood in terms of the fact that what lies beyond the drives and instincts of a non-human animal is not 'given' to them in the same way as it is to the human being. The animals' drive-goal is given only as a centre of resistance to desires or

[798] Scheler, *The Human Place in the Cosmos,* p. 27.
[799] Scheler, *The Human Place in the Cosmos,* p. 27.
[800] Scheler, *The Human Place in the Cosmos,* p. 27.
[801] Scheler, *The Human Place in the Cosmos,* p. 27.

repulsions in a biological sense, and is situated exclusively *within* the 'structure' of its specific environment. This environmental structure is 'fixated' in the 'physiological peculiarity' of the animal in a way that dovetails functionally with its 'unity of drive and sense structures' – this finds expression and form in the unique 'morphological structure' of the animal in question. What this means is that everything an animal engages with and perceives in any way within that environment is 'securely embedded' within the 'frame' and 'boundary' of the immediate environmental confines.[802] Non-human animals are bound to their environments in a way that humans – as bearers of *Geist* – are not.

Non-human animal behaviour involves a direct two way mediation between the animal itself and its drive-goal. A being with *Geist* behaves differently because their behaviour is conditioned by the 'pure whatness' of a given 'complex of intuitions and representations' – a complex that has coalesced into an 'object' that is more than just a drive-goal.[803] Scheler states that – in principle – this happens independently of the 'physiological and psychic states' of the being in question. It also happens independently of the drive impulses and of the 'sensuous' exterior. The implication of this is that it does not have to be a human being that is a bearer of *Geist*.

What Scheler is describing is an act of 'free-inhibition', or a 'de-inhibition', of drive impulses. For the human being, this is an act which starts in the centre of the person and results in an experience of the 'objectivity' (*Gegenständlichkeit*) of a thing – an experience within which the intrinsic objective value of the thing can be intuited.[804] This transformation takes the form of 'world-openness' according to Scheler.[805]

The experience of being world-open represents a 'shedding' of the simple two way mediated structure between animal and environment. As a bearer of *Geist*, this simple

[802] Scheler, *The Human Place in the Cosmos,* p. 27.
[803] Scheler, *The Human Place in the Cosmos,* p. 28.
[804] Scheler, *The Human Place in the Cosmos,* p. 28.
[805] Scheler, *The Human Place in the Cosmos,* p. 28.

mediation structure is replaced with a structure that extends to and from them and their world (rather than their environment), not as a closed loop that is confined by a fixed boundary (as in the case of the animals environmental confines), but in such a way that the world opens up through the act of objectification towards a horizon beyond the fixed limits of the environmental sphere.

Human being as human *becoming* is 'elevated' to the level of world-openness by virtue of *Geist.*[806] In contrast, non-human animals are ecstatically bound and delimited by their environments – it is everywhere they go (Scheler uses the metaphor of a snail with its shell). Without the capacity for world-openness the animal has no 'distance' from their environmental sphere – lacking the capacity for objectification, the non-human animal cannot transform its environment into a world – or a 'symbol of the world' – as human beings can. Hence, the human being, as bearer of *Geist*, is a being that Scheler says is free in 'unlimited degrees'.[807]

Thus, there is an essential difference between non-human animals and human beings in as far as non-human animals are incapable of transforming the resistance of reality and its effects on the drives into 'objects' and this reveals that the 'being of objects' is the most 'formal category of the logical side of spirit'.[808] A non-human animal is too immersed in its organic context of its environment to grasp its reality as an object. This ecstatic immersion is not as 'complete' as it is for plant life, and there is some separation of sensory and motor systems coupled with a capacity to report back sensory data to its centre. But while the animal does have a 'lived body schema', its behaviour is essentially ecstatic with regard to its environment – even when this behaviour is at the level of practical intelligence. A non-human animal's practical intelligence always remains attached to the organism's practical activities and drives. A human being on the other hand has the capacity to experience a 'spiritual act'

[806] Scheler, *The Human Place in the Cosmos,* p. 28.
[807] Scheler, *The Human Place in the Cosmos,* p. 28.
[808] Scheler, *The Human Place in the Cosmos,* p. 29.

that describes a 'second level' act of reflection or act of 'ingathering' (*Sammlung*). This act of reflection is *directed inwards toward the self* and is experienced as a 'consciousness' of the 'spiritual' act-centre itself, i.e., it is experienced as *self*-consciousness.[809]

Simply put, a plant lacks consciousness, a non-human animal is consciousness but lacks self-consciousness, and a human is self-conscious and hence qualitatively different from other non-human animals. Because non-human animals are not self-reflectively aware of themselves, they have no 'power' over themselves in the way that human beings do – they do not 'own' themselves in the same manner as we do. This further highlights the essential difference between human and non-human animal and the uniqueness of the human capacity to 'objectify original resistance in drives'.[810]

The experience of the human being 'becoming conscious of itself' describes a 'bending back upon' and 'concentration on' the very experience of existence itself. This is an act of self-reflection which is made possible by *Geist* which facilitates the development of a further uniquely human capacity. As well as being able to 'broaden' our environment into a world and objectify the experience of resistance, we can also objectify our own 'physiological and psychic' nature and every single vital function of it.[811]

Scheler relates the 'inwardness' that is characteristic of the human as a bearer of *Geist* to the existence and mode of appearance of other phenomena. He states that there are four essential levels in which all 'existing things' appear with reference to self-being:[812]

1. The Inorganic: Inorganic entities have neither an inwardness nor a self; There is no 'ontic centre' with respect to inorganic entities, and hence no medium or environment; Anything we might understand as a 'unity' in the inorganic world of

[809] Scheler, *The Human Place in the Cosmos,* p. 29.
[810] Scheler, *The Human Place in the Cosmos,* p. 29.
[811] Scheler, *The Human Place in the Cosmos,* p. 29.
[812] Scheler, *The Human Place in the Cosmos,* p. 30.

material objects, is wholly dependent on our ability to divide bodies either in reality or in abstraction; Every inorganic unity is a unity only relative to specific laws of effects they have on other bodies; In contrast, a living body is always an 'ontic centre' that forms its own spatiotemporal unity and individuality, which is not dependent on an externally imposed synthesis; A living being limits itself through individuality and cannot be 'divided' without destroying both its nature and its existence.

2. Plant Life: A plant's being has both impulsion and a medium, yet it lacks a centre to which it can report back data to.
3. Non-Human Animals: Non-human animals have sensation; consciousness; and a centre to which changing' organic states can be reported back to. This means that an animal is 'given to itself a second time'.
4. Human. As a bearer of *Geist* – and by virtue of that capacity – the human being is given to themselves a 'third time' in *self-consciousness*; and in the act of objectification of their own psychic processes; and in terms of their own 'sensory and motor system'. This threefold structure conceives within it the 'person' of the human being as the centre 'above the polarization of organism and environment'.[813]

This four step process leads Scheler to the conclusion that it describes a 'stepladder' from which 'the Ground of Being in the structure of the cosmos keeps turning back on itself more and more in order to become aware of itself on ever-higher levels and in ever-new dimensions, so that in the end, the Ground of Being *entirely* has and takes hold of itself in the human being'.[814] The process of Being bending back on itself is the same dynamic of self-consciousness bending back onto itself in progressive concentration on, and reflective awareness of, its own existence as is displayed by the human being. Thus, Scheler establishes

[813] Scheler, *The Human Place in the Cosmos,* p. 30.
[814] Scheler, *The Human Place in the Cosmos,* pp. 30–31.

an analogy between macro and micro level evolutionary dynamics, which is ultimately an articulation of the concept of the human being as a microcosm.

It is in and through this process, that the human assumes their structure. A structure which describes a process of 'givenness' to themselves, and which is revealed in and through the ability to objectify their environment, their psychic and physical being, and their mutual relations. As part of this, Scheler holds that it is only the human being that possesses a fully developed category of thing and substance, and it is only the human being who possess 'unified space', as a '*fixed form ahead* of individual things and their perception'.[815]

Non-human animals lack the definitively human self-centredness – a trait that works to unify all sense data with the drive impulses into a single 'world' that can be, and is, ordered by 'essences'. Hence, animals have no 'world-space', that can persist as a stable background independent of their movements. It is only the human being that has the 'empty forms' of time and space into which they find themselves and within which they encounter things and events.[816] Central to this is Scheler's assertion that it is only in a being who possesses *Geist* that these 'empty forms' can occur, for *it is only in a being with Geist that the lack of satisfaction of its drives is always more than their satisfaction.*[817]

This reveals that the roots of our intuition of space and time – which precede all external sensations – reside in organic spontaneous possibilities of movement and action. The transition from animal consciousness to human self-consciousness represents a complete reversal from 'full' space and time, to 'empty' space and time. Non-human animals cannot separate the empty forms of time and space from the contents of their environment. In the same way, that they cannot separate 'number' from a plurality of things, and are always 'completely absorbed in the concrete reality of each and any of their present moments'.[818]

[815] Scheler, *The Human Place in the Cosmos,* p. 31.
[816] Scheler, *The Human Place in the Cosmos,* p. 31.
[817] Scheler, *The Human Place in the Cosmos,* p. 32.
[818] Scheler, *The Human Place in the Cosmos,* p. 32.

Lacking a world-space, the non-human animal cannot turn its 'lived body and its movements' into an object, the movements of which can be incorporated as a variable in a broader and contextualising spatial overview of its environment and its location in it. Non-human animals only have changing 'environmental spaces' – spaces that change with the animal's movement. These spaces cannot be coordinated in terms of a unified understanding of its environment that can grasped independently of where it happens to be in each moment.[819]

Scheler sees the human ability to do this as the point of departure for the natural sciences. The human being – from their 'accidental place in the cosmos' – begins to grasp themselves and the whole of their 'physical and psychic constitution' as if it were an 'object placed among other objects in causal interconnectedness'.[820] Through this, the human can build an image of the world where objects and laws are independent of human psycho-physical biological structures, human sense perception, and human concerns. A world where objects and laws remain constant irrespective of any change that may occur in the being of the human being.

As a bearer of *Geist*, the human being can 'rise above' both the world, and their own experience. It is only the human person who can 'soar above' their status as a living entity and – from a centre beyond the spatio-temporal world – turn 'everything', including themselves, into an object of knowledge.[821] Without being limited by a naturalistic ontology, Scheler is able to posit that the centre from which this act is carried out, and from where both the world and the lived body are objectified, cannot itself be a constituent 'part' of the world – it cannot itself be locatable within the confines of time and space. The location of this centre of acts? Scheler says it can of course 'only lie in the *supreme Ground of Being* itself'.[822]

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[819] Scheler, *The Human Place in the Cosmos,* p. 32.
[820] Scheler, *The Human Place in the Cosmos,* p. 33.
[821] Scheler, *The Human Place in the Cosmos,* p. 33.
[822] Scheler, *The Human Place in the Cosmos,* p. 33.

CONCLUSION

Scheler provides us with a comprehensive metaphysical picture of the human being which describes how we relate to other species and what our place in the world of things is. The most important aspect of this is the constant metaphysical tension that co-constitutes *Geist* and *Drang*. This tension infuses us, and it infuses the cosmos – it is both an anthropological and a cosmological *dual-aspect* – defined in and through a dynamic process of becoming through the interplay between the *real* and the *ideal*. This dynamic movement describes both the becoming human being and the becoming cosmos, thus it describes a *process* ontology, not a *substance* ontology. This as we shall see is an important move.

Likewise, the distinction between consciousness and self-consciousness is key to Scheler's understanding of the human being. It is this distinction that marks us as different to other biological species. It is also this distinction which capturers the nature of the interplay between the real and the ideal, and the recursively structured process of coming to be self-aware. This is a *metaphysical* distinction which is definitive of both the human being and the Ground of Being itself. Thus, the consciousness vs. self-consciousness is a distinction that amplifies the becoming of the human being to cosmological proportions. And it is for this reason that it must now be the focus of our inquiry.

CHAPTER 4: THE HUMAN BEING IS NOT A THING: AGAINST SUBSTANCE ONTOLOGY

INDTRODUCTION

Scheler recognises Kant as the first philosopher to raise *Geist* over *psyche*, and deny that *Geist* simply consists of a group of functions of a *soul-substance*. He develops this position further by positing another essential feature: as the 'only being which cannot be *objectified*' – Geist – is '*pure actuality*', and it exists only in '*freely carrying out its acts*'.[823] Following this, the person – as a centre of *Geist* – cannot be objectified, nor is the person a 'thinglike' being. Rather, the human person must be understood as a 'constantly self-executing ordered structure of acts', who is only 'in' their acts and exists only 'through' those acts.[824]

Psychic phenomena do not execute acts 'by themselves', rather a psychic being is a series of events *in* time. In principle, this is observable from another person's centre of *Geist*, but only objectifiable in the limited terms of 'internal perception observation'.[825] Whatever is psychic can be 'objectified', but the 'intention' behind ~~the~~ the psychic act – the act of *Geist* itself – cannot. Other persons – *as* persons – are not objectifiable.[826] Thus, the human being can be understood as a *thing* or *substance*.

4.1 THE CONCSIOUSNESS VS. SELF-CONSCIOUNESS DISTINCTION

4.1.1 IS SELF-CONCIOUNESS A UNIQUELY HUMAN TRAIT?

To assess Scheler's claim that *Geist* is a principle that sets us apart from other biological species, we must do a couple of things: First, we need to ask is he correct to focus on the

[823] Scheler, *The Human Place in the Cosmos,* p. 34.
[824] Scheler, *The Human Place in the Cosmos,* p. 34.
[825] Scheler, *The Human Place in the Cosmos,* p. 34.
[826] Scheler, *The Human Place in the Cosmos,* p. 34.

distinction between consciousness and self-consciousness; Second, we need to find a way to determine if that distinction holds, and we are in fact uniquely characterised – as a biological species – by virtue of our self-consciousness.

To begin, I argue that Scheler is correct to focus on the consciousness vs. self-consciousness distinction. Obviously, consciousness is the heart of the entire investigation – underlying everything is the metaphysical issue of how mind and matter are related. The entire context is framed by the fact that we can even ask in the first place 'why there is something rather than nothing'? Whatever Being is, whatever the cosmos is, we can ask about it. Not only can we ask about it, we are aware of the fact that we are asking about it. Thus, the enquiry into Being is a *recursive process* – with the human being, evolution has become a self-referential preferential process. The consciousness vs. self-consciousness distinction cuts to the heart of the matter.

Saying that, it is also necessary to recognise that the 'self' is a notoriously slippery concept which is very hard to nail down. It resists easy definition, is not readily locatable, and can sometimes seem little more than a nebulous abstraction. Despite this problem, the self is a persistent philosophical concern and central to this entire debate surrounding post-biology. Especially if we take into account that the idea we currently have of ourselves – our *self-image* – now includes the fact that evolution is something we can attempt to direct and plan, rather than simply the outcome of some blind and random process.

Thus, at this point we must recognise a distinction between consciousness *per se* or awareness, and self-consciousness or self-reflective awareness. Human consciousness is not simply perceptual awareness of an external environment – we perceive and encounter the world *as* the world, we perceive and encounter things *as* the things they are. We can abstract from the particular to the universal and recognise things in terms of type and categories. We can also take the step of categorising according to type through the designation of names for the things we perceive and – just as importantly – for things we simply imagine. Once we name something – be it physically-real or imagined – it acquires conceptual content.[827] The imagined object can become an intersubjective phenomenon as a shared idea, and the physically-real object becomes partly an ideal construct, which is then both *perceived in* and *produced through*, our encounter with it. The idea that then accompanies the physically-real object – once it has acquired conceptual content – can also be intersubjective in nature.

An encounter with an object-in-the-world is – for us – experienced from a first-person subjective perspective. This perspective is one which is characterised by the 'subject' being perceptually aware of the 'object' encountered, while simultaneously having the experience of being self-reflectively aware of that perceptual awareness. Likewise, when we have an idea of something or imagine something, there is an accompanying self-reflective awareness of the imaginative or ideational nature of the process involved. It isn't necessary at this stage to underpin this with a fully developed theory of mind or consciousness – or indeed, a theory of the self – rather, it suffices to simply try to describe the phenomenon of self-reflective consciousness in such a way as to contrast it with what can be described as simple 'awareness'.

By doing this we can attempt look at human consciousness holistically and in a way that understands it as a constituent part of a larger system that includes both physically-real and ideal components. We can do this without having to say that it is a different type of 'thing' than the physical parts of the system, while accepting that they may exhibit different properties. Again, at this stage we don't have to know how exactly consciousness and the

[827] Hence, we can argue that there is no such thing as a concept in and of itself, i.e., a concept is always a labour of construction – the product of abstract reflection. The idea that philosophy itself can be understood as the production of concepts was a central theme for Giles Deleuze. See, Giles Deleuze, *Difference and Repetition*, trans. by Paul Patton (Bloomsbury Academic: London, 2016); Bento Prado Jr, 'The Plane of Immanence and Life', in *Introduction to the Philosophy of Giles Deleuze*, ed. by Jean Kalfa (London: Continuum, 1999), p. 10; Daniel smith and Paul Protevi, 'Giles Deleuze', *Stanford Encyclopedia of Philosophy* (2018) < https://plato.stanford.edu/entries/deleuze/> [accessed 25th October 2021].

physical parts and mechanisms of a system interact, but this manoeuvrer allows us to move away from the idea of a substance dualism.

The issue is clearly one of reduction, and following Scheler's distinction between consciousness and self-consciousness (as the defining feature of *Geist*), we can approach it in terms of the contrast between human and non-human consciousness. Think for example of a pet dog or a pet cat. Taken as a unity, they have a physical biological body which is amenable to measurement and categorisation, while also displaying obvious conscious activity and individual personalities, traits, and characteristics which are not as easily quantified, but nonetheless appear to be observable. Without fully understanding the underlying mechanisms, nor the exact nature of the relation between the two, we can be certain enough that the animal's consciousness is in some way related to, and to some or other degree dependent on, the functions of their physical brain.

This also applies to our own consciousness. For example, the brain can be damaged due to some injury or other, and while we may survive the trauma and continue to live, there can easily be a significant reduction in cognitive abilities and a noticeable change in personality traits.[828] So, in both the example of the human and the non-human animal, we have a living biological system which clearly and observably displays consciousness and personality which are intrinsically linked to the workings of the physical brain. But, if we are to attempt to establish that there is a distinction between consciousness and self-consciousness, we must ask is the dog or the cat *self*-conscious? Obviously, this is harder to ascertain than simply asking are they conscious, indeed, even with respect to humans, there is no consensus on the issue of how to recognise, measure, or even define self-consciousness.

[828] The link between physical brain function and personality has been studied extensively in humans. See, Erin M. Warriner and Diana Velikonja, 'Psychiatric Disturbances After Traumatic Brain Injury: Neurobehavioral and Personality Changes', *Current Psychiatry Reports*, 8 (2006), 73–80; Jeffrey Edwin Max, Brigitte Anna Marie Robertson and Amy E Lansing, 'The Phenomenology of Personality Change Due to Traumatic Brain Injury in Children and Adolescents', *The Journal of Neuropsychiatry and Clinical Neurosciences*, 13/2 (2001), 161–170 <https://neuro.psychiatryonline.org/doi/10.1176/jnp.13.2.161> [accessed 29th September 2021].

First off, are non-human animals self-conscious in a comparable way to the human being? Scheler clearly distinguishes between the human being – as a bearer of *Geist* – and other biological species through the consciousness vs. self-consciousness distinction. Is he correct to do this? What does it mean for his overall scheme if it can be shown that non-human animals are in fact self-conscious?

One of the reasons I believe Scheler is correct to focus on the consciousness vs. self-consciousness distinction is that other biological species are clearly conscious, it makes no sense to deny this.[829] The more we learn about the 'animal mind', the more we realise that non-human animals are more cognitively developed and emotionally sophisticated than we would have once given them credit for. The cognitive capacities that we are now willing to attribute to animals are in general far greater than in Scheler's day. Abilities that we clearly recognise and identify with, are now much more readily acknowledged in non-human species. Two major lines of demarcation have been severely challenged in the intervening years: the notion that it is our minds that make us unique among biological species; and the idea that tool-use sets us apart from all other species. Both of these issues will need to be addressed. Tool-use will be addressed in the next chapter, for now we will look at the question of animal self-consciousness.

One established way of trying to assess how self-aware animals are is the Mirror Self-Recognition (MSR) test which was developed by psychologist Gordon Gallup Jr in 1970. The MSR was an attempt to construct an experimental test capable of measuring self-awareness through self-recognition, and it has been used to assess a variety of different animal

[829] See, Kirstin Andrews, *The Animal Mind: An Introduction to the Philosophy of Animal Cognition* (London/New York: Routledge, 2015); Crickette M. Sanz, Josep Call, and Christophe Boesch, eds., *Tool Use in Animals: Cognition and Ecology* (Cambridge: Cambridge University Press, 2013); Clive D. L. Wynne and Monique A. R. Udell, *Animal Cognition: Evolution Behavior and Cognition* (Basingstoke: Palgrave Macmillan, 2013).

species.[830] Humans generally pass the test as toddlers, but apart from us, only a select few animals have passed.

Despite the intriguing nature and impact of the test, it is not universally acknowledged as valid. There are a number of controversial issues associated with it in terms of how specific tests are designed, what constitutes a successful pass, and whether passing actually indicates self-aware cognition or simply problem solving. Because failing the test does not prove lack of cognition it is ultimately still a matter of some contention what the test actually proves.[831]

Even if the test does indeed prove an animal is self-aware, I feel an important distinction still needs to be made between self-awareness and self-reflective awareness. If an animal recognises itself in the mirror and they are aware of themselves, this still does not mean that they are aware of the fact that they are aware of themselves. Nor does it mean that they can reflect upon that awareness in an abstract manner. While this may indeed indicate different capacities and complexities in terms of cognitive ability, it still does not indicate the self-consciousness that humans display in our ability for self-reflection and abstraction.

Human consciousness, *as* self-consciousness, displays an ideal or conceptual component and is experienced in such a way that external objects that we encounter perceptually are accompanied by an associated idea of *what* that thing is. In other words, as Scheler points out, we can distinguish between essence and existence. We can engage perceptually with the object from a subjective perspective and conceptually engage with the 'idea' of it from a subjective perspective also. Human self-consciousness means that we can be aware of something and – at the same time – be self-reflectively aware that we are aware

[830] Gordon G. Gallup Jr., 'Chimpanzees: Self-Recognition', *Science*, 167/3914 (197), 86–87 <https://www.researchgate.net/publication/235231776_Chimpanzees_Self-Recognition> [accessed 29th September 2021].
[831] See, Elizabeth Preston, 'A 'Self-Aware' Fish Raises Doubts About A Cognitive Test', *Quanta Magazine*, <https://www.quantamagazine.org/a-self-aware-fish-raises-doubts-about-a-cognitive-test-20181212/> [accessed 29th September 2021]; Michael D. Breed and Janice Moore, *Animal Behaviour*, (London: Academic Press, 2011), pp. 151–182.

of it. This works for both a physically real object and an imagined object, concept, or idea – I can be aware of a concept and simultaneously self-reflectively aware that I am aware of it.

Hence, I can look at myself in the mirror and recognise myself in such a way that I am self-reflectively aware that I *can* recognise myself in the mirror – not just that I *do* recognise myself in the mirror. Thus, self-reflective awareness reveals a capacity for abstraction – when I see myself in the mirror I am self-reflectively aware that I can recognise myself conceptually *as* me. Similarly, when I imagine myself doing or saying something or imagine myself in a fictitious context, the self that I recognise is not tied to a physical reflection that I have encountered perceptually. The self I can recognise can also be imagined and encountered conceptually as an *idea* of myself rather than a reflection of myself.

There is nothing in the MSR test that indicates that animals who display *perceptual* self-awareness can achieve this type of *conceptual* self-reflective awareness. There does not appear to be any obvious way to tell if – and to what degree – they have an idea of themselves in a sense that might be similar to the way that we do. Even if an animal recognises itself in the mirror, there doesn't seem to be any indication that they have an imagined idea of the self – a constructed 'self-image' – in the same way that we do.

Non-human animals are obviously conscious, they can be self-aware and pass a self-recognition test, but this does not mean that they are self-reflectively aware of that self-awareness and, as such, there is nothing to indicate that they are *self*-conscious in the way that humans are so as to allow them to construct an ideal or mental picture of themselves in the way that we can. While we can't know what the conscious experience of other animals is like, there is nothing to indicate that they have an 'idea' of themselves or a self-image of themselves in a similar way to us.

This is an important distinction because it gives us our point of entry in terms of how we approach the question of consciousness. Again, we don't have to fully understand or be able to explain the exact relationship between the mental and the physical, we only have to recognise that the distinction between consciousness and self-consciousness reveals something new in the overall system. I believe that the best approach to this is to see this distinction in terms of *emergence* and *complexity*. It is often argued – particularly with respect to consciousness – that when considering a physical system, the whole seems to be more than simply the sum of its parts. Increasing complexity within a system can generate new and unexpected emergent properties and qualities that are not fully explainable to the properties of the system's constituent parts.[832] This is why I believe a move beyond reductionism is necessary. A reductionist approach is ill-equipped to accommodate the emergence of novelty in the system and will struggle to adequately explain how associated 'higher-level' emergent properties can be explained exclusively in terms of the properties of the systems 'lower-level' constituents. Thus, Scheler makes an important distinction when he highlights the difference between consciousness and self-consciousness as it describes the emergence of genuine novelty and an overall increase in complexity for the system itself. This holds whether we define the system as delimited by the human being and human consciousness, or as extending to the cosmos and everything in it.

4.1.2 EVOLUTION IS A SELF–REFERENTIAL PROCESS

How does consciousness relate to the physical universe? How does consciousness 'emerge' from inert matter? How does inert matter relate to organic matter? Scheler offers an answer to these questions, but is his account satisfactory? His metaphysical scheme is constructed to address these very issues, but is it relevant today? His metaphysics has already been described as 'complex' and 'diffuse' and 'misbegotten'. And of course, we should recall that

[832] Paul Davis, 'Preface', in *The Re-Emergence of Emergence: The Emergent Hypothesis form Science to Religion*, ed. by Philip Clayton and Paul Davis (Oxford: Oxford University Press, 2006), pp. ix–xi.

we critiqued transhumanism for its inherent contradictions and implicit dualism. Thus, there is still the charge of dualism that Scheler himself must answer. *Geist* and *Drang* are explicitly dualistic to some degree or other – problematically so for a lot of commentators. Ultimately, these issues will need to be assessed in terms of reductionism. The question is whether or not consciousness is reducible to – and fully explainable by – the causally determined laws of physics?

This relates directly to Scheler's most fundamental insight concerning *Geist* as a metaphysical principle. The human being can say *No* to the world, we can deny life itself, and sacrifice it for the sake of ideal ends. How is this possible? How can this be explainable strictly through recourse to principles inherent to, and exclusively intrinsic, to life itself? What is the source of this capacity to deny life? It must be a principle that is in some way outside, oppositional, or at the very least not *reducible* to physics of life. Thus, Scheler gives us the concept of *Geist*, reducible only to the ground of ultimate reality if it is reducible to anything, and posits it in opposition to *Drang*, as the principle that underlies life, both *organic* and *inorganic* material existence. Two seemingly *dualistic* principles – identifiable on both the macro-level as fundamental ontological constituents of the cosmos, and on the micro-level as the defining characteristic of the human being when compared to other non-human animals.

The identification of the dual-aspect that characterises and defines the human being and its significance for the project of Philosophical Anthropology, coupled with the persistence of the dualism problem within both paradigms of transhumanism and posthumanism, reveals that – across the board and on every level – the underlying question is always the nature of the relationship between mind and matter, or to employ our Schelerian terminology, *Geist* (<u>M</u>ind) and *Drang* (<u>M</u>atter). This is of particular relevance when we consider the central concerns of silicone-based conceptions of posthumanity associated with the concept of the Singularity. Upon closer inspection, it appears that the metaphysics of uploading and silicone-based conceptions of post-humanity has two distinct elements – both of which relate to the consciousness vs. self-consciousness distinction:

On the micro-level, the point in question is one that concerns the issue of identity and change over time. This issue has a tendency to be expressed within transhumanism as a metaphysics of salvation, i.e., it refers to the equivalence of the religious promise of an afterlife, and the idea that it is possible to personally survive death – without the inconvenience of actually dying. Of course, this is not articulated in explicitly 'religious' terms, rather it is an eschatology that is informed by, and given coherence through, the fact of evolution and the promise of technology – an eschatology where it is the metaphor of mechanism, not religion, that defines the horizon of possibility. In a nutshell, the question is this: can you exist – *as* you – in a machine?[833]

On the macro-level, the metaphysics also concern change, but there is less of need to address the issue of identity over time. The macro-level metaphysics concern the issue of whether or not non-biological systems can be conscious in the first place, and how evolution change can be biological, technological, and cosmological in nature. Thus there is a broader perspective required – one which can view things as a totality which incorporates – rather than differentiates – a wide range of (potentially) ontologically distinct phenomena.[834] Understood as a totality, the cosmos is first and foremost an evolving physical system. But it is an evolving physical system which includes life – self-conscious life. Hence, on the macro-level, the most pertinent issue is still the relationship between Mind and Matter – but instead of asking how our mind and our body relate with respect to personal identity, first person subjective experience, and free will, the inquiry is framed in more general terms, and is

[833] Obviously, this begs the follow up question: how do we define 'you'?

[834] The value of understanding things in terms of systems is apparent in this regard, as a systems approach allows for a focus on process and relation which – in comparison to substance and parts – can better accommodate the philosophical problem of change over time.

concerned with how consciousness relates in an evolutionary sense to the cosmos, to biology, and to technology. As such, the issue is one of evolutionary change and the fact that it displays deeply intwined and interconnecting aspects of a biological, technological, and cosmological nature – which, as we have just said, is now a *self*-referential process.

As stated, the big question is – in the broadest possible terms – how do we understand the relationship between Mind and Matter. Materialism and mechanism seem to offer confidence and precision in terms of physical Matter, but struggle to accommodate Mind. The natural sciences recoil from superstition, speculation, and dualism, yet the hard problem of consciousness remains.[835] This does not mean we must reject the findings of the natural sciences or developments in biotechnology and biological engineering. As Fischer points out, Philosophical Anthropology actively engages with the findings of biology and begins by adopting the biologist's point of view.

These issues can be assessed specifically in terms of technology and how it mediates our engagement with the fundamental principles that underlie them. In the same way that we must take biology seriously, we must also take transhumanism seriously. We can begin by trying to seriously engage with the engineer's perspective – both in terms of the mechanical and the biological. Fischer identified the point of departure for Philosophical Anthropology was the 'factual existence of life', which for the human entails biological embodiment. This can be expanded to incorporate the growing reality – on both a physical and conceptual level – of our biological/technological embodiment. Hence, what transhumanism presents as the basic facts of the human condition should be considered to have some merit. We are subject to evolutionary processes and there is no reason to assume evolution stops with the human

[835] See, David J. Chalmers, *The Conscious Mind: In Search of Fundamental Theory* (Oxford: Oxford University Press, 1996); Oliver Burkeman, 'Why Can't the World's Greatest Mind Solve the Mystery of Consciousness', The Guardian (2015) <https://www.theguardian.com/science/2015/jan/21/-sp-why-cant-worlds-greatest-minds-solve-mystery-consciousness> [accessed 5th January 2022]. Chalmers describes the 'easy' problems of consciousness as issues associated with such questions as how the brain processes information and stimulation from our environments, how we integrate information and describe internal states. To address these issues is not to address the 'hard' problem of consciousness – this he says is the question of why cognitive processing and brain functions are 'accompanied by an experienced inner life'. *The Conscious Mind*, pp. xi–xii.

being. Being aware of this, it is more than likely the case that the human being does in fact represent a unique evolutionary juncture as the first biological species to try and assume control of their evolutionary trajectory, regardless of whether or not this aligns with the ideology and details of transhumanism's predictions, assumptions, and projections. As such, the enquiry can be conducted on both the macro and the micro-level, within a framework of Philosophical Anthropology.

While the important macro-level issues are obviously less subjective in nature than the central micro-level concerns, the above reveals that the concept of self is still of relevance. If we take into consideration that our point of departure is the fact that – with the human being – evolution has now become a self-referential and self-directed process, then the concept of self can indeed have cosmological implications. This dynamic of self-reference is a key ingredient of both Scheler's metaphysics and Kurzweil's concept of the Singularity. The end-point of the two are strikingly similar. For Scheler, it is a matter of the Ground of Being becoming aware of itself, while for Kurzweil intelligence infuses the matter of the universe to a sufficient degree that it 'wakes up'.

We have just described how Scheler envisions this process, and it hinges on the concept of *Geist* as a spiritual principle that is not reducible to the laws of physics. Without such a spiritual principle, is Kurzweil's metaphysical scheme even coherent? Both metaphysical models hinge upon a process of becoming or *self-referential transition*. The idea of a physical system transitioning to a state of self-awareness is central to the speculation concerning artificial intelligence and the possibility of machine super-intelligence. Self-awareness within a system tends to be the assumed criteria for the possibility of strong artificial intelligence. It also tends to mark the point where it is imagined that artificial systems may be considered legitimately to display agency. The centrality of the self-referential dynamic to this issue means that the decision to take a reductionist or a non-reductionist approach to it, has implications which range from the ethical to the cosmological.

Just as the dual-aspect of the human being encompasses both the personal and the cosmological, so too does the dualism problem present itself when we consider both personal identity and how consciousness fits within an evolving cosmos. It should be clear that transhumanism focuses on both the notion of personal salvation and articulating an ontological position which elucidates an underlying metaphysics that is compatible with such. We need to establish the centrality of the notion of the self for the entire investigation, and show how our understanding of the self will help to determine how we can come to grips with the implications of post-biological evolution.

As already noted, in reference to the relationship between Mind and Matter, Max More posits functionalism as a response to the charge of dualism that is regularly levelled at transhumanism. What is of interest here is that this move allows him to engage with the idea of an infinite human mind escaping the confines of a finite human body without having to give up the idea that the self is nothing more than a physical process which is wholly describable through material explanations. As a kind of materialist 'have-your-cake-and-eat-it' scenario, the move to functionalism is intended to ensure that – despite a commitment to a materialist ontology – the overall coherence of positing the possibility of uploading consciousness can be maintained, and the mind/body problem can be sidestepped.

This seems intuitively problematic to me. It appears that – in whatever way the concept is understood – the 'self' which is the object of concern, is clearly not the 'physical' self that we associate with our embodiment. Rather, what is to be preserved is a sense of identity and a sense of self-reflective awareness that is experienced from a first-person subjective perspective as the continuity of experience that accompanies our lived reality of physical embodiment. Regardless of how the ontological relation between this experience of the self and our lived embodiment is actually structured, the fact that it is our finite biological bodies that transhumanism strives to transcend – both on a personal level, and on a species level – reveals that a simple reduction of the self to our constituent physical components is unsatisfactory with respect to the stated goal of freeing ourselves from the limits of our embodied biology.

Transhumanism's explicit materialism fails to hide the implicit dualism that is inherent in its primary objective – while the functionalist move seeks to establish the possibility of consciousness being embodied in a non-biological substrate, the associated reductionist assumptions promote the primacy of linear cause and effect relations, denigrate the idea of free will, and grant nothing beyond the status of illusion to any idea or experience that we have of the self.

With respect to any notion of personal salvation through uploading and the metaphysics surrounding silicone-based conceptions of post-humanity, I would hold that this calls into question the very principles that underlie the idea of transferring or duplicating *already existing* consciousness into a machine. If the aspect of the human being that we experience as the self is illusory and completely reducible to the structure and functions of the underlying physical substrate, then it is not – in principle – separable from that substrate. If we take into consideration the fact that the materialism that underscores transhumanist metaphysics must necessarily assume temporality as a defining feature, then surely each individual physical thing can be materially instantiated only once and. Simply by virtue of the fact that it is rather than it isn't, and that it is what it is rather than something else, the material essence of that thing – whatever that might be – represents a kind of existential uniqueness or specificity, i.e., its Haecceity, or thisness.

Even if an exact physical replicate of the human brain were artificially constructed, and it perfectly mimicked the structures and functions that gave rise to the intentions, memories, experiences, and psychology that characterise a particular self, this self – the metaphysical *you* associated with that brain – can only ever be a copy of the original. This in itself might not necessarily be a problem if one still insists on viewing the self as illusory epiphenomenon. Once the copy thinks it's the original, or has some experience of continuity that ties it to the original, then it doesn't really matter if it is only a copy because the self isn't 'real' anyway. As long as the digital copy that is the new virtual you has an associated experience of being the same you as the biological you, then one can hold that the functionalist argument is vindicated – as long as the 'idea' that you have of yourself survives the post-biological transition and has an associated experience of continuity, then the uploading can in fact be understood to represent the equivalent of the religious notion of personally surviving death through the persistence of the soul into some form of afterlife.

The ardent materialism that underlies most versions of transhumanism means that the human being is understood as essentially and *completely* physical – yet it is the physical aspect of humanity that they aim to transcend. Hence, there is an obvious and problematic tension between the ontological reductionism that characterises the transhumanist worldview and the overall conceptual project of transcending biology. This is especially true when in reference to any notion of uploading where the transferring or duplication of consciousness from the biological to the synthetic explicitly involves psychological continuity in terms of personal identity and subjective experience.

If the human being is essentially reducible to our underlying material substance, then why is it that this essential irreducible aspect of human nature is to be transcended, and the illusory reducible aspect is to be preserved? If the self is an illusion, then why is continuity of experience the determining factor in defining a successful uploading? Does this call into question the idea that it is actually *you* that gets to experience digital immortality? Does it even matter once the experience has a sufficient sense of continuity? Even if – like the reductive self – this sense of continuity is itself illusory?

We can of course suppose a scenario where each constituent part of the human body was synthetically replaced over time through some process of step-by-step regeneration which preserved the instantiated individual integrity of the body as a functional physical object. While this scenario provides a way for the self of the original body to transition into what is effectively a new form without definitive physical separation, it poses a challenge to reductionist explanations as it would seem that it is the integrity of the whole system – physical body *and* first person subjective experience – that needs to be maintained at all times rather than the constituent physical parts themselves taken in isolation and subject to reconfiguration.

The functionalist argument actually highlights the fact that the relations between the parts would need to be sustained *as* a whole – clearly this takes us away from reductionism and in the direction of holistic perspectives more associated with systems thinking. We could use such an argument to further a functionalist position that holds the above to be true across any system – natural *or* artificial – and that once functional parity is maintained, the system itself is maintained. But even if this is the case, the problem of identity remains. The functionalist position can only really account for a particular system that goes through a process of change over time, not the replication of an existing system that is somehow undertaken so as to achieve a transfer of identity from one system to another simply through a continuity of experience.[836]

The self is a contested concept and the nature of the self is a hotly debated subject. Similarly, so too is the nature of consciousness, its relation to biological life, and whether or

[836] See, Susan Schneider, 'Future Minds: Transhumanism, Cognitive Enhancement and the Nature of Persons', (2008) <https://repository.upenn.edu/cgi/viewcontent.cgi?article=1037&context=neuroethics_pubs> [accessed 12th January 2022]. Schneider highlights the limitations of Kurzweil's 'Patternism' which she describes as an 'updated version of the Psychological Continuity Theory'.

not we should ascribe it any causal role in terms of human behaviour. This is of fundamental importance to how we begin to understand evolution, both as a biological and a cosmological phenomenon – especially if it is a process which can be intentionally controlled and directed. I argue that it is best approached in non-reductive terms and must be explored through the concepts of emergence and complexity. In terms of conceptual foundations, I think these are two most relevant concepts when looking for where to begin.

Initially, I think there is a simple decision to be made, we can start by deciding to argue *toward* or *away* from the self and subjective conscious experience. If one is – metaphysically speaking – a materialist, then it seems that the obvious path is the one that leads away from the self, and one which will look for physical linear cause-and-effect explanations with which to describe reality. i.e., *reductive* explanations which would seem to inevitably explain consciousness, free will, and the self away.

On the other hand, if one is not committed to a metaphysical materialism, there is no need to explain consciousness away. Rather, the path lies open to argue toward a non-reductive understanding of consciousness as a irreducible phenomenon – a path that begins with the self and the first-person subjective perspective that characterises human experience. This approach does not require either the self or the experience of free will to be an illusion. To me, this would seem intuitively seem better suited to supporting the notion that we can, and are, intentionally directing an evolutionary process whose origins lie all the way back with the Big Bang. The non-reductive approach also has the advantage of being able to more easily accommodate the holism associated with systems level thinking, and account for the generation of novelty within a system which displays emergent properties that are not necessarily explainable through recourse to its constituent parts.

The significance of this should be apparent if we consider the two central pillars of transhumanism to be the persistence of the transcendent aspiration into late-modernity and the re-imagining of transcendent themes through an engineering perspectives and through engineering practices. With the concept of the Technological Singularity and post-biological evolution more generally, the theme of transcendence has been coupled with an engineering perspective so that it has become 'practically' motivated and orientated.[837] Ideas of transcendence are well established human constructs, which historically have functioned to provide us with a picture of what the after-life might look like. The engineering perspective functions in a way as to furnish the concept of post-biology with a plausible design of how such a post-biological future might actually come about. As such, age-old and outstanding problems for philosophy and religion have now become the concern of engineer's and technologists, and hence, they have become the object of design.

The above relates to the central problem of an 'infinite' mind (or soul, or self), being housed in finite biological bodies – a problem which has historically given rise to dualistic accounts of the relationship between mind and body, and the subsequent establishment of problematic dichotomies between the human *subject* and external *objects* that we encounter in the world. This problem is a persistent one, and transhumanism still struggles to free itself from its legacy. This is reflected in its tendency to objectify the mind, and an apparent predisposition toward an instrumentalist conception of technology – both of which align with the basic assumption of the engineering perspective. The materialism that underscores both the engineering perspective and the transhumanist worldview, offers a sense of metaphysical security through the very act of measurement, and claims a principle of legitimacy by being subject to the precision and apparent objectivity and consistency of mathematical calculation. An inability to find a satisfying solution to the problem of dualism and address the inability to explain the mind/body relation has served only to swell the ranks of the adherents of

[837] The subtitle for Kurzweil's 2005 book *The Singularity is Near* is 'When Humans Transcend Biology', and his 2012 publication *How to Create a Mind*, is about reverse engineering the human brain. See, Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology*, (New York: Viking Penguin, 2005); Ray Kurzweil, *How to Create a Mind: The Secret of Human Thought Revealed*, (New York: Viking Penguin, 2012).

materialism. The sense of security and authority it engenders in our attempt to describe the world has only been reinforced by the development of machines capable of computational capacities that far exceed human capabilities. But in order to maintain coherence, that which cannot be quantified tends to be explained away, Thus, despite the overt rejection of dualism as a response to the mind/body problem, implicit dualistic assumptions remain, and reductionism seems ill equipped to provide a satisfactory answer to the question of the source of the motivation to attempt to transcend biology.

We should also take into consideration that the self – whatever the reality of it is – can be understood more or less in individual terms or more or less in collective terms. There will always be some degree of a construct involved and different conceptions of the self can be employed – either individually or collectively imagined. This would indicate that a self-referential process may also grasp itself in collective terms, as opposed to in a strictly individualistic sense. Also, a *process-based perspective* seems more suited to a collective sense of self-identity than a *substance-based perspective*, which intuitively seems less likely to be amenable to being self-referential due to what one would assume is its inherent reductionism. To what degree does it even make sense to speak about a substance being reductively self-referential? The concept of self-reference seems to be more suited to a process than a substance – when we look at things in terms of processes we can approach things from a systems perspective based on relational dynamics of the interplay between different substances and between different processes. Thus, a move away from substance ontology and toward process ontology is required – a move that Scheler has already anticipated.

4.1.3 AGAINST SUBSTANCE ONTOLOGY

In a 2017 publication for the Royal Society, 'The Metaphysics of Evolution', philosopher of science John Dupré begins with a definition of metaphysics as, 'the branch of philosophy that aspires to provide the most general description of reality', which aims toward 'what exists' – but in a more general way and at a higher level of abstraction than that which is 'typical of practical science'.[838] He states that, in general, it can be assumed that the metaphysical stance of most contemporary biologists is one that assumes, 'living beings are made from the same kind of material stuff as the non-living', but this however was not always the case.[839]

As such, there are always philosophical problems that seem to arise with 'naturalistic' metaphysics, and the ontological Naturalism that grounds the positive sciences. Even if metaphysical assumptions cannot be denied they don't have to made explicit. Dupré says that philosophical reflection on science, is the way to reveal them. The major issue is that sometimes the results of scientific activity and research are actually in tension with the metaphysical presuppositions of the scientists conducting the work.[840] Though it might be denied by many, 'scientists are almost inevitably committed to metaphysical opinions', says Dupré, and these opinions influence their work – thus, 'metaphysics can be ignored but not escaped'.[841] Dupré's specific concern here relates to what he calls 'an ancient debate' – does reality ultimately consist of things, or is it more accurately described in terms of process?[842]

Modern science, he says, has predominantly adopted an ontology of 'things' – a substance ontology which is firmly embedded in an explanatory framework of mechanism. Within the mechanistic worldview understanding is achieved by breaking objects down into their constituent parts. Ontological mechanism approaches *living* things from this perspective

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838 John Dupré, 'The Metaphysics of Evolution', *Royal Society*, 7/5 (2017) <https://royalsocietypublishing.org/doi/10.1098/rsfs.2016.0148> [accessed 28th March 2019].
839 Dupré, 'The Metaphysics of Evolution', p. 1.
840 Dupré, 'The Metaphysics of Evolution', p. 1.
841 Dupré, 'The Metaphysics of Evolution', p. 1.
842 Dupré, 'The Metaphysics of Evolution', pp. 1–2.

also, and living systems tend to be viewed as being 'composed of things arranged in a hierarchy of mechanism'.[843]

As a rejoinder to the problems generated by reductionism and mechanism, Dupré advocates a *process ontology* – he says that for process philosophers *things* are never more than 'patterns of stability' within a process, and – contra to reductionism and mechanism – a philosophy of process holds that what maintains these patterns of stability is not just the 'behaviour of the entities that compose the pattern', but also the 'network of relations between the patterns and their surrounding'.[844] Dupré then asks, what is the relevance of process ontology to evolutionary theory?

While acknowledging that object ontology does not necessarily deny there are processes, its proponents generally see these processes as requiring objects as their subject, in other words, a process is 'what happens to things', from this view, evolution can be seen as a process, but it is a process that has objects as its subject. As a counter to this, process ontology holds that evolution is a process but so are the entities that are its subject matter.[845] Within a process ontology Dupré says that things are always taken to be 'temporal', or relative to a timescale. But how can something 'change' yet remain the same through time? To answer this question, he gives as an example the comparison between a mountain, which is taken to possess core/essential properties that remain fixed, and the red spot storm (a persistent high weather phenomenon observable in the atmosphere of Jupiter), where it is the causal continuity of the process that maintains the pattern of stability. Dupré says it is the dynamic, processual perspective given from observing the storm that is the most appropriate analogy for life and for the study of biological systems.[846]

[843] Dupré, 'The Metaphysics of Evolution', p. 2.
[844] Dupré, 'The Metaphysics of Evolution', p. 2.
[845] Dupré, 'The Metaphysics of Evolution', p. 2.
[846] Dupré, 'The Metaphysics of Evolution', p. 2.

Organisms are thus understood as open systems far from 'thermodynamic equilibrium' – as such, they can be understood from this perspective as the 'paradigm of living systems'.[847] Such systems require 'constant interaction with, and intake of matter or energy from the environment', and the persistence of such a system must be 'actively maintained', it is not just 'given'.[848] In such contexts, stasis equals death. Such a process does not require a 'constant property' – persistence is 'achieved' rather than a property that an organism continues to possess. A process is 'inherently extended in time', and the 'temporal parts' are united *as* parts of that process, rather than from 'causal connections', i.e., the dynamic is relational rather than causal.[849]

Traditionally object ontology has had problems explaining change – for process ontology it is persistence that requires an explanation, a good working example is this definition of physiology: 'understanding the multitude of internal processes that enable an organism to stay alive, to maintain its thermodynamic disequilibrium with its environment'.[850] Hence, organisms can be seen as 'individual' processes, that have a 'sort of coherence and persistence that might suggest treating it like a thing' – such a 'coherent individual process', can be seen in comparison with larger, less individuated processes that lack such coherence.[851] Evolution would also be such a process.

Mechanism has historically been the source of significant scientific knowledge and success. If mechanistic explanations are understood as the attempt to identify 'a set of constituents of a phenomenon and showing how their actions and interactions combine to generate the phenomenon', then a process perspective would critique it in terms of the mechanism studied. The mechanism 'must always be abstractions from the wider biological

[847] Dupré, 'The Metaphysics of Evolution', p. 2.
[848] Dupré, 'The Metaphysics of Evolution', p. 2.
[849] Dupré, 'The Metaphysics of Evolution', p. 2.
[850] Dupré, 'The Metaphysics of Evolution', p. 2.
[851] Dupré, 'The Metaphysics of Evolution', p. 2.

context, and this always poses potential limits on their application'.[852] The limits of mechanism for Dupré stem from the fact that the constituents of biological mechanism are themselves 'dynamic'/'transient' entities. Biological processes are stabilised not just by the interactions of their parts, but also by interactions of the whole with its wider 'biological and abiotic' context. Even useful and illuminating mechanistic explanations should not be used to necessarily infer that an organism is 'really an interlocking system of mechanism' – according to Dupré, an organism is not a 'hierarchy of interconnected things', rather it is a 'hierarchy of processes', operating at 'different interlocking timescales'.[853] At every level entities are 'stabilized' by both their 'internal activities', and their 'interactions with their wider environments' – showing that the organism is not the 'terminus' of the hierarchy of processes, rather it is 'just one further component'.[854]

From this we can understand processes as not require the same precision with respect to delineated boundaries in the way that objects do. So if a 'species' is taken to be an individual process, then species can be seen to be units of evolution within which evolutionary change takes place.[855] Thus, Dupré offers us a way to conceptualise the human being – *as human becoming* – in and through the interplay between real and ideal factors.

4.2 A MOVE BEYOND REDUCTIONISM?

4.2.1 AGAINST REDUCTIONISM

Scheler's metaphysics, although speculative, is a rigorous first philosophy. Kurzweil strives for empirical legitimacy and builds a theory that has the aspirations of first philosophy but none of the rigour of Scheler. Even though Kurzweil ascribes to a metaphysical position he

[852] Dupré, 'The Metaphysics of Evolution', p. 3.
[853] Dupré, 'The Metaphysics of Evolution', p. 3.
[854] Dupré, 'The Metaphysics of Evolution', p. 3.
[855] Dupré, 'The Metaphysics of Evolution', p. 4.

calls 'patternist', his commitment to mechanistic reductionism means he cannot escape a substance based-ontology. While there are some surprising similarities between the two thinkers, a fundamental point of contention is the issue of reductionism.

Ultimately, Scheler's evolutionary theory and the positing of *Geist* as an *oppositional* principle to life, stands as a challenge to Kurzweil – and more generally to the transcendent themes of transhumanism – to explain how a principle can originate *within* biology and yet be the root source of a striving to transcend biology. The contemporary philosophical debate regarding reductionism vs. anti-reductionism in biology is a matter that is far from settled. It is a testament to the lucidity of Scheler's thought that the matter is still a contentious one today even after biology followed physics and chemistry in taking a reductive turn, after the DNA revolution. The successful reductionism of physics and chemistry remains stubbornly elusive with respect to biology.

Biological reductionism is the view that all biological facts are 'fixed' by the facts of molecular biology. In contrast, anti-reductionism in biology is the view that even if the reductionist metaphysical claim regarding the fixing of biological facts by the facts of molecular biology is true, this does not necessarily imply that 'all' explanations in functional biology need to be 'corrected, completed, or otherwise made more accurate by explanations in terms of molecular biology'.[856] Hence in terms of theory, reductionism represents 'deductive' derivation, i.e., a 'reduced' theory from a 'reducing' theory. The theoretical assumption is that the reduced theory is less *complete* then the reducing theory, but that the former can be completed or 'corrected' by the latter.[857] Controversy arises though, because the correction of a theory sometimes turns into the *replacement* of the theory – which means a new theory is established that is in fact not derived from the original; an obvious example is

[856] Alex Rosenberg, 'Reductionism in Biology', in Sahotra Sarkar, and Anya Plutynski, eds., *A Companion to Philosophy of Biology* (Malden: Wiley-Blackwell, 2008), pp. 550–567, p. 550.
[857] Rosenberg, 'Reductionism in Biology', p. 551.

the replacement of Aristotelian mechanics by Newtonian mechanics, and its subsequent replacement by Einsteinian mechanics.[858]

Biology is foundationally concerned with 'earthly phenomena' – as such biological explanations are by necessity 'spatiotemporally restricted in their meanings'.[859] For a proponent of reductionism the most complete explanations for the spatiotemporal facts of functional biology are given through recourse to other spatiotemporal facts that operate at the molecular level. For a proponent of anti-reductionism, at least 'some' explanations in functional biology cannot be 'completed, corrected, or otherwise improved by adducing wholly non-functional considerations from molecular biology'.[860] The reductionist argument rests on a 'negative existential claim', i.e., there are no 'irreducible' biological explanations or properties, hence, to be successful in terms of formulating a robust rebuttal, the anti-reductionist argument needs to find only one such irreducible property or explanation.[861]

The implications of reductionism in biology extend beyond the boundary of biology itself, and the importance of it in terms of the current debate is that a reductionist position establishes that consciousness is reducible to – and fully explainable in terms of – physical brain states and functions. Ultimately, reductionism grounds biological theories, generalisations, and explanations in chemistry and physics. It aims for legitimacy by drawing on the empirical evidence and predictive strength and precision of the physical sciences. [862] Anti-reductionist arguments in biology argue for the autonomy of 'biology' from molecular biology, where molecular biology is understood as 'organic chemistry'. The argument against reduction is based on the idea that natural selection works at every level of organization in

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[858] Rosenberg, 'Reductionism in Biology', p. 551.
[859] Rosenberg, 'Reductionism in Biology', p. 559. Natural selection is considered the only 'general theory' in biology, the reductionism vs anti-reductionism debate concerns the explanation of 'particular historical facts', which are ultimately the 'contingent' results of natural selection operating on 'boundary conditions'.
[860] Rosenberg, 'Reductionism in Biology', p. 559.
[861] Alex Rosenberg and Daniel W. McShea, *Philosophy of Biology: A Contemporary Introduction* (London: Taylor Francis, 2008), p. 96.
[862] Rosenberg and McShea, *Philosophy of* Biology, p. 96.

the biological realm, and the way this happens ‘insulates each level from reduction to the one immediately below it’.[863]

Accordingly, the process of natural selection cannot be reduced to physical science, hence Darwinian theory applies to molecular biology but not to organic chemistry. The argument from downward causation, which posits that higher-level biological properties have the ability to affect their constituent parts, holds that ‘reduction of the biological to its lower level parts’ is seemingly not possible. The epistemic question of how the knowledge claims of biology and physics relate – and of what the ‘appropriate’ research programme for biology is – are hotly debated. This issue spans across disciplines in both philosophy and science.

The antireductionist holds that at least ‘some’ explanations in biology need no ‘additional’ support or grounding, hence the physical sciences cannot provide ‘evidential’, or ‘explanatory’ grounds for the results of biology.[864] Despite the argument that reductionism necessarily collapses into eliminativism, it should be noted that reduction in biology does not necessarily imply eliminativism or that ‘biological theories, and generalizations and the explanations that employ them, should be eliminated in favour of physical theories, laws and explanations, because the biological ones are wrong, false, imprecise, exception ridden, evidentially unsupported, or without predictive power’.[865] Whereas eliminativism holds that biological theories should enjoy a central role in fully developed science, reductionism would accord them the same position, but with the understanding they still need to be refined, and improved through ‘further grounding in more basic scientific findings’.[866]

Reductionism as an epistemic thesis should also be distinguished from the metaphysical position of physicalism. The physicalist position states that the basic facts of the world are physical facts and that these determine or ‘fix’ all other facts. It is the standard

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[863] Rosenberg and McShea, *Philosophy of Biology,* p. 97.
[864] Rosenberg and McShea, *Philosophy of Biology*, p. 97.
[865] Rosenberg and McShea, *Philosophy of Biology*, pp. 97–98.
[866] Rosenberg and McShea, *Philosophy of Biology*, pp. 97–98.

position in biology today to 'acknowledge allegiance to Physicalism', and as such it doesn't feel compelled to offer any serious attempts to posit such things as non-material, or non-physical entities or forces.[867] Any such vitalistic and or teleological explanations from the 19th century, have been purged post-Darwin. This is not to imply that Physicalism is without its problems in terms of biology. Physics, as it stands, is 'incomplete and subject to change', and no 'final' list of what makes up the physical universe is currently established. This incompleteness leads to a sense of *vagueness* in terms of relating theories from outside of physics to a basic position of physicalism. For example, one could hold a biological theory that includes vital forces which does not contradict the basic tenets of physicalism, *if* that theory includes the belief that someday physics will be able to accommodate such immaterial vitality in biological phenomena.[868]

There is also the issue of what it means to fix biological facts by physical facts. Do physical facts determine biological facts simply by *composition*? Are all biological entities just 'complex combinations of physical things', or are biological facts *distinct* from physical facts?[869] Reductionism holds that physics is more 'basic' than biology. As a result, biology is more 'difficult', less precise. This is due to the fact that physics is a 'hard' science – one which allows us to 'identify, describe, and replicate physical facts with great precision'.[870] Biology on the other hand is 'softer' and less certain. The metaphysical position of Physicalism supports and informs the reductionist argument in terms of a research programme for biology.

This argument holds that reduction of biology to physics should, in principle, be possible, even if biology is less precise than physics, and the overall attempt extremely difficult to realise. Accordingly, a weaker version of reductionism can be argued for which

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[867] Rosenberg and McShea, *Philosophy of Biology*, p. 99.
[868] Rosenberg and McShea, *Philosophy of Biology*, p. 99.
[869] Rosenberg and McShea, *Philosophy of Biology*, p. 100.
[870] Rosenberg and McShea, *Philosophy of Biology*, p. 100.

holds that the complexity of biology and the cognitive limitations of the human brain, may make this a goal that is not attainable by us – even though it might be possible in principle. This weaker epistemic claim could be used to support an anti-reductionist argument that is compatible with physicalism as outlined above, and work then to undermine the reductionist position.[871] Of interest is the fact that technological developments in computing and prosthesis, and the enhancement of our cognitive abilities means that the proponents of the reduction of biology claim that the reductionist programme might not remain such an intractable problem for too much longer.[872]

These 'philosophical' issues will probably be of no interest to a practically minded scientist who is simply concerned with the fact that reduction has proven successful in advancing scientific knowledge – the history of science can in fact be described as the 'history of successful reductions'.[873] The 'unification' of the sciences through reduction has led to a 'synthesis' of theories from physics and chemistry, whose 'explanatory range' and 'predictive precision', is a defining characteristic of modern and late-modern technology.[874]

Biology itself did not take a reductionist turn until the DNA revolution which followed the discoveries of Watson and Crick, once it did it 'became much more predictive and productive of technological applications'.[875] Before the DNA revolution biological theory generally lacked the defining characteristics found in the theory of physics and chemistry, and advocates of reductionism would argue that these 'defects' were addressed by the reductionist turn. The logic is as such: if the history of science is the history of reduction from *broader theories* to *narrower theories*; of *special cases* from *general cases*; of *incorrect*

[871] Rosenberg and McShea, *Philosophy of Biology,* p. 100.
[872] Rosenberg and McShea, *Philosophy of Biology*, p. 100.
[873] Rosenberg and McShea, *Philosophy of Biology*, p. 101.
[874] Rosenberg and McShea, *Philosophy of Biology*, p. 102.
[875] Rosenberg and McShea, *Philosophy of Biology*, p. 102.

earlier theories to *modified theories that are more-correct* – then why should biology not follow this pattern of reduction?[876]

If, as Physicalism maintains, biological systems are simply and exclusively physical systems, then they can be explained and understood by breaking them down into their constituent parts and examining how these are 'physically' related. But according to the anti-reductionist argument, this becomes problematic because of the lack of biological laws; a generalization or 'law' in biology that may be true now, will almost definitely be challenged in the future by 'nature's never ending search for adaptive advantage', which will in all probability falsify it at some future time.[877] Hence, a non-reductive position argues for the autonomy of biology from the more 'basic' sciences. All biological structures, including at the molecular level, are selected for in terms of their 'effects' on reproduction and survival, nature's selection is 'blind' to differences in structure 'when they do not make a difference in the effects it is selecting for'. [878]

Because the 'design problems' that face biological systems are 'general' problems, there is nearly always more than just a single solution to them. Nature itself is indifferent to 'how' its design problems are solved, Darwin himself recognised that biological life is characterized by multiple structures being capable of adapting to serve the same function.[879] Also, design solutions in nature do not necessarily represent efficiency and optimality.

The multiplicity of structure that can correspond to the same function in biology, is a cornerstone of the argument against reduction. Because the very vocabulary of biology is functional – and functions are 'those effects that nature has selected for' – there will always be a range of underlying structures for each individual functional type that is provided by a biological explanation. Within this multiplicity, individual examples of 'actual', or 'possible',

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[876] Rosenberg and McShea, *Philosophy of Biology*, p. 103.
[877] Rosenberg and McShea, *Philosophy of Biology*, p. 105.
[878] Rosenberg and McShea, *Philosophy of Biology*, p. 109.
[879] Rosenberg and McShea, *Philosophy of Biology*, p. 110.

physical structures – *which obey physical laws* – will only have in common whether they can or do provide the same function. A diverse collection of physical structures, which only have that one thing in common, cannot explain entities, systems, processes, and organizational principles that came into existence because they 'were selected for solving the same design problem'.[880] It is commonly asserted that in biology nothing makes sense except in the light of evolution, if this is so then it shouldn't be a problem to accept as a basic fact that 'what physical science can tell us about structures will not make sense in biology'.[881]

4.2.2 COMPLEXITY: A MOVE BEYOND REDUCTIONISM?

Regardless of the veracity of their claims, and a possible ideologically conditioned inflexibility of thought, Kurzweil and other transhumanists are nevertheless still seriously engaging with complex philosophical questions. But as we have seen, there is an outstanding problem with regard to the underlying instrumentalist view of technology, and the related subject/object dualism of the mechanistic worldview persists. Despite this, it seems that the associated technologies are reflecting – and perhaps to a significant degree shaping – a notable trend of late modernity; a possible intellectual shift away from reductionism and towards holism or a 'systems' approach within the sciences. If this is the case, a closer alignment may be possible between the different schools of thought in terms of the human/technology relation and post-biological evolution more generally.

Reflecting on this very issue, experimental architect and philosopher Rachel Armstrong suggests in an entry in *The Transhumanist Reader* (2013), that the shift away from this instrumentalist view of technology toward a systems-based approach is already well under way. Armstrong holds that biology has traditionally been viewed as an undirected

[880] Rosenberg and McShea, *Philosophy of Biology,* p. 110.
[881] Rosenberg and McShea, *Philosophy of Biology*, p. 110.

consequence of 'nature', beyond the control of human intention, but that this has now changed with the manipulation of biological processes afforded by bio-technology, and the promise it holds in terms of human enhancement.[882] Echoing a central theme that was developed earlier, Armstrong references the Agrarian Revolution as an epochal example of biology being approached *as* technology, and how this perspective was eventually given full expression during the Industrial Revolution – characterised as it was by an intensification and extension of human control over nature. This overall process was given impetus and facilitated by increased mechanisation on industrial scales, and this led to the mechanistic worldview eventually reigning supreme.[883] The industrialised worldview of machines producing energy through combustion 'powered by natural resources' was – according to Armstrong – 'so successful that it pervades every aspect of our existence and machines shape our world to such a degree that they influence the way we solve problems'.[884]

Armstrong equates this 'machine thinking' with the 'Cartesian perspective' – she states that it not only underpins the 'problem solving capabilities of modern technology', it now also 'extends to the way we think about biological systems'.[885] This reiterates what we have already established, but interestingly, Armstrong also says that despite the predominance of this Cartesian perspective, in recent years there has been a shift in thinking by technologists, engineers, and scientists. Armstrong posits that though 'the machine metaphor was adequate for describing the world in the last millennium', there is a growing realisation that 'it is not sufficient to navigate twenty-first-century phenomena'.[886]

The technologies of the twenty-first-century are technologies which are characterised by instant global interconnectivity, complexity of networks, and vast data streams and

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[882] Armstrong, 'Alternative Biologies', p. 100. Armstrong says that the standard understanding of biology is as a 'spontaneous set of carbon-based self-replicating structures that persist on earth', hence, spontaneous and self-replicating 'nature' was traditionally beyond the realm of human control.
[883] Armstrong, 'Alternative Biologies', p. 101.
[884] Armstrong, 'Alternative Biologies', p. 101.
[885] Armstrong, 'Alternative Biologies', p. 101.
[886] Armstrong, 'Alternative Biologies', p. 101.

information flows. The late-modern world is one that is 'less determined by objects and increasingly shaped by connectivity' according to Armstrong – 'twenty-first-century society identity is not fixed but shaped by networks where people and "things" can coherently exist in many states'.[887]

What this means is that the 'dualistic either/or distinction that characterizes the machine worldview is being replaced by a complex system of networks that are able to explain perpetual transience, omnipresence, and parallel identities through inclusive identities'.[888] For Armstrong, this use of metaphor is our way to 'help describe and navigate' an explanatory framework for the world or an 'existence paradigm' – our contemporary paradigm is defined by the attempt to grasp its 'constantly evolving' character.[889]

Hence, Armstrong understands this shift in perspective to be reflected in the relatively recent emergence of complexity Science and Systems Science. She states that, concerned as it is with 'the study of networks and systems', the systems perspective 'offers a different strategic way of problem-solving', which contrasts with the Cartesian 'object-based perspective that mechanical technologies have to offer'.[890] The science of complexity 'considers the physical world to exist as the result of an interconnected set of complex and simple systems rather than as a series of objects that are hierarchically connected'.[891] Of note, is the way that complex systems do not 'require' complexity, they 'fundamentally posses' complexity – such a system may even be composed of only a few components, but these are combined in such a way as to be 'irreducible'.[892]

According to Armstrong, the most significant feature of complexity in terms of how we might employ it as a metaphor, is the 'unexpected universality of the principles governing

[887] Armstrong, 'Alternative Biologies', p. 101.
[888] Armstrong, 'Alternative Biologies', p. 101.
[889] Armstrong, 'Alternative Biologies', p. 102.
[890] Armstrong, 'Alternative Biologies', p. 102.
[891] Armstrong, 'Alternative Biologies', p. 102.
[892] Armstrong, 'Alternative Biologies', p. 102.

these complex systems' – which suggests that the *same* laws that describe and govern complexity in biological systems also describe the essential features of artificial systems.[893] This is an important insight and it should also be stated that complexity, and the capacity to evolve are characteristics that are exhibited by both biological *and* artificial systems. Thus, this may offer us a starting point to begin to develop a non-reductive and holistic conception of the human/technology relation that can be scaled up and incorporated into the analysis of post-biological evolution.

In reference to living complex systems, Armstrong situates the above *systems thinking approach* in direct opposition to mechanistic assumptions of the Cartesian worldview, i.e., living systems are not made up of 'components' and 'parts' in the same way that mechanical systems are, and they cannot be defined or understood through a reduction to their constitutive elements. In this, I believe she is correct and I am inclined to argue that the central problem of the reductionism that characterises transhumanism reflects this very point – treating complex living systems as machines is inherently misguided. The brain is not a computer, biology is not mechanical-technology. The metaphor of mechanism only goes so far.

If there are analogies to be made between the biological and the mechanical, then they are better expressed from a systems perspective that investigates the way in which processes, properties, and principles can be common to both natural and artificial systems, rather than attempting to transfer our established methods and knowledge of the principles of mechanism to biological systems, as if those principles were both theoretically and practically directly transferable. This approach would align with the basic position of Philosophical Anthropology as sketched out above, and serve to reinforce the claim that – as a

[893] Armstrong, 'Alternative Biologies', p. 102. In terms of practice, Armstrong states that these 'common organizational principles allow the characterisation of poorly understood complex systems, such as those that govern biological and cellular functions, from principles that are already well characterised in large and well-mapped non-biological systems such as the internet'.

philosophical paradigm – it provides the resources to engage seriously with the techno-scientific developments with which transhumanism buttresses its vision of the future. At the same time, it allows us to investigate the human/technology relation in a non-reductionist way, which does not assume an instrumentalist conception of technology, nor rely on or promote the outdated 'Cartesian' perspective.

For Armstrong, the growing realisation that reductionism is inadequate to describe and explain living systems is what is at the root of the shift in perspective within science. She highlights synthetic biology as exemplifying this change of attitude, and goes on to describe it in terms of it being a 'living technology', which employs complexity and systems thinking.[894]

Again, this aligns with what was discussed earlier, it reiterates the importance of complexity, the necessity to adopt an emergent perspective, and the need to focus on the processes and properties of systems rather than limiting the scope through reduction to simply the substance and physical parts that constitute objects-as-things. It does appear that the relatively recent trend of adopting the characteristics of living systems such as complexity, emergence, and self-organization, and employing them as engineering principles, seems to represent a move away from the characteristic reductionism of the neo-Darwinian worldview.

This neo-Darwinian world-view itself has been described by biologist and complex systems scientist Peter A. Corning as characterised by a 'mechanistic, gene-centred approach

[894] Armstrong, 'Alternative Biologies', pp. 102–103. Methodologically, synthetic biology can be approached as top-down project based on direct 'interventions' into existing biological systems which are 'modified through instrumentation' or it can employ a bottom-up approach based on 'chemical self-assembly'. Top-down approaches are generally understood to be 'design' based genetic engineering projects which aim toward the genetic 'modification'. Such genetic engineering ultimately erodes the element of chance that underscores evolution through modification and descent and allows engineers to 'effectively choose new biological functions' which becomes the bases for ideas such as 'designer evolution' or 'artificial evolution'. Bottom-up synthetic biology is primarily concerned with 'molecular self-assembly' – some 'non-genetic molecules' display the capacity for 'chemical self-organisation in both biological and non-biological contexts' and this has become the focus of research for a range of scientific disciplines – which ultimately concerns itself with the investigation into 'how inert substance can acquire life-life properties, which is an ancient quest that is steeped in history, alchemy, magic, and religion'.

to evolution' – an approach which he sees as being 'epitomized by the selfish gene metaphor'.[895] Of note, is the fact that Corning says that there is a related shift from understanding based on 'linear' causality to understanding based on 'circular' causality within the ongoing move away from reductionism.[896]

Similarly, in recent years biologist Dennis Noble has also advocated a systems approach to biology. This is based on the fact that systems level analysis in biology reveals that – at the level of the organism – all constituent elements are embedded in an integrated system or network which displays its own logic. A logic which it is not possible to understand by simply investigating the properties of the system's components.[897] Noble highlights the limits of a strictly reductionist mindset within biology, by showing how the linear causality of a reductionist approach ultimately fails. This is because the first step in the chain of cause and effect, is never just a simple 'causal event'. When a sequence is read off – and a whole series of subsequent physical events are initiated from it – and that sequence is to be understood, then it is the *process* of reading that is of importance, not just the object being read.[898] This insight is compatible with how research in the field of epigenetics suggests that DNA is better understood and approached as a 'script' rather than a fixed set of instructions.[899]

What needs to be taken from this is that these trends reveal a possible shift toward analysis based on a dynamic of interpretation – the underlying logic is *hermeneutic*! The parts interact with the whole, and one cannot be understood without reference to the other. The significance of this is huge when we acknowledge that the problem of the human being is first and foremost an interpretative problem. Reductionism is inherently deficient in this

[895] Peter A. Corning, *Holistic Darwinism: Synergy, Cybernetics, and the Bioeconomics of Evolution* (Chicago: Chicago University Press, 2005), p. 1.
[896] Corning, *Holistic Darwinism*, p. 1.
[897] Dennis Noble, *The Music of Life: Biology Beyond Genes* (Oxford: Oxford University Press, 2006), p. 3.
[898] Noble, *The Music of Life*, p. 6.
[899] Nessa Carey, *The Epigenetics Revolution*: *How Modern Biology is Rewriting Our Understanding of Genetics, Disease and Inheritance* (London: Icon Books Ltd, 2011).

respect and ultimately represents a set of conceptual blinkers that serve only to narrow the entire field of vision.

4.2.3 THE PARADOX OF THE MECHANISING BRAIN

What we have just established can now be applied to the claims of the NBIC project and the reductive assumptions that underlie its concept of the mind and its notion of the brain-machine interface. There is a clear theory of mind which shapes the goals and aspirations of the NBIC – the computational theory of mind. Based as it is on the brain/computer analogy, the computational model of the mind approaches the human mind *as* a computer – the physical brain represents 'hardware', while cognitive processes and experiences represent 'software'. Any inclination or tendency toward interpreting the relation between the mind and the body in dualistic terms is eliminated through reducing consciousness to nothing more than a function of the physical brain. The problem with this approach though is that such a reduction to physics represents the elimination of free-will, and denigrates the occurrence of first person subjective experience – both free-will and the self are reduced to illusory epiphenomenal side-effects of biological brain function.

This is significant because, as stated, the NBIC perspective is one that reduces all knowledge claims to physics and causal explanations. It reduces consciousness – and subsequently the self – to the physical brain, operates according to the metaphor of mechanism, and adopts and promotes the brain-as-computer analogy. The brain as an object that is explainable in purely scientific terms, i.e., in physical terms. Through reduction, consciousness itself subsequently objectified in the exact same way. But there is a fundamental problem with this metaphor of mechanism and its ubiquitous assumption and application across the natural sciences and engineering disciplines. If consciousness itself is just another *object* in the world – reducible to the sum of the constituent physical components of the brain, and subject cause and effect – then how can it objectify itself?

Philosopher Jena Pierre Dupuy formulates this problem nicely as a paradoxical and apparently self-referential statement – he describes it in terms of 'the self-mechanized mind'.[900] Dupuy presents the notion of the self-mechanized mind in such a way that it gives the appearance of being a self-referential concept – closed, self-contained, and looping back on itself. But he says this is actually a superficial description. For in fact there are actually *two minds* contained within the concept – the mind that 'carries out the mechanization', and the mind 'that is the object of it'.[901] He says that the mechanized mind is taken to be an artifact, and – as an artifact – it is presumed to be subject to precise control and manipulation, by the mind that has performed the mechanization.

The result of this is the assumption that the human mind can now manipulate, reproduce, and manufacture – at will – a 'mechanized version of itself'.[902] Problem arise though, because any attempt at constructing a mechanized mind – in either theoretical or a practical sense – can only be done through recourse to subjective human experience, even if this is only to establish or develop normative parameters and clarify values. There is also the issue of whether or not free will would need to be an essential component of any such endeavour.[903]

Dupuy says that it is the 'cybernetic metaphor' that structures the current 'cognitivist paradigm'. It has also been adopted by molecular biology, where it has become expressed in the formulation of that discipline's 'central dogma' – the workings of the genome can be

[900] Dupuy, 'Cybernetics is Antihumanism', p. 103. Here, Dupuy is referencing cybernetics and cognitive science when he uses the term 'self-mechanized mind', hence its relevance for both the NBIC project (to which he subsequently applies the concept) and transhumanism more generally.
[901] Dupuy, 'Cybernetics is Antihumanism', p. 103.
[902] Dupuy, 'Cybernetics is Antihumanism', p. 103.
[903] Dupuy, 'Cybernetics is Antihumanism', p. 103.

understood in terms of a computer programme.[904] For Dupuy, the designation of DNA as simply a digital genetic code is mistaken – from both a scientific and philosophical point of view. He holds that the very principle of biological self-organization represents a fundamental challenge to the idea that DNA is a digital genetic programme, and that understanding molecular biology in this way results in the false impression that we have full mastery and control over ourselves and all of nature.[905]

As already mentioned, the use of metaphor is never a one way process and metaphors have a tendency to work both ways. Thus, Dupuy holds that – in a paradoxical sense – the mechanisation of the mind and the use of machine metaphor to describe it, is in fact an attempt at 'naturalising' the mind. This process of *naturalisation vis mechanization* is of course perfectly coherent, if and when the entire natural world is understood as an 'immense computational machine' – this includes the human being as simply one machine among many.[906] Dupuy highlights the irony of how the attempt at naturalising the mind that characterises cybernetics and cognitive science culminates in the attempt to create 'artificial' intelligence. Tellingly, he asks, 'in the name of what or whom, will man, thus artificialized, exercise his increased power over himself?', for the 'attempt to restore mind to the natural world that gave birth to it ends up exiling the mind form the world and from nature'.[907]

What is happening here is that this process of objectification represents the ontological designation of 'thing' being imposed on the object by a subject who enjoys some degree of perspectival (and perhaps ontological) separation from that object. Objectification involves the imposition of extrinsic value onto a thing in the world that derives, not from a position of ontological equivalence or internality, but from a position of at least some ontological opposition/separateness and externality. The motives and intentionality behind

[904] Dupuy, 'Cybernetics is Antihumanism', p. 103.
[905] Dupuy, 'Cybernetics is Antihumanism', p. 104.
[906] Dupuy, 'Cybernetics is Antihumanism', p. 104.
[907] Dupuy 'Cybernetics is Antihumanism', p. 104.

this imposition of value and designation of status onto the object, are – in a fundamental way – *outside* the object-as-thing itself. Originating in the intentional subject, the process of objectification – through the imposition of extrinsic value – originates outside the material world of objects-as-things. Hence, if it is consciousness that is objectified in this way, we are left in the paradoxical position where the attempt to reduce consciousness to simply an object-as-thing in the natural world actually results in it being *abstracted* from the world. The overall process of attempted objectification actually positions consciousness outside the physical world-of-things, as the root source of the imposition of extrinsic value. As Dupuy puts it, the 'mechanist materialism' that underlies the attempt to objectify the human mind in such a way actually 'invalidates itself' by situating the human subject 'outside of the very world' that they are supposedly belong to.[908]

This problem, and the tension it generates, is of fundamental significance for transhumanism and the attempt to transcend biology. According to Dupuy, it is also one that has historically plagued cybernetics and cognitive science since their inception, and currently, it is also an inherent quandary for the NBIC project, and he highlights the leading role designated to cognitive science within the NBIC paradigm.[909] For Dupuy, this can be interpreted as a manifestation of the fact that 'the metaphysics of NBIC is embedded in the work of cognitive scientists' – which leads him to state that the contradictions at the root of cognitive science also lie at the heart of the metaphysics that underlie the NBIC project.[910] Of particular note, is the fact that Dupré traces this issue back to a distinction between the first wave of cybernetics (1945–54) and the second wave (mid–late 1950's, 60's, and 70's), which revolved around a point of contention regarding the 'theory of biological self-organization' – initially rejected by the first wave, and later becoming the 'principal model' of the second

[908] Dupuy, 'Cybernetics is Antihumanism', p. 104.
[909] Dupuy, 'Cybernetics is Antihumanism', p. 105. Dupuy says that the 'potential consequences are far more serious because we are not dealing with a theoretical matter, a certain view of the world, but an entire program for acting upon nature and mankind'.
[910] Dupuy, 'Cybernetics is Antihumanism', pp. 102–103.

wave.[911] Dupuy says that the issue is encapsulated in a dispute between Norbert Wiener and John von Neuman, where the former advocated the 'ideas of control, mastery, and design', and the latter the 'ideas of complexity and self-organization'.[912] Accordingly, cybernetics never successfully resolved the issue and failed to satisfactorily reconcile the two contradictory perspectives. Part of the legacy of the failure to resolve this tension is that nanotechnology is currently 'caught up in the same contradiction'.[913]

CONCLUSION

The paradox that underlies the brain/computer analogy, is rooted in the same tension that was identified earlier as a defining feature of the field of synthetic biology – the tension between a reductionism 'mechanistic' perspective, and a holistic 'organic' perspective. Described earlier by Schmidt in terms of the reductionism of convergence versus the holism of a systems approach this – 'inherent dialectic' of 'seemingly contradictory concepts' – lies at the heart of the attempt to harness the 'self-organization of nature for technological purposes'.[914] The attempt to harness, control, and direct the complexity and self-organization of biological systems for engineering purposes defines the current 'design paradigm', encapsulates the guiding principle of the NBIC project, and expresses the central leitmotif of transhumanism and its vision of post-biological evolution.

But, as shown above, the process of objectification conducted through reduction, mechanism, and the brain/computer analogy that characterises it is inherently problematic and self-defeating. Highlighting this issue percipiently brings into profile the tricky philosophical knot of how to understand the relation between the parts and the whole of any

[911] Dupuy , 'Cybernetics is Antihumanism', p. 105.
[912]Dupuy, 'Cybernetics is Antihumanism', p. 105.
[913] Dupuy 'Cybernetics is Antihumanism', p. 105.
[914] Schmidt, 'Prospective Technological Assessment of Synthetic Biology', p. 1157.

entity or system. In a philosophical sense, when it comes to conceptualising the operational principles and complexity of a biological system such as the human brain, there would then seem to be an initial choice one must make when laying the foundations for an analysis of the self-organisation and naturally occurring spontaneous order displayed by the system – *a theoretical choice between reductionism or anti-reductionism*.

It seems reasonable to assume that this basic polarity also applies to the analysis of artificial systems and – on an ontological level – this translates into an initial choice between substance ontology and process ontology and a concomitant preference for understanding the constituent parts of a system reductively and in isolation as static separate 'things', or holistically and relationally as part of a dynamic singular 'process'. If a substance ontology is adopted, then a system is fully explainable through recourse to the laws and mechanistic assumptions of orthodox physics. On the other hand, if one is inclined toward the view that a character of physical systems is that sometimes the whole is more than the sum of the parts, then a process ontology can accommodate this perspective. Also, the concept of emergence can provide a theoretical grounding for this, as it deals with the idea that increasing levels of complexity appear to generate novel properties within a system which are not easily explainable in terms of what is known about the constituent parts.

As stated earlier, the core principles of the two ontologies of substance and process are straining against each other in tension within late-modern technology. A possible reason for this is that complexity and the ability to evolve are characteristics of both biological and artificial systems.[915] This is a key point in any assessment of post-biological evolution because it identifies common ground between the biological and the technological. It also highlights the need to understand the nature of emergence itself and focus on how emergent

[915] See, Stefano Cagnoni, Marco Mirolli and Marco Villani, eds., *Evolution, Complexity and Artificial Life*, (Heidelberg: Springer, 2014). The way that evolution and complexity characterise artificial and natural systems is the central theme for Cagnoni et al. Interestingly, they say that their study of the 'organization principles of living systems' – viewed in terms of the organization of the relationship between the parts of living beings – is 'complementary' to reductionist and physicalist approaches.

behaviour and properties can be observed in a similar way across a range of different systems. The focus on emergence and a systems level analysis can also allow for a non-reductive approach to consciousness to be developed that can accommodate the dynamic of self-reference and self-design in a non-contradictory way and which is – in principle – applicable across the boundary between inert and organic matter. At this point I feel it is hard to overstate the significance of the dynamic of self-reference when it comes to idea of post-biological evolution – something which Scheler also seems to have anticipated.

CHAPTER 5: TECHNICS AND *GEIST*: THE END OF BIOLOGICAL EVOLUTION

INTRODUCTION

When we ask what are the differences between us and other non-human animals, or is there something that marks us as unique among biological species, there are in fact a few defining features that seem to differentiate us from other known forms of biological life on earth. One acknowledged distinction is that we are the only species member in our genus – there are no other extant hominin species. We also populate a far wider range of disparate environments than any other species. We possess symbolic language, create religion and culture, and use and make complex technologies. And we are the first known species to try and direct evolution – by technological means.

Even so, it is clear that the traditional notion of *homo faber*, as a way to differentiate between human beings and other biological species through reference to our tool-use, is a distinction that – if taken in its strictest terms – clearly does not hold.[916] Scheler himself said that it was a conception of the human being which 'denies any separate, spiritual power of reason in man. Man and animal are not essentially different. There are only differences of *degree*. In men, the same elements, forces, and laws are active as in all other beings, only with more complex consequences'.[917] He called it 'untenable', and designated it as the '*naturalistic*', '*positivistic*', and '*pragmatic*' theory of human nature.[918]

Despite this, I think it is easy enough to acknowledge that animal tool-use is in no meaningful way comparable to complex human technology. Regardless of the ingenuity displayed by some animals in using and sometimes fabricating tools, there is nothing from

916 Sanz, and Call, and Boesch, eds., *Tool Use in Animals: Cognition and Ecology*.
917 Scheler, 'Man and History', p. 76.
918 Scheler, 'Man and History', p. 76.

other species that is even close to displaying the complexity, sophistication, and ubiquitousness of human material production.

In what follows, I am going to argue that it is indeed our complex technologies which mark us as unique but in a way that is not only compatible with Scheler's concept of *Geist*, but is actually a reflection of it. I argue that there is a clearly observable connection between human cognitive processes and the particulars of our technological artifacts, and that this connection can be seen to leave an identifiable mark on the material form of technological products – a mark that refers directly back to the cognitive process involved in the material production of the artifact, and which gives some indication of the cognitive capacities of the producer such as foresight, anticipation, imagination, creativity. From this, I conclude that human technology reveals – in a concrete manner – a unique ability of the human being for abstract thought, an ability that is not revealed by a similar assessment of the tool-use of non-human animals. Human technology bears a trace of human consciousness, human technology bears a trace of *Geist.*

5.1 THE *IDEA* OF THE HUMAN BEING

5.1.1 EVOLUTION IS A METAPHYSICAL RESEARCH PROGRAMME: BEYOND THE NEO–DARWINIAN PARADIGM

In *Evolution: A Theory in Crisis* (1986) author and biochemist Michael Denton states that after Darwin, the study of life on earth progressively fell more and more within the remit of science, and the universe came more and more to be understood as having gradually evolved from its inception and into its current state through a process that is wholly explainable through the laws of physics and chemistry. Ultimately, this led to the predominance of the view that the universe was a closed 'natural' system. As a result, the scientific method was successfully extended to incorporate biology and life and all associated phenomena – any apparent design in nature was to be framed, from then on in, in purely naturalistic terms.[919]

The effects of this are apparent in the current neo-Darwinian context, and also clearly observably in the predominance of mechanistic ontologies within the philosophy and worldview of transhumanism. It is clear also that this applies to Kurzweil's evolutionary theory – founded as it is in a principle of reverse engineering, and directed toward the idea that successfully reverse engineering human intelligence represents the next phase of evolutionary progress. Many philosophical issues arise with respect to this mechanistic understanding of life. Issues that stem from the uneasy relationship that exists between how we understand the evolutionary process itself, and the concepts of design, teleology, purpose, reduction, free-will, and of course, consciousness. These issues are not the strict preserve of post-biological evolution, and they have traditionally been a concern for evolutionary theory before – and since – Darwin.

For example, the issue of teleology in biology is confounded by the very language used to *do* biology. In any causally determined closed system, explanations that imply a connection between biological phenomena and their *future* goals, ends, and purposes – rather than with the *prior* causes – are inherently problematic.[920] Almost everything in biology is ordinarily described in terms of its *function*, hence biological descriptions are in general teleologically problematic.[921] Future events cannot bring about past events, hence explaining something in terms of function – even in cases of malfunction – is dubious. This is observable in the inclination to explain behaviour in terms of goals – even when the goal is not achieved.[922]

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[919] Michael Denton, *Evolution: A Theory in Crisis* (Chevy Chase: Adler and Adler Publishing Inc.), pp. 69-71.
[920] Martin Brinkworth and Firdel Weinert, 'Introduction', in *Evolution 2.0* (Dallas: BenBella Books, 2015), p. 13.
[921] Brinkworth and Weinert, 'Introduction', p.14.
[922] Brinkworth and Weinert, 'Introduction', p. 14.

The issue of apparent design is another problem in biology that is confounded by terminology. Even the term *selection* is somewhat ambiguous and misleading.[923] The environmental challenges faced by an organism, are often described as 'design problems', and the term 'fitness' is generally used to describe the traits that can be selected from, to solve these design problem.[924]

Also, the concept of function is ubiquitous in biology. Making matters worse is the fact that functional language seems to serve both a theoretical and practical purpose. This means that it can display both explanatory and normative characteristics, i.e., a functional description will explain 'why' something does what it does in a descriptive sense, *and* say what something is *supposed* to do. This can hold true, even in cases where whatever the trait is, it doesn't actually fulfil its supposed function. There is also the issue of 'backward causation' to consider. Functional explanations refer to a future state of affairs that can be brought about by the organism, but this is a problem because descriptions like these seem to violate the principle which holds that events which are 'temporally posterior', cannot be the root-source of causal explanations for events that are 'temporally prior' to them.[925]

It is also unclear exactly what the normative status of function statements is. If something is *meant* to perform some function, does it imply design? Functional explanations in biology are not only confusing when describing what something 'should' do, they also raise problematic issues in terms of the central doctrines of the modern scientific worldview, i.e., the rejection of any notion of 'final causes' in the natural world ,and the illegitimacy of any appeals to the divine as an explanatory device.[926]

The power, influence, and scope of Darwin's theory of evolution cannot be underestimated, and evolutionary thinking has extended beyond biology to other areas of

[923] Brinkworth and Weinert, 'Introduction', pp. 18–19.
[924] Brinkworth and Weinert, 'Introduction', pp. 21–22.
[925] Rosenberg, 'Reductionism in Biology', p. 525.
[926] Rosenberg, 'Reductionism in Biology', pp. 525–526.

human concern as diverse as economics and cosmology. What facilitates this are analogies that seem to exist between evolutionary biology proper, and areas beyond evolutionary biology.[927] In a similar way that we identified with respect to engineering, philosophical problems also arise though the extension of biological principles and concepts beyond biology itself.

Darwin's theory of natural selection is a 'general claim' about the evolution of reproducing things with heritable variation and differential fitness – it is 'sufficiently general' that it can operate as an explanatory framework for the evolution of life not just here on earth, but 'anywhere in the universe'.[928] But what exactly is the explanatory power of natural selection? There are outstanding arguments in terms of what it explains 'within' biology, let alone whether or not it can be extended beyond biology, and if it is legitimate in terms of its consistency with the physical sciences.[929] Chief among this issue is the question of whether or not human beings should be considered within its domain. Biology – as a science – lacks laws and does not proceed in the same way as other sciences do, and biology is 'historical', in a way that physics and chemistry are not.[930]

The issue of consciousness comes to the fore again. Can the natural sciences give an adequate account for consciousness?[931] Can consciousness be explained in terms of function, adaptation, and mechanism? These questions were raised by Scheler at the start of the 20th Century and they are outstanding problems that lie at the root of the idea of post-biological evolution. Biology – as all sciences do – raises many questions that it itself cannot answer. Of the natural sciences, it seems logical that biology is the one that is primarily concerned with

[927] Rosenberg and McShea, *Philosophy of Biology*, p. 4.
[928] Rosenberg and McShea, *Philosophy of Biology*, pp. 19–29.
[929] Rosenberg and McShea, *Philosophy of Biology*, pp. 19–29.
[930] Rosenberg and McShea, *Philosophy of Biology*, pp. 58.
[931] Rosenberg and McShea, *Philosophy of Biology*, p. 4. The 'emergence of consciousness from the brain', was an issue that 'Darwin tried to deal with this problem in his *Descent of Man* (1871), arguing that consciousness and conscious states may emerge from the brain states through the operation of natural selection', and this is 'still one of the greatest mysteries of modern science'. See, Charles Darwin, *The Descent Man, and Selection in Relation to Sex*, (London: John Murray, 1871).

addressing the question, *what is life*? But it is not clear if – as a science – it has the power to do this. Hence, questions concerning the range and limits of biology are *philosophical* questions.[932]

The *idea* of evolution has inherently significant philosophical implications. And in this light, the extension of the mechanistic worldview of the physical sciences to the life sciences can be understood to be a serious 'metaphysical consequence' which has resulted from Darwin's theory of natural selection.[933] But it would seem that any possibility of Naturalism's inability to address the problem of the human being, or to explain how Mind and Matter are related, can't be engaged with seriously if a dogmatic commitment to mechanism pre-figures the debate about evolution.

This brings to mind Karl Popper's famous conclusion that Darwinism failed to meet the criteria of a 'testable scientific theory', and was more accurately described as a 'metaphysical research programme'. He described it as such: a 'possible framework for testable scientific theorised….One might say, it "almost predicts" a great variety of life'.[934] Popper's critique includes the observation that to say an organism is adapted to its environment, is almost tautological, or if an organism became extinct, it was because it was ill adapted to its environmental conditions. In other words, Q: which organisms survive? A: the fittest; Q: which ones are the fittest? A: the ones that survive. This is a circular argument.

For Popper a theory such as this is not testable, and hence not scientific.[935] Despite this he did state that the theory itself was invaluable. Even if it is a metaphysical theory, it still 'sheds light upon very concrete and very practical researches'.[936] It was also the first 'nontheistic' theory of the evolution of life, a fact that lends it considerable credence and

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[932] Rosenberg and McShea, *Philosophy of Biology*, p. 2.
[933] Rosenberg and McShea, *Philosophy of Biology*, pp. 19–29.
[934] Karl Popper, 'Darwinism as a Metaphysical Research Programme', in *The Philosophy of Karl Popper*, ed. by P.A. Schillp (LaSalle: Open Court, 1974), pp. 133–143.
[935] Popper, 'Darwinism as a Metaphysical Research Programme'.
[936] Popper, 'Darwinism as a Metaphysical Research Programme'.

worth for Popper, because 'theism was worse than an open admission of failure, for it created the impression that an incontrovertible explanation had been reached'.[937] He did caution though, that 'to the degree that Darwinism creates the same impression', it is just as problematic as 'theistic view of adaptation'.[938]

We should also take into consideration that human beings have used classification as a way of making sense of the world for millennia. With respect to biology, this classification consists of 'a hierarchy of structure' and generally 'ends mostly with species rank' – species are considered to be 'one of the basic units to of comparison across most fields of the biological sciences.[939] Species concepts both define species, and offer a definition of the notion of speciation. Thus, in a practical sense, much of biology works with, and relies on some idea of the 'delimitation' of species.

Despite this, the term species has historically been 'underdefined' for more than three centuries.[940] Philosophical problems arise as soon as we even begin to consider the concept of species in an evolutionary context and consider the fact that a species can undergo a series of changes that will result in it becoming one or more different species' – if individual organisms are to be understood in terms of 'type' or 'kind', then this understanding must, by necessity, provide some form of 'fixed limits' to the organism's variability.[941] These limits may work in a way that constrains a species' ability to adjust and respond to environmental change – thus, they can be used easily enough to explain how *extinction* might occur. But a strictly naturalistic explanation for how species might *originate* is not so easily explained in terms of kind or type. This is because the limits fixed by the idea of type or kind 'must

[937] Popper, 'Darwinism as a Metaphysical Research Programme'.
[938] Popper, 'Darwinism as a Metaphysical Research Programme'.
[939] Amal Y. Aldhebiani, 'Species Concept and Speciation', *Saudi Journal of Biological Science*, 25 (2018), 437–440 (p. 437).
[940] Aldhebiani, 'Species Concept and Speciation', p. 437.
[941] James G. Lennox, 'Darwinism and Neo-Darwinism', in, *A Companion to the Philosophy of Biology*, pp. 77–98, p.77.

somehow be transgressed' as part of the explanation of its origins.[942] At stake are two issues – the *ontological* status of 'species', and the *epistemological* status of 'species concepts'.[943] Taken together, this is known as the 'species problem'.[944]

The species problem is a *philosophical* problem – one which has the same roots as the outstanding metaphysical 'problem of universals'.[945] Are biological species real – if so, what is the nature of their reality? Do species concepts actually refer to 'entities' that exist objectively in the world?[946] The species concept resides at the very heart of the Darwinian revolution, and as a 'technical' term in biology species concepts are the 'currency' in which biologists trade – species are necessary for biologists to *do* biology.[947]

The main issue is whether or not species are 'extra-mentally' real, or merely fictions, and constructs. Are species actually *discovered*, or merely *invented*? This problem should be addressed in such a way that takes both the biological and the philosophical issues seriously – empirical findings alone cannot decide the issue, nor can simply philosophical reflection provide a definitive solution – the species problem is both empirical and metaphysical.[948] What matters here is the identification that this issue is not simply an empirical issue – metaphysical considerations are not only relevant and valid, but also necessary.[949] Scheler's

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[942] Lennox, 'Darwinism and Neo-Darwinism', p.77.
[943] Lennox, 'Darwinism and Neo-Darwinism', p.77.
[944] See, R.A. Richards, *The Species Problem: A Philosophical Problem* (Cambridge: Cambridge University Press, 2010); David N. Stamos, *The Species Problem: Biological Species, Ontology, and the Metaphysics of Biology* (New York/Oxford: Lexington Books, 2003).
[945] Gyula Klima, 'The Medieval Problem of Universals', *Stanford Encyclopedia of Philosophy*, (2022) < https://plato.stanford.edu/entries/universals-medieval/> [accessed 27th April 2022).
[946] Stamos, *The Species Problem*, p. 1.
[947] Stamos, *The Species Problem*, p. 1.
[948] Stamos, *The Species Problem*, p. 4.
[949] Richards, *The Species Problem,* p. 2. By way of illustration, if we take even a widely used concept like the 'biological species concept' (BSC) we immediately run into problems. The BSC is generally understood to be defined in terms of sexual reproduction, i.e., if organisms can mate and reproduce viable offspring then they are the same species – but, this does not apply to organism that reproduce 'asexually'. Richards concludes that our 'choice' of species concept can sometimes seem to 'depend on little more than which organism one studies' – even within the study of a single organism there can be disagreement about which concept should – and does – apply. Ultimately – within biology alone – there exist fundamental differences of opinion about the nature of species, and this leads to disagreement regarding how organisms should be grouped and classified. Richards states that the more we learn the worse the disagreement becomes – the species problem is the result of multiple and inconsistent ways of dividing biodiversity into species based on multiple, inconsistent, and conflicting species concepts.

initial starting point is then shown to be more than relevant, and the case for Philosophical Anthropology as paradigm is boosted. When one reflects on the issues facing biology in terms of conceptualising species – an element of construction is necessarily involved in any attempt to define any organism. *Ideal factors* must be taken into consideration.

In light of this, we can assess archaeologist Timothy Taylor's claim that the human being in effect turns orthodox evolutionary theory on its head. Taylor is concerned with 'origins', and he asks what are the exact origins of humanity? He claims that there was indeed an 'actual moment when we became human', and it was long before we became 'intelligent'.[950] Taylor's basic premise is that the standard orthodoxy of 'survival of the fittest' – as a description of how species evolve – is incapable of explaining human evolution. If, following the orthodoxy of humans being deficient in instinct, we understand ourselves as being dependent on technology and tool-use to make up for being so weak, then how did we evolve in the first place? Taylor says that it is clear that human beings don't just use material things to 'adapt to the natural world', we use material things to 'manipulate the laws of the physical, and subvert the instincts of the biological', i.e., we use material things to 'construct ourselves'.[951]

The thing that most defines the human being is our 'relationship with artifact' says Taylor, human life 'assumes the presence of artifact' – artifactual objects that we created in the first place, yet which have been, at the same time, shaping us for the entirety of our evolution. Thus, Taylor says that Darwin was mistaken. Human technology actually functions so as to 'subvert biology'; 'break the rules of evolution'; and 'undermine natural selection' – for Taylor it is clearly the case that without technology we could not have evolved in the first place.[952]

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[950] Timothy Taylor, *The Artificial Ape: How Technology Changed the Course of Human Evolution* (New York: St. Martin's Press, 2010), p. 2.
[951] Taylor, *The Artificial Ape*, p. 6.
[952] Taylor, *The Artificial Ape*, pp. 7–8.

The very thing that differentiates us from other non-human species is our ‘relationship with technology and material culture’.[953] Both in terms of how we make tools, and how tools in turn, make us. Thus, Taylor says that we cannot be the ‘result’ of the blind operations of natural selection, and it is a fundamental mistake to ‘disregard the role that artificial aids played in our development’ – from the very beginning, technology allowed our ancestors to take ‘control’ over their evolution.[954] Through technology we have usurped the idea that it is the fittest that survive, not only has technology allowed the weakest of us humans to survive where once we would not have, technology allowed us to extend our reach and capacity for hunting and killing, so that we could selectively target the fittest of the species that were suddenly *our* prey. Ensuring – in the long run – that it was not the fittest among them that survived either. The fittest were marked, coveted, and killed *because* they were the fittest and we desired their heads as trophies, their antlers as ornaments, and their deaths for our prestige.[955]

Taylor says that it is now obvious – in the late-modern world of nanotechnology – that we are not subject to natural selection in respect to our evolution and what drives it. Technology clearly now ‘supersedes’ biology and we are the first known species to ‘escape natural selection’.[956] For Taylor, the implications of this are ‘immense’, but it is also clear that we have never been wholly ‘natural’ creatures – we have evolved to be ‘artificial’, there is no other option for us in terms of our evolutionary trajectory.[957] Taylor insists that we ‘must stop living the lie that we are either animals or divine creations’, because for far longer than we generally acknowledge or accept, we have been technologically constituted, and our

[953] Taylor, *The Artificial Ape*, p. 8.
[954] Taylor, *The Artificial Ape*, p. 8.
[955] Taylor, *The Artificial Ape*, pp. 14–24.
[956] Taylor, *The Artificial Ape*, p. 8.
[957] Taylor, *The Artificial Ape*, p. 9.

existence has been ‘a symbiotic form of life’ – one which ‘breaks all the old rules’, and ‘whose new rules’, if there are any, are ‘far from understood’.[958]

Taylor boldly states: ‘We did not evolve to the point where we were intelligent enough to invent and use tools, rather our use of tools ‘evolved us’, our late physiological development took place within a technological context, a context that was fundamental and necessary for us to survive in the first place – our evolution is ‘the history of elision between biological substrate and artificial construct’.[959]

Thus, the human being is not bound by biological embodiment in the same way that other animals are, our biology is extended through artifacts and artifacts are extended through our biology. Taylor says that this is because there is no separation between us and our artifacts – in an essential and fundamental way, we are our artifacts, and they are us. Why else he asks, would we die for things, or be so committed to abstract causes that we would neglect or deny the ‘apparent imperative of biological reproduction’?[960]

Taylor says that such a capacity to deny life drives and urges, does not reveal ‘dysfunction’, such a capacity is a typically human trait, yet in a simple and profound way, such a capacity defies ‘simple Darwinian logic’ – the human being has turned evolution ‘inside out’, in such a way that we are a challenge to the fundamentals of ‘the Darwinian explanation of our species’ existence, behaviour, appearance, and attributes’.[961] All of which, to me, sounds *decidedly Schelerian*. What Taylor is describing, is the human being saying ‘No’ to the world, and to life. What he is describing is the sublimation, re-directing, and subverting life-drives and vital energies – *in a technologically mediated way*!

[958] Taylor, *The Artificial Ape*, p. 9.
[959] Taylor, *The Artificial Ape*, pp. 9–10. Taylor references Kurzweil and Kevin Kelly, but says that both mistakenly assume a fairly clear biology-technology divide’.
[960] Taylor, *The Artificial Ape*, p. 11.
[961] Taylor, *The Artificial Ape*, p. 11.

5.1.2 THE FUNCTIONAL ROLE OF SELF-IMAGE

The foundational question of philosophical anthropology is an unresolved one, it is also a question that has ancient roots – it is as old as we are, and it reveals that a constituent aspect of the human condition is the fact that we are at all times compelled toward self-interpretation. We inherently ask about ourselves, and enquire into our nature and our place in the world. Hence, we always have an *idea* of ourselves that accompanies everything that we do. Saying that, and as Scheler shows, there exists a perpetual lack of consensus regarding the foundational question of human nature – there is no single, and universally accepted, image of the human being. This lack of fixity ensures that our very nature is experienced problematically. There are a couple of ways of assessing this.

Arnold Gehlen – one of the core of the 'classical' paradigm of Philosophical Anthropology – interprets this situation in light of Nietzsche's declaration that the human being is a 'not yet determined animal'.[962] For Gehlen, the human being finds themselves to be 'undetermined' on the most basic of levels, and as a result of this indeterminacy, we pose a fundamental challenge to ourselves – our very nature and existence are experienced problematically.[963] This is encapsulated in the way that we find ourselves – for a variety of particular, specifically human, reasons – seeking explanations about ourselves, and our place in the world. A search, which ultimately reveals us as unequipped to provide such answers.[964]

As a being who is 'unfinished', we are compelled to form opinions about ourselves – thus, we seek to address and 'clarify' the issue of our nature and existence through self-

[962] Gehlen, *Man,* p. 4. Gehlen says that Nietzsche's phrase 'not yet determined' is both an accurate and apt description of the human being, it also contains a double meaning in the sense of 'it is as yet undetermined' what the human being is, and in the sense that the human being in some way incomplete, 'unfinished' – i.e. neither a definitive account of human nature *and* what we actually are have been 'firmly established'.
[963] Gehlen, *Man*, p. 4.
[964] Gehlen, *Man*, p. 4.

interpretation.[965] Quite simply, we are tasked with having to formulate an understanding of ourselves as part of our existential circumstances. As Gehlen points out, we can make something of ourselves only *after* we have attempted this task and 'formed' for ourselves a necessary 'self-concept'.[966]

As such, our 'unfinishedness' is a constituent part of our physical biological condition. It compels us into action – we cannot escape the need to 'form attitudes' toward ourselves, and toward the outside world. From this basic need we begin to enquire about ourselves – self-reflection highlights and reinforces that our very existence is problematic for us, and by way of a response, we attempt to address our incomplete and unfinished nature by making 'something' of ourselves.[967] It is in this way that we are 'anticipatory' beings – unlike other biological species we live for the future rather than in the present, and our energies are directed ultimately toward 'what is not present in time and space'.[968]

Gehlen likens us to Prometheus in this sense, and says that this predisposition is one of the necessary conditions for human 'action', which, for Gehlen, is the 'basic defining characteristic' of the human being.[969] Accordingly, human self-consciousness must be understood in these terms, and Gehlen describes us as nature's 'experiment' with an 'acting being'.[970] This concept captures the dynamic of essential 'freedom' through which we are constituted. *A freedom which sets us apart from other biological species, but which does not remove, or separate us, from the biological realm*.[971]

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[965] Gehlen, *Man*, pp. 4–8.
[966] Gehlen, *Man*, p. 4.
[967] Gehlen, *Man*, p. 24.
[968] Gehlen, *Man*, p. 25.
[969] Gehlen, *Man*, p. 25. The name Prometheus translates as 'forethought', see, Mark Cartright, 'Prometheus', *World History Encyclopedia* <https://www.ancient.eu/Prometheus/> [accessed 11th March 2021].
[970] Gehlen, *Man*, p. 25.
[971] Gehlen, *Man*, p. 25. Gehlen endorses the position that 'mind' cannot be derived reductively from 'life' and says that the challenge is to 'find those categories that are common to both and that therefore make their coexistence possible'. He says it is a mistake to reduce what is 'naturalistic' and 'biological' to a simply matter of physiology, pp. 6–10.

From this, Gehlen concludes that the human being represents a 'special position' within the natural scheme of things. With regard to the evolution of life, we represent a 'unique, hitherto untrodden path of development', and can be considered as a 'new organizational principle'.[972] As a result of our unique status in nature our very survival is simultaneously our 'greatest challenge', and our 'greatest accomplishment'.[973] It is clear to Gehlen that the human being lacks the inherent and instinctual attributes for survival that other non-human animals possess – we are a 'deficient being' – and he makes specific reference to the 'highly complex, marvellous array of skills', which are necessary for such a being as us – with our specific and limited physical constitution – to survive until 'tomorrow', let alone until 'next week', or 'next year'.[974]

By focussing on the actions taken by the human being just to ensure survival, Gehlen shows – in a similar way to Taylor – how our biological and anatomical constitution must have, as a necessary accompaniment, the complete range of human characteristics; everything from our 'upright gait' to our morals'.[975] Of note, is how Gehlen says that the complete gamut of our essential features can be taken as a single unified 'system', whose constituent parts necessarily 'presuppose' each other. Adopting a non-reductionist approach like this means that the fact of our biological embodiment does not have to be in – any essential way – in conflict with our uniquely human 'compulsion' to understand ourselves and intentionally exert existential control over our being.[976]

Philosopher Michael Landmann also engages with this idea that we are anticipatory beings. For Landmann, our existence is somehow directed toward what is not spatially-

[972] Gehlen, *Man*, p. 10.
[973] Gehlen, *Man*, p. 10.
[974] Gehlen, *Man*, p. 10.
[975] Gehlen, *Man: His Nature and Place in the World*, pp. 10–11.
[976] Gehlen, *Man: His Nature and Place in the World*, pp. 10–11.

temporally there – the human being is conditioned by 'what is removed'. He describes this as the 'anthropine gap' – a creative empty space within which we constitute ourselves.[977]

Landmann says that within the act of cultural production, the human being not only produces culture, we are also – retroactively – produced *by* the culture we create. This dynamic is characterised by a synthesis of 'creativity' and 'malleability' – two fundamental anthropina that define the human being. The human ability to achieve culture as a creative enterprise, finds its correlation in our capacity to be 'culturally receptive'.[978] This creativity and receptiveness are – according to Landmann – of opposing polarity, but they are precisely balanced and in tune, thereby forming a bond of complementary and mutual conditioning.[979] Hence, the 'deficit' that accompanies us as a fundamental trait of our humanity is experienced as a 'gap' of 'unspecification' and 'instinct reduction' – a gap that we address through, and by, culture.[980]

Landmann comes to the same conclusion as Gehlen and, with respect to evolution, he holds that the human being must be thought of in a different way to other non-human animals. This is due to the nature of our 'mediated existence' – a situation which establishes that we display a unique 'structural plan', in comparison to other species.[981] Landmann says that the *symbolic* and the *spiritual* have always been a factor for us – an idea captured in his concept of 'anthropological fundamentality'. This anthropological principle is something he says that defines us and makes us what we are. It does not just originate, and ensue, from

[977] Landmann, *Fundamental Anthropology*, p. 59.
[978] Landmann, *Fundamental Anthropology*, p. 60.
[979] Landmann, *Fundamental Anthropology*, p. 60.
[980] Landmann, *Fundamental Anthropology*, p. 60.
[981] Landmann, *Fundamental Anthropology*, p. 37. Landmann takes the same position as Gehlen and rejects the idea of reducing 'mind' to a physiological function of biological life. He says that mind is an 'originary' and 'constitutive' principle rather than an 'impeding' or 're-routing' late addition to life. In terms of how mind and body relate, Landmann posits what he calls an 'anthropological monism' which describes an 'interlocking of the spiritual with the somatic-practical in a unified structure'. This a non-reductive anthropological 'holism' as opposed to some sort of reductive material or ideal monism where spirit is 'also material' or the reverse.

individual human subjectivity, it is also located in, and flows from, human (material) culture.[982]

We are human only through culture, but to produce culture we must already have been human – this is what Landmann calls the 'paradox of culture'.[983] It describes the fundamental dynamic of human existence. Structured and conditioned through unspecification and instinct reduction – and unable to return from the symbolic world we have constructed – the human being is 'completely dependent on the outside anchor, support and shelter of culture'.[984] Culture is not 'decoration' or any kind of 'subsequent acquisition' but is a 'condition of the human form of existence' – our instinct reduction, freedom, and creativity are the well from which culture springs forth, while our malleable nature and receptiveness to its symbolic form are what ensures that, as we create it, we are simultaneously constituted in and through it.[985]

Landmann says that there is 'no natural state of man this side of Culturality' – we are always already cultural. In terms of genesis, he says that culture – though first created – is itself a defining factor in the phylogenesis of the human being. In other words, all human evolution took place within the context of the cultural world. This means that the human being is not just an evolutionary product of biology but – to some degree or other – is also an evolutionary product of its own cultural products.

In a material sense, what Landmann is describing here is the co-development of the human brain with human culture. This applies equally in terms of how human consciousness and culture also co-developed. Even if our biology and the natural world temporally preceded our culturality, all of our experience of the natural world is – and always has been – culturally mediated. Our consciousness and intelligence, ideas and intentions, tools and material

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982 Landmann, *Fundamental Anthropology*, p. 37.
983 Landmann, *Fundamental Anthropology*, p. 37.
984 Landmann, *Fundamental Anthropology*, p. 37.
985 Landmann, *Fundamental Anthropology*, pp. 37–38.

culture, all 'interacted' and co-developed in a dynamic 'feedback loop' which allowed human intelligence to shape human existence, and to make the 'way' of that existence possible only because it is in fact the result *of* that way of existence.[986]

The nature of culturality means that human evolution is characterised by a dynamic of simultaneous development under mutual influence. What was an originary 'default' – a 'fundamental cleft in origin and production' – synthesised into something 'uncountable', i.e., the human being.[987] In the same way that Taylor says that the late-stages of our physiological development took place in a pre-existing technical context, Landmann asserts that the late-stages of our cognitive development took place in a pre-existing cultural context.

The human mind did not develop and *then* the growth of culture followed as a 'consequence' – the accrual of culture was already a dynamic process before the development of the human brain reached its current state.[988] This establishes that culture itself was instrumental in the expansion of the brain's capabilities in its late stages of maturity.

By way of explanation, Landmann suggests that the existence of cultural objects and tool-use, 'set a premium on skill and foresight...which favoured the rapid growth of the brain', a process which reveals a *co-development* of culture and biology. As such, culture is always already an 'existing' ingredient of our 'mental equipment'.[989] This means that – within human evolution – there 'existed a reciprocal creative relation between somatic and extra-somatic progress', i.e., the 'last stages' of biological development came after the beginning of cultural development.[990]

As an essential aspect of this, Landmann rejects the idea that there might be some form of 'mandatory norms' that *anchor* or *fix* human nature. This lack of fixity is revealed through the diversity of our cultural expressions. Our cultural creations disclose an inherent

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986 Landmann, *Fundamental Anthropology*, p. 38.
987 Landmann, *Fundamental Anthropology*, p. 38.
988 Landmann, *Fundamental Anthropology*, p. 38.
989 Landmann, *Fundamental Anthropology*, p. 38.
990 Landmann, *Fundamental Anthropology*, p. 38.

freedom within human nature, and this explains the multiplicity of form that culture can take, and how it can differ in specifics, both historically and geographically.[991] What is most significant about this idea is that Landmann sees that when we create culture, we also create ourselves. Because we are 'free' to shape ourselves, *our knowledge of ourselves has effect on our being and self-interpretation plays a functional role in our development*.[992]

Not only do we create ourselves but we must also decide what to make of ourselves. Hence, Landmann sees that there is an 'intrinsic connection' between the great self-images that we construct for ourselves historically, and the 'concomitant shaping of cultural and personal life'.[993] Our self-interpretation, our *concept* or *image* of ourselves, influences our historical development through a 'reciprocal effect' on culture – the images which we see reflected back at us in our cultural creations, have such an effect on us that they make us want to emulate them because we think that is what we are by nature. Hence, for every cultural domain there is a corresponding image of the human being at its base. [994]

Referring to the aforementioned anthropina of creativity and malleability, Landmann describes human nature as a 'productive empty space' – a space which informs and describes an essential 'variability' in our being. It is this that lies at the heart of historically changing images of the human being. Historical variation in our attempts at self-interpretation shows how we have always 'chipped away' at ourselves. To understand ourselves, we must pay attention to the history of our form – self-image is a 'theoretical accompaniment to the reality of vital praxis' according to Landmann.[995]

The idea we have of ourselves has a concrete 'retroactive impact on reality', and this is because it is a 'necessary correlative' of – and plays a functional role in – our development

[991] Landmann, *Philosophical Anthropology*, p. 20.
[992] Landmann, *Philosophical Anthropology*, p. 21.
[993] Landmann, *Philosophical Anthropology,* p. 22.
[994] Landmann, *Fundamental Anthropology*, pp. 22–23.
[995] Landmann, *Fundamental Anthropology*, pp. 22–23.

and self-determination.[996] Thus, in each age we produce epochal self-images as a response to our lived experience. These self-images are anthropological models – they function as *ontological anchors* which steady us in our attempt to pin down and bring definition to the outstanding problem of the human being.

5.1.3 THE CYBORG AS AN ANTHROPPOLOGICAL MODEL

The cyborg is such an epochal self-image and anthropological model – an anthropological model for the post-biological age. As a merging of the biological, the mechanical, and the informatic, the cyborg is now ubiquitous as a cultural self-image. As a model of human nature, it has penetrated deeply into our cultural imagination. But as an anthropological model, it also challenges previous conceptions of humanity – it represents the possibility of us crossing over and beyond the border of what we commonly understand to be our humanity.

The very concept of the cyborg has implications for our understanding of human nature, and how we relate to the world around us. It represents a challenge not only to previously established notions of human being, but also how we understand the human/technology relationship and – perhaps most challengingly – to what degree we should define ourselves through recourse to our biological heritage. As an anthropological model for the post-biological age, the image of the cyborg encapsulates the notion that the problem of the human being is now understood as an engineering problem.

The cyborg is an already established and recognised image of the *enhanced* human being. It is characterised by the merging of the organic with the synthetic – the natural and the artificial. As an anthropological model, it represents the increasing intimacy and

[996] Landmann, *Fundamental Anthropology*. pp. 26–27.

ubiquitousness of the human machine interface and it serves as an orientation model which guides the way toward the techno-scientific horizon of a possible post-biological and post-human future. As a cultural symbol, the cyborg not only straddles the border between science fiction and science fact, but stands also as a gatekeeper at the border of humanity itself. The very idea of the cyborg forces us to reflect on where we should draw the limits of the human being and to what degree – as a biological species – we are technologically determined. This late-modern reassessment of what it means to be human has found its most emphatic and unrestrained expression within the philosophy of transhumanism.

The image of the cyborg captures perfectly the way that the human condition is experienced as seemingly 'undetermined'. The hybrid bio-mechanical character of the cyborg reflects the fact that human nature does not appear to be 'fixed' in the same manner as it is for other species. This lack of fixity represents a kind of existential sovereignty, and the idea that we are essentially free to become what and who we are – or *will* be. Unlike other biological animals, we are free to create ourselves and make of ourselves what we will. Our dual-aspect means we are free to imagine ourselves in any way we can – hence, the knowledge that we have of ourselves has effect on our being.

Consequently, self-image plays a functional role in our historical development, and our evolutionary trajectory. This means that there is an intrinsic connection between the epochal self-images we produce, and our cultural and personal lives. In this way, our self-image is a product of creative self-interpretation – where the concepts we produce of ourselves influence our historical development through a reciprocal effect on culture. The images which we see reflected back at us in our cultural creations tend to make us want to be what we think we are by nature. This is because our self-image is a 'necessary correlative' of – and plays a functional role in – our historical and cultural development. In other words, the 'idea' of the human being has a concrete retroactive impact on the 'reality' of the human being.[997]

Our concept of ourselves works in such a way ~~as~~ to serve as a point of reference with which we attempt to correspond – our self-image is an ontological anchor that helps steady us as we try to orientate ourselves in the world. Hence, different historical paradigms generate a variety of images of the human being through which we try – in different ways – to explain and make sense of our existence. Humanity always operates with an accompanying theoretical self-image through which we are both constituted by and through. More than any previous historical self-image the cyborg – as an anthropological model – reflects the fact the fact that we are both producers and produced by our cultural creations and that we simultaneously create ourselves as we create the cultural symbols which express who we think we are, or perhaps, could be.

Ultimately, the idea of the cyborg calls into question any notion of defining the human being in terms of just our biology. It also brings into sharp focus the question of how to define the exact nature and character of the relationship between our biology and our technology. In doing so, the image of the cyborg represents the possible end of humanity, or indeed, in the same breath it also represents our possible future.

Technology is how we extend ourselves into the world, it has historically compensated for and negated our physical shortcomings and the instinct deficit associated with our biological heritage. Lacking in tooth and claw, we have always used technology – there is no such thing as the human outside of technology. This means that when we talk about human technology, traditionally assumed distinctions between what we should consider to be 'natural' and what we should consider to be 'artificial', could very easily be all but redundant. Our technology reflects our dual-aspect, it is both physical and intentional, it is

[997] Landmann, *Philosophical Anthropology*, and Landmann, *Fundamental Anthropology*.

constituted by inert matter yet it displays and is imbued with our intentions, objectives, and goals, and reflects our imagination, creativity, and ability to reach beyond any notion of pre-set and fixed limits – biological or otherwise.

As a philosophy and a cultural movement, transhumanism is committed to the endeavour of using technology to engineer the human condition *as* the post-human condition, and to realise the human future *as* the post-human future. This vision of post-biological evolution represents epochal change beyond any previous historical human experience. Like the future itself, the post-human does not exist yet outside of our imaginations. Both are constructs – contextualised by the past, fabricated in the present, and projected into the future. This expectant stance toward a future that does not exist reflects the fact that our very existence poses a problem for us, and that we strain uneasily at the borders of our nature. The imperative to address the foundational issue of Philosophical Anthropology means we are driven always toward self-interpretation. We are anticipatory beings, orientated toward what is not yet there – both in ourselves, and in time – we must make of ourselves what we are. This dynamic is one which is only intensified by the 'promise' of late-modern technology – which asserts that as the biological and the mechanical converge, and the natural and the synthetic amalgamate, the 'problem' of the human being is in fact an engineering problem.

Ultimately, the very idea of post-biological evolution is a challenge to identify and define the border of humanity. The engineering perspective which is characteristic of transhumanism's vison of the future, includes as an essential part of it, the underlying belief that there exists a 'techno-fix' capable of providing a solution for all human problems – both present and future. As such, the future itself becomes the object of engineering. In the exact way that Gehlen and Landmann describe, the engineer serves as a perfect example for how we are essentially orientated toward what is not there. For the engineer, this is experienced in a *practical* sense that describes a fundamental, and primary, engagement with the world –

they do not seek to simply contemplate or describe the world, rather they see what is missing – *what is not there* – and endeavour to build a solution to such a foundational problem.

When viewed as an anthropological model, what does the cyborg reveal about us? The image of the cyborg represents how we use technology to extend ourselves into the world – both organic and cognitive extension. We are technological beings – always already technical – and the human condition is technologically mediated. Our technology serves as a bridge between us and the world, and this is only reinforced, emphasised, and further intensified with the techno-scientific developments of late-modernity such as biotechnology, genetic manipulation etc.

The model of the cyborg embodies the belief in an intrinsic equivalence between natural and artificial systems so that biology can successfully be subject to engineering principles and design-based processes. Thus, the idea that we are free to make of ourselves what we will has thus become a 'practical' concern – an engineering problem to which the cyborg is the solution. The cyborg as an anthropological model reveals that the 'idea' we now have of the human being includes within it the notion that – through the application of technology – we might be able to exert full and precise control over our biological heritage.

Reflection on the nature of our technology inherently involves reflecting on some of the most important questions we ask about ourselves. Age-old questions concerning human nature and our place in the world which were once the preserve of philosophy and theology and strictly a matter of 'theory' or 'faith', are now the specific concern of techno-science and the object of engineering. The concept of cyborg was originally a thought experiment conceptualising ways for the human being to survive the hostile environment of space.[998] Thus, in its original conception the idea of the cyborg the represents an engineered solution to the frailty of human biological body.

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[998] Manfred E. Clynes And Nathan S. Kline, 'Cyborgs and Space', *Astronautics,* (Septembe*r 1960)* <https://archive.nytimes.com/www.nytimes.com/library/cyber/surf/022697surf-cyborg.html> [accessed 27th December 2021].

This basic premise, that engineering and technology can allow us to overcome the limiting aspects of our biological bodies has been given full and unrestrained expression with the transhumanist vision of post-biology. In fact, it functions for some as a way of conceptualising the possibility of surviving the finitude of our biological heritage completely, i.e., a solution to death.

As an almost exclusively secular ideology, transhumanism is denied access to an after-life as posited by a variety of different religions. If transhumanists want to experience eternity, it must be before rather than after death. Without recourse to an after-life, transhumanism must turn, not to the theologian to solve this problem, but to the engineer – in search of an engineering solution to the problem of biological finitude. Although there are some religious manifestations of transhumanism, in general it must function without the luxury of recourse to a religiously inspired after-life in its attempt to address age-old questions concerning the finiteness of the human condition. Without such an otherworldly option, transhumanism must thus turn to technology to provide a solution.

Like a religion, transhumanism grapples with the dual-aspect of our existence – our obviously finite bodies and seemingly infinite minds. But, unlike most religions, if our potentially infinite minds are to somehow be free of, and transcend the limits of, the material of our physical bodies, it must be achieved in this world and in this life – before rather than after death. It is for this reason that human nature is not something to be preserved, but something to be overcome for the transhumanists – evolutionary success does not entail survival of the species but transcendence of the species. As such, it is not the priest or theologian that points the way – it is the engineer.

5.1.4 NATURAL BORN CYBORGS?

Professor of engineering Woodrow Barfield states boldly and simply that it 'our future is to merge with machines' – he believes that this will not be a 'conscious decision made by humanity', but a 'gradual' and inevitable process'.[999] Barfield believes that this process is well under way and that the accelerating rate of technological development has already ensured the outcome – our 'cyborg future' is already being designed and implemented through the creation and use of 'neuroprosthetic devices'.[1000] While the defining characteristic of 'cyborg' enhancement technology is the attempt to 'improve' human functioning above 'normal' or 'average', technologies originally designed for 'enhancement' are regularly used for 'medical regenerative purposes' – hence, the machine/human interface of the post-human future is already under way.[1001]

The cyborg future includes the possibility of the emergence of new species, a mixture of 'non-enhanced humans' and 'enhanced humans', cyborgs, robots, and androids – and as Barfield points out, the possibility that 'there could emerge one intelligent species, based on the merger of human and machine'.[1002] His analysis takes it as given that current use of prosthesis, implants, pace-makers etc., indicates that we are already moving, and will continue to move, beyond 'human capabilities provided by our evolutionary history and coded in our genes' – we are already evolving into our cyborg-future.[1003]

This assumption can be seen as the starting point of the philosophy of transhumanism and it is an idea that extends far beyond those who identify themselves as transhumanists. Technoscientific development is shaped by imagination, and whether the idea of a paradigm changing human-machine merger is dismissed as a dream of science fiction or understood as a subtle and intrinsically mundane part of an already developed co-evolution of biology and

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999 Barfield, *Cyber-Humans*, p. 1.
1000 Barfield, *Cyber-Humans*, p. 3.
1001 Barfield, *Cyber-Humans*, p. 3.
1002 Barfield, *Cyber-Human*, p. 4.
1003 Barfield, *Cyber-Humans*, p. 5.

technology, analysis with a focus on philosophical anthropological considerations can provide valuable insight into the key issues at play.

By not focusing on the veracity or otherwise of the technical claims of transhumanism we are free to avoid a simple dichotomy of for-or-against, and by approaching transhumanism first and foremost from a philosophical anthropological perspective it can be studied philosophically as a techno-scientific anthropology with its own unique and clearly defined image of the human being which extends from the empirical to the transcendental. This analysis can incorporate both the natural and cultural factors that are at play within what we know about historical evolution, biological evolution, human evolution, our place in the world, and how technology relates to these on a physical, psychological or philosophical level. As such, there is much to be gained from a philosophical engagement with the cultural image of the cyborg as a late modern conceptualisation of the self.

Such a perspective allows us to approach the wide range of phenomena involved in a way that is sensitive to how self-image functions on both the macro and micro scale as a reflection of our current lived experience. A self-image that is recognisable as model of orientation capable of penetrating the cultural imagination to a sufficient degree so that – in reality – it plays a functional role in guiding and shaping the direction and form of human development.

Common understanding of the concept of the cyborg presents it as being shaped by a vision of the human as a being whose future won't be *confined and restrained by biology*. In this I think we can agree. Not only is the human future not constrained by biology, the human being is not *presently* constrained by biology. Thus, there is a mundane aspect to the idea of the cyborg, and this notion forms the backdrop of the ideas of cognitive scientist and philosopher Andy Clark.

Clark uses the imagery of cybernetics to explore the idea that valuable insights into the human condition – and our relationship with technology – can be had through anthropological engagement with and interpretation of, already established cultural images of cyborgs as 'human-technology symbionts'. This perspective, says Clark, serves as an alternative to representations of the cyborg as just a superficial combination of organic material and technology expressed in a cartoonish, science fiction type way.[1004] He sees the cyborg as a 'potent cultural icon of the late twentieth century', and reshapes the interpretative constitution of it to reveal it as a 'disguised vision' which ultimately will reveal 'our own biological nature'.[1005] In doing so he offers a definition of the human nature which is built on the distinctive feature of human intelligence, the unique ability of the human brain to '*enter into deep complex relationships with non-biological constructs*' (my emphasis) – for Clark, we are *Natural-Born Cyborgs*.[1006]

Conceptually, Clark's position should be viewed as a move beyond the established archetype of *homo faber*. This is due to the fact that the tools we use are more than just 'external props and aids', but are in fact 'deep and integral parts of the problem-solving systems we now identify as human intelligence' – hence, best understood as 'proper parts of the computational apparatus that constitutes our minds'.[1007] With respect to concepts of the posthuman, Clark suggests that the 'deepest and most profound of our potential biotechnological mergers, will reflect nothing so much as their thoroughly human source'.[1008]

Drawing on the theory of neural plasticity he sees the human drive towards the creation, co-option, and exploitation of non-biological 'props and scaffolding' as a uniquely defining feature of the human condition which reveals us to be *'creatures whose minds are*

[1004] Andy Clark, *Natural-Born Cyborgs*: *Minds, Technologies, and the Future of Human Intelligence*, (New York: Oxford University Press, 2003), p. 3.
[1005] Clark, *Natural-Born Cyborgs*, p. 5.
[1006] Clark, *Natural-Born Cyborgs*, p. 5.
[1007] Clark, *Natural-Born Cyborgs*, pp. 5–6.
[1008] Clark, *Natural-Born Cyborgs*, p. 6.

special precisely because they are tailor-made for multiple mergers and coalitions' (original emphasis).[1009]

With a focus on an evolutionary analytic perspective that emphasizes our 'ancestral environments', Clark sees that the profound effects of a plastic evolutionary overlay that yields a 'constantly moving target' and this target is the human mind, understood in these terms as 'an extended cognitive system whose constancy lies mainly in its continual openness to change'.[1010]

What may have begun as a small evolutionary 'tweak' in our biology is perhaps now on the verge of a 'massive leap in the space of mind design' as our 'cognitive machinery is now intrinsically geared to self-transformation, artefact based expansion, and a snowballing/bootstrapping process of computational and representational growth'.[1011] Clark states that everyday concepts of 'minds' and 'persons' reveal what he describes as 'deeply plastic, open-ended systems', systems that are 'fully capable of including nonbiological props and aids as quite literally parts of themselves'.[1012]

Drawing on research and findings from the neurosciences, Clark asserts that when we use tools we incorporate them into the dynamic 'agent-world system' we are always engaged in – a tool, when used, extends this system and creates a new 'agent-world-circuit' as an 'extended-agent-world circuit'.[1013] Clark highlights the 'bodily and sensory adaptability' of biological systems in general as a starting point – and drawing on the results of documented scientific experimentation – he demonstrates that using technology leads to 'real long term physiological changes' in brain response.[1014] Clark extrapolates that our bodies are designed in a way that allows us to incorporate 'new bodily and sensory kits' – which means we create

[1009] Clark, *Natural-Born Cyborgs*, p. 6.
[1010] Clark, *Natural-Born Cyborgs*, pp. 7–8.
[1011] Clark, *Natural-Born Cyborgs*, p. 8.
[1012] Clark, *Natural-Born Cyborgs*, p. 10.
[1013] Andy Clark, 'Re-Inventing Ourselves', in *The Transhumanist Reader,* pp. 113–127.
[1014] Clark, 'Re-Inventing Ourselves', pp. 116–117. The experiments in question involved macaque monkeys.

new ‘systematic wholes’ when we incorporate tools into our body-schema and this in turn leads to long-term changes in the body schema itself due to neural and bodily plasticity.[1015] Our own ‘embodied activity’ creates new extended agent-world systems. Hence, Clark states that the human mind can in this way be genuinely extended and augmented by cultural and technological activity.[1016]

He states, ‘what makes us distinctly human is our capacity to continually restructure and rebuild our own mental circuitry, courtesy of an empowering web of culture, education, technology, and artefacts’.[1017] Clark goes on to develop his thesis as an attempt to address the mind/body problem – he posits a third ‘hidden’ element to the problem and it reformulates it as ‘the mind-body-*scaffolding* problem’. The mind/body/scaffolding problem is understood by Clark as the ‘problem of understanding how human thought and reason is born out of looping interactions between material brains, material bodies, and complex cultural and technological environments’.[1018] Thus, Clark offers a possible route out of the mind/body problem – a route that is technologically mediated.

5.2 THE RUPTURE OF ANTHRPOGENESIS

5.2.1 COMPLEX TECHNOLOGY IS A UNIQUELY HUMAN PHENOMENON: TECHNICS IS NOT *JUST* TOOL-USE

As a means of developing the analysis so far, we can now consider how the theme of technology as an essential component in our evolution is a theme that extends across a wide range of disciplines. As such we can turn to archaeologist Steven Mithen who also holds that

[1015] Clark, ‘Re-Inventing Ourselves’, p. 120. Clark understands ‘body-schema’ as a ‘suite of neural settings that implicitly (and non-consciously) define a body in terms of its capabilities for action’, this is contrasted with ‘body-image’ which he understands as a ‘conscious construct’ that informs our thinking and our reasoning.
[1016] Clark, ‘Re-Inventing Ourselves’, p. 120.
[1017] Clark, *Natural-Born Cyborgs*, p. 10.
[1018] Clark, *Natural-Born Cyborgs*, pp. 10–11.

our particular use of material culture has played a defining role in our evolutionary success. The task that Mithen undertakes is the task of 'cognitive archaeology' – the aim of which is the 'reconstruction of prehistoric minds'.

Mithen investigates the mind of the human/ape common ancestor (which is generally assumed to more closely resemble the chimpanzee mind rather than the mind of the modern human) and the minds of our ancestors and relatives in the *Homo* lineage; *Homo habilis*, *Homo erectus*, and *Homo neanderthalensis* – the latter two he includes in a group which he gives the title 'Early Humans'.[1019] Mithen's starting point is the fact that –according to the archaeological record – it appears that the prehistoric material culture of *Homo sapiens sapiens* was qualitatively different from that of other hominin species. It is a matter of some controversy as to the reason for this – was it simply a result of us being the ones that made the necessary innovations and discoveries (innovations and discoveries that could have easily been made by other hominins), or was it a result of some difference in cognitive abilities, which meant that it was only us among the species of our genus that could use material culture in this way?[1020]

Does the archaeological record give us definitive evidence for a qualitative distinction between human and non-human species? According to Philosopher of technology Val Dusek, tool-making and language are the two traditional ways to argue for the uniqueness of human beings in contrast to other non-human species. To be effective, any such arguments need to show how human tool-making is different to animal tool-use, or that human language is different to the way in which other animals communicate. Dusek formulates this in terms of two competing perspectives – head vs. hand. Dusek says that this is a debate that has gone on

[1019] Steven Mithen, *The Prehistory of the Mind: A Search for the Origins of Art, religion and Science* (London: Orion Books, 1998), pp. 10–11.
[1020] Steven Mithen, 'Introduction to Part II', in, *Creativity in Human Evolution and Prehistory*, ed. by Steven Mithen (London/New York: Routledge, 1998), pp. 69–79, p. 67.

since the beginning of Western thought – i.e., should we look to *rationality* or *tool-making* as a way to define the human being, to *homo sapien or homo faber*.[1021]

The issue over which has primacy, the development of our hands or the development of our mind, is an important one. As Dusek puts it, 'did humans first get smart and then stand up, free their hands, and make tools? Or did they first stand up and make tools and then get smart'?[1022] Historically, there has been a tendency within philosophy to reject the idea that technology is a defining feature of the human being in favour of the argument based on language. As Dusek puts it, 'language, not tool-making, is what is characteristic of humans. Language, as the realm of meaning, is held up in opposition to technology'.[1023] One of the problems with using technology to define the human being is that we are now well aware of not only tool-use by other animals, but also of tool-making by other animals, not to mention niche-construction. Even so, and as Dusek points out, 'human tool-making has a characteristic that makes it different from animal tool-making', one such example of this the fact that humans 'make tools to make tools', i.e., *our technology has a recursive character*, there are 'tools that make tools that make tools'.[1024]

Once again, we have a recursive process playing a pivotal role in our inquiry into the human being, and playing a pivotal role in describing some of the essential characteristics of human action. As Scheler has shown, our consciousness is self-referential and recursive in nature. Our experience of the self is essentially recursively – so too is our technology. If we follow Scheler then, it does not have to be a simple case of either technology *or* language, we don't have to choose between the two. If we employ Scheler's metaphysics, we can understand both human technology and human language as a reflection of *Geist* – hence, *both* human technology and human language can be taken to be qualitatively different from tool-

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[1021] Val Dusek, *Philosophy of Technology: An Introduction* (Oxford: Blackwell Publishing, 2006*)*, pp. 112–113.
[1022] Dusek, *Philosophy of Technology*, p. 119.
[1023] Dusek, *Philosophy of Technology*, pp. 118–119.
[1024] Dusek, *Philosophy of Technology*, p. 118.

use and communication in other non-human animals. This is not necessarily a result of some inherent characteristic of either our language, or our technology, rather it is a result of *Geist*. Or to be more accurate, it is the result of the interaction of *Geist* and *Drang*, as the interplay between real and ideal factors.

In other words, we need to understand the human being in terms of both cognitive abilities and our technology, i.e., in terms of *both* head and hand. As Peter Kroes has already shown, 'engineered' technical artifacts are 'creations of mind and hand' – they require a combination of both mental and physical work, ideas and the manipulation of matter combine in our material production.[1025] **T**echnical artifacts are designed, and they contain a technical-functional. Artifacts are a mark of human engagement with matter – they are central to human experience – and they display, as an essential feature, fundamental 'aspects of humanity'.[1026]

As archaeologist Michael Chazan points out, artifacts are 'not only a source of evidence about early humans', they are also 'a crucial component of the process of becoming human'.[1027] Chazan states that from an archaeological perspective the 'current understanding' within the discipline is that 'the first artifacts were simple cobbles that early humans transformed into cutting and pounding tools through percussion' – he describes this activity as being 'extremely simple, and every indication is that the goal was to allow access to meat through butchery'.[1028] This establishes - from the earliest of human experiences – an intimate relationship with tools that has its origin in drive-conditioned behaviour. This is an uncontroversial assertion in and of itself and seems self-evident and easily explainable in terms of function and adaptation and – in terms of evolutionary development – potentially the result of purely physiological factors.

[1025] Kroes, *Technical Artefacts*, p. 4.
[1026] Chazan, *The Reality of Artifacts*, p. 15.
[1027] Chazan, *The Reality of Artifacts*, p. 10.
[1028] Chazan, *The Reality of Artifacts: An Archaeological Perspective*, p. 10.

Early hominin tool-use is comparable in many ways to tool-use associated with pre-human species and the higher primates in a way that our later use, design, and production of complex technology is simply not. Hence, if we are to find the roots of 'modern' technology in drives and the practical intelligence that Scheler says we share with other non-human species, we must have an understanding of technology that extends back in time to our very first use of tools[1029]. This is relevant because everything we have seen so far shows that if an accurate account of human evolution is to be constructed, it must include the centrality of artifacts and artifactual systems and processes. This is presumably true of both our past evolution *and* our future evolution, whatever direction that might actually take.

This is why cognitive archaeology offers us some unique resources. As a relatively new area of research, cognitive archaeology is the study of past ways of thought and past symbolic systems and structures – as inferred from material remains.[1030] As a discipline (or sub-discipline) it develops 'structures of inference' to try and understand how early humans used their minds and utilized conceptual and abstract thought in prehistoric societies. Evidence from stone tools and prehistoric material remains are combined with what we know about cognition as established by the cognitive sciences. Inferences about behaviour/cognitive abilities from archaeological evidence is studied in conjunction with knowledge gained from the observation of behaviour/cognitive abilities of modern humans and how this compares to similar data gathered on non-human animals. There is a general

[1029] See, Chris Gosden, *Prehistory: A Very Short Introduction* (Oxford: Oxford University Press, 2003), p. 18. The 'idea' of prehistory developed gradually between the 16th and early 19th Centuries, and exploded as a result of the predominance of discourse of evolution around the middle of the 19th Century. Understanding prehistory is both an empirical and a philosophical task. Prehistory understands that the world of material things can reveal something essential about us, our material culture can express the 'non-verbal bits of human experience', thus, prehistory is an exploration of human the being conducted through 'our connection to material things'. pp. 18–118.

[1030] Evolutionary cognitive archaeology is concerned with the 'evolution of the human mind', thus it incorporates 'all of human thought form the first stone tools 3.3 million years ago to the appearance of human civilization some 5,000 years ago', it can be understood to be a mixture of: paleoneurology, evolutionary psychology, primatology, and cognitive archaeology. See, Thomas Wynn, 'Evolutionary Cognitive Archaeology', in *Cognitive Models in Palaeolithic Archaeology*, pp. 1–21, p. 1.

working assumption that hominin cognition evolved from a last 'common ancestor', whose cognition was more like that of a chimpanzee than a modern human.[1031]

Cognitive archaeology tries to understand how cognitive processes operate in a specific context – there is an explicit focus on the unique human ability to construct and use symbols, and the way that symbols are used to cope with different aspects of human existence. Cognitive archaeology also works with the idea that the production of tools reflects cognitive processes, i.e., the production of stone tools involved the use of a 'mental template'.[1032] This refers to a notion of design inherent in the production of sophisticated tools, i.e., coherently structured and purposeful behaviour. The production of tools is then understood to have an inherent 'ideational' element. The dynamic of design links the tool to its mental template which 'guides' the craftsperson in the production of the artifact.[1033]

Hence, we can draw on the findings of the discipline to support the anthropological perspective of technics as material culture. This can then be employed to incorporate the idea of technological extension and mediation into Scheler's concept of interacting real and ideal factors – both in a historical and a metaphysical sense. In doing so we can at this stage lay the groundwork for the development of a theory of *technics and Geist*, i.e., human technology reflects the essential and unique character of human nature i.e., *self*-consciousness and our ability for ideation and abstract thought. The dual-aspect of the human being is mirrored in the dual-aspect of our technology, the unique character of human nature thus manifests itself within our artifactual production, in and through the principle of *design*.

Accordingly, we can argue that it is this mark of design that differentiates human technics as material culture, in comparison to the tool-use of non-human animals. Design is not instinctual – it is symbolic and it involves abstraction – the study of artifacts can help

[1031] Nathan Schlanger, 'Mindful Technology: Unleashing the *Chaîne Opératoire* for an Archaeology of Mind', in *The Ancient Mind*, ed. by Colin Renfrew and Ezra B.W. Zubrow(Cambridge: Cambridge University Press, 1994), pp.143–151.
[1032] Schlanger, 'Mindful Technology'
[1033] Schlanger, 'Mindful Technology.

reveal the symbolic cognitive processes that accompanied their creation and that were 'exteriorised' as part of this production. Cognitive processes and capacities are 'reflected' in material remains. Material culture reflects human cognitive processes and capacities – thus, the human being itself is reflected in the production of artifacts within material culture. The technical act has an element of both conceptual/abstract knowledge, and practical/procedural know-how.[1034] Because human artifacts have an ideational element, they are the material correlates of symbolic representations – *they contain an idea as part of them*, i.e., a trace of *Geist*.

Human material production is necessarily informed by intention, purpose, projection, forethought, and imagination, i.e., *it is a design-based activity*. An activity whose outcome is *anticipated*. Thus, a 'conceptual sequence' is formed, prior to *and* with the 'actual sequence' of gestures that make up the execution and implementation of the technical act. The technical act does not remain an 'immutable sequence' – 'inputs' and 'outputs' interact dynamically with each other, i.e., technics is a *dialogue*.[1035] The logic is hermeneutic!

The evolution of intellectual abilities can be studied by analysing the development of technical skills. This can also be done through the attempt to evaluate the conceptual complexity of the cognitive processes that underlie them.[1036] By way of illustration, take the example of flint-knapping: the prehistoric flint worker bases their 'technical reasoning' on concepts and mental images of 'ideal' (geometric) form; this ideal form works as a guide; the mental assessment of possible outcomes and consequences of each action within a given operational sequence indicates 'ideational' know-how.[1037] Thus, a 'technical' operational sequence has a corresponding 'conceptual' operational sequence – this conceptual pattern

[1034] Schlanger, 'Mindful Technology'.
[1035] Schlanger, 'Mindful Technology'.
[1036] Schlanger, 'Mindful Technology'. This type of operational sequence is called the *chaîne opératoire* (operational chain/operational sequence), a term commonly said to be first employed by, André Leroi-Gourhan.
[1037] Schlanger, 'Mindful Technology'.

indicates imagination, anticipation, and forward planning as part of the overall process of production.[1038]

Continuing with this train of thought we can also consider how, according to cognitive neuroscientist and neuroanthropologist Merlin Donald, ‘the modern human mind evolved from the primate mind through a series of major adaptations’.[1039] Donald states that it is important to keep in mind that ‘despite our close genetic relationship to apes, the cognitive distance from apes to humans is extraordinarily great, much greater than might be imagined from comparative anatomy’.[1040] He goes on to say that while the idea of cognitive evolution is necessarily ‘speculative’, it is also essential to theorise about the origins and emergence of human cognition. For Donald, it is clear that the modern mind evolved from the primate mind through adaptations, where each adaptation led to the emergence of a new ‘representational system’ – hence, this was not just the physical evolution of larger brains, but the evolution of ‘new systems for representing reality’.[1041]

Donald says that when we consider that there was no pre-existing ‘symbolic’ environment that preceded our use of symbolic representation, our capacity for ‘symbolic reference’ poses a serious theoretical challenge to ‘computational’ concepts of the mind.[1042] To use and understand a symbol correctly – and in context – one must understand what it represents. No animal, apart from the human being, has ever invented a symbolic device in its natural environment. So, how did humans – given their ‘non-symbolic mammalian heritage’ – come to represent reality in symbolic form? Through what stages did this development

[1038] Schlanger, Mindful Technology’.
[1039] Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition* (Cambridge: Harvard University Press, 1993), pp. 1–3. Cognitive science has neglected its ‘theory of origins’ according to Donald – not enough attention has been given to the ‘evolutionary’ context and cultural and historical elements of human cognition. The cognitive abilities of non-human animal species are studied in terms of evolution and their place in the biological order – Donald argues that this needs to be done with respect to human cognition.
[1040] Donald, *Origins of the Modern Mind*, p. 1.
[1041] Donald, *Origins of the Modern Mind*, p. 2.
[1042] Donald: *Origins of the Modern Mind*, pp. 2–3.

pass? How did humans, as a biological species, bridge the gap between non-symbolic cognition and symbolic cognition? [1043]

The emergence of human cognition meant a radical change in primate cognition – what Donald describes as a gradual 'surrounding' of primate mind by a 'new representational system'.[1044] The model he suggests posits that the pre-existing cognitive system is 'absorbed' into a 'larger cognitive apparatus' – a process that involves biological and technological factors being incorporated into a 'single evolutionary continuum'.[1045] The modern mind is, according to Donal, a 'hybrid structure containing vestiges of earlier stages of human emergence, as well as new symbolic devices that have radically altered its organization' – thus, the 'structural relationship between individual human minds and external memory technology continues to change'.[1046]

Interestingly, Donald also argues that 'recent changes in the organization of the human mind are just as fundamental as those that took place in earlier evolutionary transitions'.[1047] These 'recent' changes though are not mediated by 'genetically encoded changes in the brain' – they are mediated by 'new memory technology' – the effects of these 'technological' changes can be seen in similar terms as the effects of prehistorical 'biological' change with respect to the fact that they can produce 'alterations to the architecture of human memory'.[1048] In other words, human evolution and the evolution of human cognition is transitioning from the biological to the technological domain.

For Donald, the modern mind is a 'hybrid structure' which contains vestiges of earlier stages of human emergence and 'new' symbolic devices that have – since their development

[1043] Donald, *Origins of the Modern Mind*, p. 3.
[1044] Donald, *Origins of the Modern Mind*, p. 4.
[1045] Donald, *Origins of the Modern Mind*, p. 4.
[1046] Donald, *Origins of the Modern Mind*, p. 4.
[1047] Donald, *Origins of the Modern Mind*, p. 4.
[1048] Donald, *Origins of the Modern Mind*, p. 4.

– radically altered its 'organization'.[1049] He states that the unique feature of the modern cognition is the nature of the structural relationship between individual human minds and 'external memory' – a relationship that is constantly changing and developing as part of our overall 'continuing mental evolution'.[1050] He says that cognition is the mediator between brain and culture – the technical act is a dialogue that is situated at the juncture between the 'external' and the 'internal' – hence, the technical act is a 'cognitive activity'. Accordingly, cognition is the engine of – and locus for – evolutionary change.[1051]

The human mind has been evolving for a very long time. Written records produced by that mind date back only to about 5,000 thousand years ago, thus, we need to look back into prehistory if we are to begin to try and grasp a sense of what we would recognise now as modern human consciousness and how it evolved. Mithen's argument is that in prehistory 'the distinguishing features of the human mind arose', and – despite the extended time-frame – it is in prehistory that we will find the 'key events which acted as turning points for how the mind evolved'.[1052] The logic is simple, to understand the present, we must understand the past, hence, archaeology may be the key to understanding the modern mind.

Our starting point, is of course the first appearance – approx. 2.5 million years ago – of stone tools within the archaeological record, but we must look back slightly further to establish some context. Because the archaeological record dates from 2.5 million years ago it encompasses the period of evolutionary development which saw hominin 'brain enlargement and the evolution of fully modern language and intelligence'.[1053] Combined with anatomical and morphological data from the fossil record, the 'archaeological record is an essential means to reconstruct the past thought and behaviour of our ancestors, and the selective

[1049] Donald, *Origins of the Modern Mind*, p. 4.
[1050] Donald, *Origins of the Modern Mind*, p. 4.
[1051] Donald, *Origins of the Modern Mind*, p. 4.
[1052] Mithen, *The Prehistory of the Mind*, p. 1.
[1053] Steven Mithen, 'Introduction: The Archaeological Study of Human Creativity', in *Creativity in Human Evolution and Prehistory*, pp. 1–11, p. 7.

pressures for cognitive evolution' – as such, cognitive archaeology takes as its point of departure the following working hypothesis: the understanding of human behaviour and society (past or present) must necessarily entail explicit reference to human cognition; the study of human cognition (past or present) must be undertaken in such a way that it is integrated into the study of society in general – individual cognition takes place always in a shared context; material culture is an essential aspect of the expression of human cognition, while simultaneously being a necessary means to develop it.[1054] All of which dovetail nicely with the framework of Philosophical Anthropology we have already established.

The underlying principle here is that the development of culture between approx. 60,000 and 30,000 years ago, and especially its 'cumulative character of knowledge (something that had been absent from all previous human cultures), is partly attributable to the disembodiment of mind into material culture – epitomised in the storage of information in paintings and carvings', thus, 'material culture plays an active role in formulating thought and transmitting ideas, and is not simply a passive reflection of these'.[1055] As such, the investigation into the 'relationship between material culture and human cognition is one of the key tasks for the future of cognitive archaeology'.[1056]

The most important part of this is the idea of 'the disembodiment of mind into material culture'. This highlights the two way dynamic of the human/technology relation, technics as material culture is not simply a passive, value-neutral, and instrumental relationship between the human being and their artifacts, it is a dynamic co-constitutional process that works both ways. As we will see, it is also a process that was well under way by the time anatomically modern humans developed intelligence and behaviour that we recognise as equivalent to our own – the late stages of both human physiological

[1054] Mithen, 'The Archaeological Study of Human Creativity', p. 7.
[1055] Mithen, 'The Archaeological Study of Human Creativity', pp. 7–8.
[1056] Mithen, 'The Archaeological Study of Human Creativity', p. 8.

development *and* human cognitive development took place in a pre-existing cultural/technical context.

Approximately 6 million years ago, the common ancestor of humans and apes existed – this was the last common ancestor before our evolutionary trajectories diverged. Between then and approx. 100,000 years ago when *Homo sapiens* appeared, there were what Mithen describes as 'two major spurts of brain enlargement' – the first one between 2 and 1.5 million years ago. This is believed to coincide with the appearance of *Homo habilis*, who is generally assumed to be among the first of our ancestors to make stone tools – the development of such being 'tentatively' linked to the coinciding increase in brain size.[1057]

The second spurt is less 'pronounced' than the first. It occurred between 500,000 and 200,000 years ago, and unlike the first case, this increase in brain size does not appear to have a similar correlating change in the archaeological record associated with it, i.e., despite this second dramatic increase in brain size, the same tools, techniques, and life-style patterns persisted without any significant developments.

What is important about these facts is that the two spurts of increased brain size *do not* coincide with the what are recognised as the two most significant 'prehistorical transformations' in human behaviour – a cultural explosion and an agricultural explosion, or what are called the Cognitive Revolution and the Agricultural Revolution.[1058] Thus, the two defining events of human prehistory both took place 'long after the modern size of the brain

[1057] Mithen, *The Prehistory of the Mind,* pp. 5–8.

[1058] See, John Sarnecki, and Matthew Sponheimer, 'Why Neanderthals Hate Poetry: A Critical Notice of Steven Mithen's *The Prehistory of Mind'*, *Philosophical Psychology*, 15/2 (2002), 173–184 (pp. 173–178). Sarnecki and Sponheimer are critical of Mithen's project. They say that because archaeology is the 'study of behavioural residues', it may not be equipped to tell us anything of value about the finer details of the development of human cognition, as behavioural changes 'do not necessarily issue from changes in biology [...] it cannot *ipso facto* be used as evidence of biological change' – 'archaeological changes are not sufficient to demonstrate changes in hominid biology'. Also, the authors say that Mithen works off the assumption that the different stages in development of modern human is analogous with the different stages in our development as a species, i.e., ontogeny recapitulates phylogeny. In and of itself this is a contentious position, and Mithen's idea that a transition from the 'generalised intelligence of our hominid precursors to a modular one' marks the emergence of what we can call the modern mind, is based firmly on it. Even if this perspective is correct, and it is indeed modular cognitive capacities that differentiate us form other species, the authors suggest that this still leaves the real issue unaddressed. What is the basis for this form of cognition being a uniquely human trait?

had evolved'.[1059] Both are exclusively associated with *Homo sapiens sapiens*, the first occurring approx. 60,000–30,000 years ago and marks the first appearance of art, complex technology, and religion, while the second occurred about 10,000 years ago, and marks the start of farming and agricultural practices such as the domestication of animals.

Mithen shows how *Homo neanderthalensis*, who existed from approx. 200,000–30,000 years ago, had brains as large as ours, but despite this, they had no complex technology, no art, and more than likely no religion. Thus, he argues that whatever lies at the heart of the transformations within human evolution is not directly reducible to simply an increase in brain size.

The question that we need to ask is what was going on between the two spurts of brain expansion and the cultural explosion? How and why did the cultural explosion take place and what was happening during that period to the mind of *Homo sapiens sapiens* to bring it about? What we are really only concerned with is the lack of change in behaviour and tool-making of these Early Humans after the second expansion of brain size, and the similarities and dissimilarities that existed between us and Neanderthals – who survived in Europe until around 30,000 years ago and co-existed alongside us for thousands of years. Despite similar brain size and comparable technical skills, Neanderthals only made tools from stone and wood, and lacked the art and ritual associated with modern humans – traits which culminated in the 'The big bang of human culture' that occurred approx. 60,000–30,000 years ago.[1060]

What we need to focus on is the fact that modern humans appeared 100,000, years ago but behaved in essentially the same way as Neanderthals and other Early Humans until between 60,000 and 30,000 years ago when – with no apparent change in brain anatomy – the cultural explosion took place. Mithen contends that this represents such a 'fundamental

[1059] Mithen, *The Prehistory of the Mind*, pp. 6–8.
[1060] Mithen, *The Prehistory of the Mind*, pp. 11–12.

change in lifestyles' that it almost certainly 'derived from a major change in the nature of the mind', in fact he claims that this transformation was in fact 'the emergence of the modern mind', i.e., the emergence of the same 'mentality' and cognitive capacities that we possess today, and which are the 'cognitive foundations of art, religion and science'.[1061]

Mithen constructs cognitive models to describe the possible development in human cognition, but we don't have to worry about the technical details of this. Philosophically, the main thing that we need to do, is establish that the late stages of human cognitive development took place in a pre-existing technical and cultural context, something that Mithen's work, and the archaeological record itself do in fact support. His investigation is into whether or not the first stone tools associated with the genus *Homo* are 'indicative of specialized cognitive processes of a kind that seem absent from the mind of the common ancestor 6 million years ago', and if – in the intervening 4 million years – there has been what could be called an evolution of 'technical intelligence'?[1062] He asserts that the earliest stone tools attributed to the hominin lineage are recognised as such due to their construction being beyond the technical capabilities of chimpanzees, thus it is assumed this puts them beyond the skill of the common ancestor – the tools require an understanding of fracture dynamics that appears beyond the capacity of the chimpanzee mind', thus they mark the presence of hominin cognition.[1063]

In a similar way, Mithen also shows how there is an observable and 'quite dramatic increase', in the technical skill displayed by Early Humans, in comparison to that shown by the earliest hominins and *Homo habilis*. Hence, archaeological evidence reveals an observable distinction between the cognitive abilities of the different species of the genus

[1061] Mithen, *The Prehistory of the Mind*, p. 12.
[1062] Mithen, *The Prehistory of the Mind*, p. 106.
[1063] Mithen, *The Prehistory of the Mind*, p. 106.

Homo in much the same way the same way as between early hominis, *Homo habilis* and the common ancestor and – by implication– between humans and chimpanzees.[1064]

A number of important issues arise that relate to what Mithen describes as 'technical conservatism' in the tool-use of Early Humans: Early Humans appear to have not used bone, antler, or ivory as raw material despite the advantages of using such materials for making tools for hunting etc.; Early Humans seem to have not made tools that were specifically designed for a unique purpose and their tools did not advance beyond having a 'generalised' purpose; Early Humans did not make tools that had multiple components, despite combining different types of raw materials in the tools they did make; Early Human tool-use displays a noticeable lack of variation and diversity, both geographically and temporally; Early Human tool-use is characterised by a lack of innovation.[1065]

Thus, through an analysis of archaeological evidence that focus on the specific characteristics of tool-making and tool-use, we can identify an 'event' of some form or other that occurred in prehistory and which marks a transformation in our evolutionary trajectory – a rupture in the evolution of consciousness, or 'the big bang of human culture' as Mithen describes it.[1066]

What we need to identify is that this 'cultural explosion' took place approx. 40,000 years after the first appearance of anatomically modern humans – hence, it is not our appearance in prehistory that marks perhaps its most significant turning point, rather it is something that happened *only after we had been around for a considerable amount of time without any significant changes in behaviour or anatomy*.

The Middle/Upper Palaeolithic transition as it is known marks 'the origins of human culture', and describes how there appears to have been a 'whole series of cultural sparks', that occurred at 'slightly different times in slightly different parts of the world between

1064 Mithen, *The Prehistory of the Mind*, p. 106.
1065 Mithen, *The Prehistory of the Mind*, pp. 136–139.
1066 Mithen, *The Prehistory of the Mind*, p. 171.

60,000 and 30,000 years ago'.[1067] Mithen states that the 'majority of archaeologists' ascribe to the position that 'something fundamental occurs at the Middle/Upper Palaeolithic transition', even if there is disagreement regarding the exact cause of this transition.[1068] Mithen argues that it is here that we see that the final developments of human cognition took place – the point at which the modern mind emerged.[1069]

Archaeology offers two obvious 'bodies of information', about the evolution of human cognition, the relevant time-frames of developments and their evolutionary context.[1070] As such, we can use the above to argue that because the point in prehistory which we think marks the emergence of human consciousness as we know it today, is the same point in prehistory that complex human technology emerged, then if the emergence of the modern mind describes a transition from consciousness to self-consciousness, that transition happened in tandem with the transition from simple tool-use and proto-technologies to technics. Accordingly, if the emergence of the modern mind is the point – *within evolution* – where consciousness became self-consciousness, then this is also the first point in the actualisation (*Vergeistigung*) of *Geist*. Where – if we follow and further develop Scheler's scheme – *Geist* first became concrete, in and through the human being. And if this is the case, then technics is intimately and irrevocably tied to the realisation and vitalisation of *Geist*, as both a micro-level phenomenon as human self-consciousness, and a macro-level phenomenon as a recursively structured metaphysical event that describes the first tentative steps of Being bending back on itself.

What is it that the archaeologist recognises in the material remains of the archaeological record that allows them to say, it is *here* – at this point in time and space – that we first developed symbolic thought, it is *here* that we produced art and religion for the first

[1067] Mithen, *The Prehistory of the Mind*, p. 172.
[1068] Mithen, *The Prehistory of the Mind*, p. 172.
[1069] Mithen, *The Prehistory of the Mind*, p. 12.
[1070] Thomas Wynn, 'Archaeology and Cognitive Evolution', *Behavioural and Brain Sciences*, 25 (2002), 389–438.

time, it is *here* that we fabricated complex tools which describes equally complex cognitive processes and capacities? If Scheler is correct and we develop his thought we can say at this point that it is *Geist*.

Also, the recursive nature of this process is further highlighted when we consider that the first examples of 'items for personal decoration such as beads, pendants, and perforated animal teeth' were all produced around the same time as the first cave paintings of 'images of animals', and 'anthropomorphic figures', and symbolic visual representations clearly imbued with varied and complex multiplicities of meanings and metaphorical content.[1071] Also of interest are the paintings of humans as animals, and animals as humans – visual representations of anthropomorphism and totemism. As Mithen points out, anthropomorphic thinking is a common activity that pervades our modern lives still, and is something we naturally apply to our pets, and there is evidence for totemism as universally present in human hunter-gatherer societies/groupings. Both anthropomorphism and totemism describe symbolic engagement with the natural world around us.[1072] They also both imply a sense of self.

Which brings us to reflection on some of the technical developments associated with the Middle/Upper Palaeolithic transition. While the same animals were hunted by Modern Humans of the Upper Palaeolithic, as were hunted by Early Humans, there is evidence of a fundamental gap between the skills involved in *how* these animals were hunted – with modern humans being 'considerably more proficient at predicting game movements and planning complex hunting strategies'.[1073] The increased ability for prediction and tactics alone does not explain the vast differences between the hunting of Modern Humans and that of Early Humans. Another vital ingredient was the development of new hunting weapons,

[1071] Mithen, *The Prehistory of the Mind*, pp. 177–181.
[1072] Mithen, *The Prehistory of the Mind*, pp. 186– 189.
[1073] Mithen, *The Prehistory of the Mind*, p. 190.

and the archaeological record reveals a 'striking elaboration of technology at the start of the Upper Palaeolithic'.[1074]

New types of projectile weapons using bone and antler were developed at this stage which incorporated different types of raw material and had multiple and complex components. Most notable is the fact that these new tools also display an associated store of knowledge, which is revealed through their design and functionality – i.e., new projectile points and barbs made of stone and bone fabricated with specific target-prey in mind, which reveals an understanding of the importance of identifying, and disseminating information about, the correlations between 'specific types of points' and 'specific types of animals'.[1075]

Just as important as the introduction of these new tools and weapons was their constant modification and development – experience-based knowledge driving innovation and experimentation as a response to changing needs and conditions. Resulting in a constantly increasing efficiency in hunting, and a concomitant increase in the sophistication of technical skills.[1076] An example of a prehistoric engineering perspective perhaps?

It is this innovation and design that interests us the most, for as Mithen himself points out, the 'design of hunting weapons is perhaps the best example of this new type of thinking', as it led to a 'wide range of other technological developments', while also setting in motion the 'constant innovation of new technology', i.e., technology which is characterised by the integrated knowledge and ability to manipulate a wide range of both inorganic and organic substances, constituting both the tools employed, and the materials worked on, as part of a range of manufacturing processes.

Many of these tools were themselves engraved and carved with elaborated designs and symbols – some even carved into the likeness of the animals which they would be used to hunt. Thus, we have blurring of the line between what we would describe as 'art' and what

[1074] Mithen, *The Prehistory of the Mind*, p. 192.
[1075] Mithen, *The Prehistory of the Mind*, p. 193–194.
[1076] Mithen, *The Prehistory of the Mind*, p. 194.

we would call a 'tool'. Mithen interprets this by saying that these are art objects *as* a type of tool – 'a tool for storing information and for helping to retrieve information stored in the mind'.[1077] Possibly functioning as 'mnemonic aids and recording devices', these artifacts can be seen in a similar way to cave paintings as a way to 'store information about the natural world' – or stimulate its recollection – for while there may be some debate about what specific roles these prehistoric artifacts may have fulfilled, it is clear that many of them stored, transmitted, and facilitated the retrieval of information. Thus, just like the cave paintings, they were tools with which to think about the natural world'.[1078] In this way, material culture became 'imbued with social information at the start of the Upper Palaeolithic'.[1079]

The change in behaviour described above coincides with what is understood to be the first appearance of religious thought, ritual activities, and concern about supernatural phenomena and the possibility of an afterlife. Cave art is widely assumed to contain a mythical component, and the use of grave goods is an indication of the belief that death is in some sense *transitional*. Thus, we have a combination of 'new abilities to use materials such as bone and ivory for tools', the use of 'artifacts to store and transmit information', symbolic art, ritual, and religious thought – all of which describe a fundamental transition in cognition which describes the emergence of a mentality that can be understood as being characteristically modern.[1080]

What all of the above also describes is a fundamental change in 'the nature of consciousness', and the emergence of 'reflective consciousness' – Mithen says this is the result of the evolution of 'cognitive fluidity' as a critical and necessary step in the evolution of the modern mind from a 'specialized', to a 'generalized', type of mentality. The seeds of

[1077] Mithen, *The Prehistory of the Mind*, pp. 194–195.
[1078] Mithen, *The Prehistory of the Mind*, p. 196–197.
[1079] Mithen, *The Prehistory of the Mind*, p. 198.
[1080] Mithen, *The Prehistory of the Mind*, p. 202–203.

this 'were sown with the increase of brain size that began 5000,000 years ago', and the end result was the capacity to 'design complex tools, to create art and believe in religious ideologies'.[1081]

There first period of 'brain expansion' described above, could only have come about according to Mithen, if 'the constraints on brain expansion had been relaxed' and if the necessary selective pressures were present, i.e., the combination of bipedalism and meat eating. Bipedalism began to evolve around 3.5 million years ago, most likely as result of selective pressures associated with thermal stress and the advantages of an upright posture in reducing exposure to heat from the sun. Bipedalism facilitated brain enlargement, and just as importantly it freed up the hands allowing for the development of increasing manual dexterity and tool-use.[1082] Bipedalism also opened the way for the anatomical developments required for human vocalisation – the descent of the larynx, reduction in teeth size, and lowering of the jaw.[1083]

In conclusion we can consider how Mithen's archaeological scholarship leads him to ask the question: 'How could past people come up with their ideas […] about the shape of stone tools, the design of cave paintings and the burial of their dead'? The answer he posits is human creativity. A 'very creative mind' lies behind all of these sophisticated, intentional, and meaning imbued practices.[1084] For Mithen it is clear that 'a mind that appears to have no bounds in what can be conceived and achieved and which lies at the root of the cultural diversity and change that is so evident from the world around us, let alone the 2.5 million years of the archaeological record'.[1085]

Mithen thus looks to the notion of *creative thought* as a way to try and explain the cultural diversity as revealed through the material remains of archaeology. His first

[1081] Mithen, *The Prehistory of the Mind*, pp. 217–223.
[1082] Mithen, *The Prehistory of the Mind*, pp. 233–235.
[1083] Mithen, *The Prehistory of the Mind*, p. 235.
[1084] Mithen, 'The Archaeological Study of Human Creativity', p. 1.
[1085] Mithen, 'The Archaeological Study of Human Creativity', p. 1.

realisation is that we don't fully understand, nor agree on, what creativity or creative thought is. In this respect he champions cognitive archaeology by stating that 'without examining the prehistory of creative thought one will only ever get a narrow and biased view of the nature of human creativity'.[1086] For as Mithen points out, the very question of human nature is approached differently by a prehistorian in comparison to experts working in other fields. This is because the first question that the prehistorian will ask is, 'what type of human'? – thus, straight away creativity is not delimited to a narrow, modern – and usually Western – conception of humanity.[1087]

What all of this tells us is that the field of cognitive archaeology can *recognise* different types of cognition and cognitive capacities through an investigation into material remains. The central aim of cognitive archaeology is the study of the 'cognitive capacities of ancient hominins', and how this can be used toward 'charting the emergence of the distinctive capacities of our own species, aspects that are either unique to humans amongst living species, or much more accentuated in humans compared to other species'.[1088] Hence, we can recognise a difference between hominin and pre-hominin tools, and between different species of hominin. We can also recognise a difference between the tools of *homo sapiens sapiens* and all other hominin species – a difference that is constituted in and by apparent cognitive uniqueness. This means that the there *is* a difference between our tools and the tools of other non-human animals, and it is directly related to the specific character of our cognitive processes. Technics – as material culture – is not simply tool-use.

[1086] Mithen, 'The Archaeological Study of Human Creativity', pp. 3–4.
[1087] Mithen, 'The Archaeological Study of Human Creativity', p. 3. One assumes that this also means Mithen is open to the possibility that creativity and creative thought is not the exclusive preserve of humans.
[1088] Kim Sterelny, and Peter Hiscock, 'The Perils and Promises of Cognitive Archaeology: An Introduction to the Thematic Issue', *Biol Theory,* 12 (2017), 189–194 (p. 189).

5.2.2 MATERIAL CULTURE: A NECESSARY ANCHOR FOR COGNITIVE EVOLUTION

The appearance of art in the archaeological record approx. 60,000–30,000 years ago marks a significant juncture that is notable due to the fact that there is evidence of tool-use for 2.5 million years previous to this point, but without any real indication of art during that period.[1089] Anatomically modern humans are dated as making an appearance some 70,000 years previously, but again, with no real sign of art as we would recognise it for that entire time.[1090] Although there is not universal consensus on this issue, we have considered the argument that the appearance of technically sophisticated and skilled cave art, which displays clear symbolic content, and which marks the beginning of the Upper Palaeolithic in Europe, is 'believed to be exclusively associated with anatomically modern humans'.[1091]

It is generally understood that this represents the first example of art that archaeology has discovered, and Mithen has suggested that the appearance of these examples of cave art, 'broadly coincides with a host of other new types of behaviour', and as such, this can only 'strengthen our belief that they do signify a major transition in the nature of human thought and behaviour at this very late stage in human evolution'.[1092] This first appearance of art in Europe was followed soon afterwards on other continents. According to Mithen, this fact – when taken together with the dates assigned to the other novel behaviours such as the use of gravegoods and the development of boats capable of 'substantial sea crossings'– means there appears to be a window of cultural development within the archaeological record which 'reaches a crescendo at 30,000 years ago with what we can recognise as fully modern

[1089] Steven Mithen, 'A Creative Explosion: Theory of Mind, Language and the Disembodied Mind of the Upper Palaeolithic', in *Creativity in Human Evolution and Prehistory*, pp. 120–140.
[1090] Mithen, 'A Creative Explosion', p. 120.
[1091] Mithen, 'A Creative Explosion', p. 120. The exact date that art was first produced is a contested issue, obviously the earliest appearance in the archaeological record does not necessarily equate with when the first artistic production took place, and future discoveries may mean a reassessment of established dates.
[1092] Mithen, 'A Creative Explosion', pp. 120–121.

behaviour'.[1093] Mithen describes how this transitional period is generally referred to in the literature as 'a creative explosion', and how this delineation is an apt one because the period is characterised by significant 'novelty', as expressed in the 'production of art' and 'technological innovation' – two activities which we would intuitively understand to be inherently tied to creativity, and two activities we would give as prime examples of a display of creative behaviour.[1094]

Importantly, the above creative explosion in human thought represents the emerging ability of humans to 'map', 'transform', and 'explore' what can be understood as 'conceptual spaces' or 'cognitive domains' – it is this developing ability that defines the Middle/Upper Palaeolithic for Mithen.[1095] Explanations for such an 'emergence of a new degree of creative thought at this late stage of human evolution', are the subject of much debate, and Mithen holds that the cognitive changes that took place as part of this 'creative explosion', are likely to be a transition from 'domain-specific' model of cognition, to a model that assumes 'a cognitively fluid mentality' – a transition that he says was underlined by three necessary aspects of developing human behaviour at that time: the possession of a theory of mind; the evolution of language; and the role of material culture as 'a non-biological extension of the mind'.[1096] The first of these – *theory of mind* – and the third – *disembodiment of mind into material culture* – are of particularly significant interest to us.

Mithen describes a 'theory of mind' as the 'ability to attribute a full range of mental states to other individuals as well as oneself, and then to use such attributions to predict and understand behaviour' – he says that there is strong evidence to suggest that a theory of mind is the basis for imaginative and creative thought, and an 'essential prerequisite for the

[1093] Mithen, 'A Creative Explosion', p. 121.
[1094] Mithen, 'A Creative Explosion', p. 121.
[1095] Mithen, 'A Creative Explosion', p. 123. Here, Mithen adopts Margaret Boden's definition of creative thought which he says is the 'mapping, exploration, and transformation of structured conceptual spaces'. See, Margaret Boden, *The Creative Mine: Myths and Mechanism* (London, Weidenfield & Nicolson, 1990),
[1096] Mithen, 'A Creative Explosion', p. 123.

exploration and mapping of conceptual spaces.[1097] Hence, he asks is the 'creative explosion' of the Upper Palaeolithic directly related to the evolution of a theory of mind?[1098] Evidence suggests that chimpanzees and gorilla seem to possess a theory of mind and as such we can probably assume our last common ancestor did also, as did our own hominin ancestors. As a result, we can't attribute the 'creative explosion' of 30,000 years ago *solely* to the evolution of a theory of mind – theory of mind is a necessary but not sufficient condition for the creative explosion.[1099]

Thus, language is assumed to have also played a formative role. There is some controversy regarding exactly when language first evolved in humans, and there is an apparent contradiction between the fossil and the archaeological record, where fossil evidence for the anatomical capacity for vocalisations needed for language seems to significantly predate the archaeological evidence for the appearance of language mediated behaviour in humans. A solution to this says Mithen, is the notion that early humans possessed a 'proto-language' that should be considered to be significantly different to the language of modern humans.[1100] Hence, it can be understood that it was a change in the nature of language that was one of the necessary conditions that allowed for the development of the capacity to 'map' and 'transform', our 'conceptual spaces'. Language is hugely

[1097] Mithen, 'A Creative Explosion', p. 124.
[1098] Mithen, 'A Creative Explosion', p. 126.
[1099] Of course, these other possible examples of the capacity to attribute a mind to other beings are probably not as going to be as developed as our own theory of mind, much in the same way that we differentiated earlier between self-awareness and self-reflective self-awareness/self-consciousness. But it is interesting to extrapolate a little from this and imagine such less-developed self-awareness as the possible first glimmerings of *Geist* in the evolutionary process. The first recursive stirrings of evolution starting to become a self-referential process. Of course, if this was the case, then we would perhaps have to attribute this proto-*Geist* to some non-human animal species presently – presumably any that pass the MSR test would qualify. There would be obvious implications for Scheler's concept of *Geist* as an exclusively human trait, but I don't think it would cause any serious problems to his overall scheme – we might just need to expand our understanding of *Geist* and possibly extend it a little way 'backwards'– so to speak – down the hierarchy of psychic-becoming. Realistically, if *Geist* is one of two primordial aspects of ultimate reality, it has to be there – in an ontological sense – all along to some degree or other. There is no reason to assume that its realisation – in and through the human being – would be temporally book-ended with precise and clearly identifiable lines of evolutionary delineation. I think it should be recognised that the philosophical issue of identity over time is necessarily going to be a consideration for any process of becoming or any process philosophy more generally.
[1100] Mithen, 'A Creative Explosion', pp. 129–131.

transformative in this sense , as it allows for the exploration of conceptual spaces from more than a single mind – language allows ideas and concepts to 'migrate' from one mind to another, and allows us to build up an interconnected network of ideas and conceptual spaces that can be explored individually or collectively.[1101]

In this way, Mithen says that 'the evolution of modern, general purpose language played a dual role in forming the modern mind and delivering the potential for creative thought. It provided the means by which one could explore one's own conceptual spaces, and, by creating a network of minds, the extent of this exploration and transformation was exponentially increased' – echoing Andy Clark, he states that 'language is a means by which mind is extended beyond the bounds of individual brains and bodies', it functions in such a way so as to be a way in which 'the mind becomes disembodied'.[1102]

And this then brings us to the third necessary condition for the emergence of creative thought – *material culture and its causal role in our cognitive development*. Rather than assume that the extraordinary cultural changes of the period were produced by changes in cognition, Mithen says that it is perhaps more pertinent to see the developments in material culture as a cause rather than simply an effect of those changes. He describes a 'positive feedback loop', that worked to engender 'a transformation of the human mind, behaviour and culture', which we now identify as the previously described creative explosion or – as some call it – the Cognitive Revolution.[1103]

According to Mithen, we can see material culture as performing a similar role to that of language, in that it facilitated the creation of 'networks of minds, disembodying minds, and exponentially increasing the range of conceptual spaces available for exploration and the manner in which this could be undertaken' – but while language can be extremely effective in terms of sharing ideas, the spoken word lacks concreteness, and is fleeting in its lack of

[1101] Mithen, 'A Creative Explosion', p. 131.
[1102] Mithen, 'A Creative Explosion', p. 132.
[1103] Mithen, 'A Creative Explosion', p. 132.

permanence compared to ideas encoded in physical media. Such ideas are exteriorized and given objective material form, and it is this which allows them to survive in the world – and to be transmitted across time.[1104]

Thus, for Mithen, 'material culture is the prime means by which minds are extended out of the body, and connected between individuals'.[1105] In this regard, there are three aspects of it which need to be considered: 1. Material culture understood as a way in which we store information; 2. Material culture as a way in which we can 'anchor ideas that have no evolutionary basis within the mind'; 3. Material culture as allowing the 'constant reinterpretation' of the ideas that it encodes.[1106]

1: <u>Material culture as non-biological memory</u>: material culture understood in this way serves as 'an extension of biological memory', and the incorporation of 'external memory' into our everyday existence as vital constituents of our thinking – especially our creative thinking. In this respect, Mithen argues that 'the art of the Upper Palaeolithic is functioning to reduce the computational load on individual minds, expanding the possibilities of information storage, and enabling information and ideas to migrate between individuals'.[1107]

2: <u>Material culture as a cognitive anchor</u>: understood in these terms, material culture allows for our 'conceptual spaces' to secure a firmer footing than they enjoy as 'transient' products of the biological mind. Propped up by material culture, conceptual spaces are accessible to more individual minds, and the very fact of this material perseverance serves to facilitates further – potentially novel – transformations. By way of example, Mithen references how the modern mind – for some unknown reason – has the capacity to undertake actions and engage

[1104] Mithen, 'A Creative Explosion', p. 132.
[1105] Mithen, 'A Creative Explosion', p. 132.
[1106] Mithen, 'A Creative Explosion', p. 132.
[1107] Mithen, 'A Creative Explosion', p. 133.

in behaviour that does not appear to serve the evolutionary ends of the species or individual organism. He says the fact that we can display such apparently 'maladaptive' behaviour is one of the most 'puzzling features' of the modern mind. By way of example he considers 'religion and pure mathematics' – he says that these phenomena are not easily explainable in terms of 'adaptive value', and it is far from clear how to explain them in functional terms in an evolutionary sense.[1108]

For Mithen, this suggests that the 'concept of a supernatural being seems to be able to arise from integrating, in some fashion, unique ways of thinking about humans, animals, and inert objects, to create an idea of something that cannot exist in the real world'.[1109] He says that religious idea should be – by definition – more difficult to transmit, disseminate, and maintain over time, compared to ideas that relate directly to the satisfaction of material needs and wants, and matters of survival, ideas which clearly have 'a deep evolutionary basis in the mind'.[1110]

He concludes by saying that to become established, such abstract ideas would need to 'become disembodied into durable media' – they would need the anchorage that encoding in material culture provides to become widespread and potent, thus the almost universal concomitance of religious ideas and the symbolic material accoutrements of religious ceremony. These material symbols function to anchor the ideas in our minds, and without them they would dissipate and dissolve, for they have no 'natural home within the mind'.[1111]

3: <u>The Multivalency of material culture</u>: Mithen holds that the written word has a far higher tendency for 'ambiguity and the corruption of ideas', in comparison to the spoken word,

[1108] Mithen, 'A Creative Explosion', p. 133.
[1109] Mithen, 'A Creative Explosion', p. 133.
[1110] Mithen, 'A Creative Explosion', p. 133.
[1111] Mithen, 'A Creative Explosion', pp. 133–134.

hence material culture has the propensity to generate creative thinking to a greater degree than language. An artifact of material culture can be the root of a multitude of cognitive spaces with a far greater range than that of a utterance of language. The interpretation of art is a clear example of this. Such interpretation displays an obvious subjective component. Any agreement in terms of the possible objective meaning of the content of an artwork, would seem to be inherently harder to pin down in comparison to the objective meaning of the propositional content of a piece of correctly spoken or written language. Mithen says that such 'multivalency most likely applies to the art of the Upper Palaeolithic', i.e., cave paintings of animals are not necessarily about just hunting, or just about a supernatural world, or just about prehistoric human social relation – they are likely about all of these things simultaneously.

What Mithen is describing here, and his interpretation of the basic facts, aligns very closely with Scheler's idea that *Geist* is a principle that can re-direct vital energies and life drives. It also describes how an 'impotent' *Geist* might find footing in the physical world. The ontological grip of the physical form of material culture, acts as a 'cognitive' anchor which allows intentionality to stabilise long enough to be recognisable in an objective sense – *long enough for recursion to kick in*. The real factors of material engagement providing the means for ideal factors to actualise and disseminate. This would serve as an explanation for the mark of intentionality in our technical artifacts, the dual-aspect of technics that mirrors the dual-aspect in us, that mirrors the dual-aspect of the cosmos, and the dual-aspect of the Ground of Being.

Thus Mithen gives us an account of how 'material culture extends and disembodies the mind', and how it 'enables ideas to migrate between individuals and vastly inflates the range of conceptual spaces that might exist, and the manner in which they can be explored and transformed'.[1112] He says that the background nature of this process is testament to its ubiquitousness and to the depth of the integration and symbiosis between the human mind and our material culture. This connection between mind and material production cannot be said to have existed in the same way with respect to Early Humans, other hominin species, and human ancestor species – their material culture could only have a limited influence on their 'domain specific' mentality, and it was not until the emergence of a mentality characterised less by domain specificity and more by 'cognitive fluidity' that material culture could become one of the necessary conditions for the development of the feedback loop of creative thought that lies at the root of the cultural explosion of art and complex technological innovation of the Upper Palaeolithic.

Mithen's conclusion is this – along with language and the development of a theory of mind – material culture was '*as much a cause as a product of the behaviour and cognitive changes that underlie the Middle/Upper palaeolithic transition*'(my emphasis).[1113] Because 'material culture disembodies the mind and facilitates creative thought', it helps generate and maintain the positive feedback loop with our behavioural and cognitive changes as described above, and – in combination with the possession of a theory of mind, and the capacity for language – it laid the foundations for an creative explosion in the cognitive evolution of the human being.[1114] Or in other words, the *rupture* of anthropogenesis in the evolutionary process.[1115] A rupture which describes the end of *purely biological evolution*.

5.2.3 EXTERIORIZATION

[1112] Mithen, 'A Creative Explosion', p. 134.
[1113] Mithen, 'A Creative Explosion', p. 135.
[1114] Mithen, 'A Creative Explosion', p. 135–136.
[1115] Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus*, trans. by, Richard Beardsworth & George Collins (California: Stanford University Press, 1989).

From the above we can conclude that technics as material culture, is a necessary condition in the evolution of human consciousness, a necessary condition for the emergence of self-consciousness, thus a necessary condition for the actualisation of *Geist*. It is in and through technics, that consciousness can extend itself beyond the internal realm of subjectivity, and become disembodied objectively in external material substrates. This process of *exteriorization* describes how we can share and disseminate information and ideas, how we can externalise ideal aspects of our being, and how we can incorporate external factors so that they become vital components of our cognition. The process of exteriorization also describes how and why our technical artifacts display their dual-aspect. They bear a trace of our mind, a trace of our disembodied mind – stabilised and externalised, and imprinted in our material production, i.e., they bear a trace of *Geist*.

Thus, when the cognitive archaeologist recognises the mark of *homo sapiens sapiens* in our material remains, it is differentiated from the material remains of other hominin and non-hominin species. And this is done through recourse to the specific characteristics of the trace it bears – a trace of our unique and defining ideational process. The dual-aspect of the human being is reflected in the dual-aspect of our technical artifacts, a dual-aspect that reveals us as bearers of *Geist*, something that differentiates us from other non-human animal species, something that can be ascertained by virtue of the fact that no other biological species displays anything comparable to our complex technologies – a distinction that is just as wide whether the comparison is made between the tool-use of non-human animals and the internet, the tool-use of non-human animals and the material culture produced by *homo sapiens sapiens* at the time of the Cognitive Revolution. Human technics has an ideational content that is lacking in the tool-use of non-human animals – an ideational content that has been exteriorized and disembodied in and through the very process of artifactual fabrication.

Michael Landmann uses the term 'objective mind' to describe this process. He says that the human mind is a source of 'substantive' ideas – ideas that can be extended into the world as structures that bear the mark of human thought, and what was once purely subjective and only *in* the human mind can de 'deposited and solidified in a material substratum'.[1116]

As the human mind extends itself into matter it takes on objective form.[1117] By way of a simple example take a knife – in its most crudest form, it is simply a thing-to-cut-with. Within this though is the *idea* of cutting as a process, and the *idea* of a thing-that-cuts – as a means to undertake that process. The idea of cutting – as the subjective content of the mind – is translated into a material implement, in and through the overall process of interacting action and thought. The *subjective idea of knife* is translated into the *objective implement knife*. Within the artifact of the knife, an ideational process has been translated into something 'real' – both the idea and the process are exteriorized and objectified in it. Landmann says that the capacity for objective mind is a 'basic human ability', and regardless of 'all external reality', the implement has within it a 'trace' of the mind – it is as such an 'objective mental entity'.[1118]

The dynamic of objective mind is not only in the tool, but also in the correct manner in which this tool is to be used. It is not just the thoughts and behaviours of persons, but how they fit within contextual norms and practices. As examples of objective mind Landmann

[1116] Landmann, *Fundamental Anthropology*, p. 81.
[1117] Landmann, *Fundamental Anthropology*, p. 81.
[1118] Landmann, *Fundamental Anthropology*, p. 81. The substratum that holds or bears the trace of mind, and provides the vehicle for the 'mental objectification', does not have to be something 'in' the world as such, or something detached from the human being. Thought and behaviours can also function as objective mind's substratum if the mental factors that guide and shape these thoughts and behaviours are 'detached' from, and 'independent' of, the specific and personal mentality of the subject involved. Landmann gives an example of an organic or spontaneous idea within a group of people to 'perform' some action or ritual. Initially this is guided by their subjective minds, and even if this action or ritual is codified through repetition and designated a set date or time of year, and is repeated again and again accordingly, every time it is performed it, 'returns' to the original subjective decision. But if this ritual becomes a tradition or custom, or becomes institutionalised, it attains a status that is 'self-evident', or 'self-explanatory', in a cultural sense. Thus, when the ritual is performed, it is no longer because one 'decides' subjectively to do it, but because one is guided by tradition and general habit. It can even be against ones will or better judgement. This dynamic marks the establishment and existence of objective mind for Landmann.

gives social forms and organisational forms that – once they are established – can be encountered as already existing phenomena. As such, they contain their own 'independence and firmness', and are capable of making demands on us – as in the case of the correct use of a language, or the correct etiquette for social and religious situations. Works of art also have their 'own mode of existence', even though they are produced by subjective mind – in an essential way – they exist and can be experienced as 'opposite' to subjectivity.[1119]

Landmann also differentiates between non-independent subjective mind and independent objective mind. Non-independent subjective mind is a form of behaviour which needs realisation, and to be complimented by lived experience. Independent objective mind is 'materialised' and carries itself in its own material substratum, i.e., a 'dead' language which has not been spoken for centuries but is found 'materialised' in ancient scrolls. Thus, the script can survive centuries of 'latency' and be brought to life and spoken again.[1120] The Rosetta Stone is an obvious and well-known example of objective mind.[1121]

For Landmann the structures of objective mind exist in the world independent of subsequent observation or use by human beings, and if and when they are encountered they are received as possessing an 'already finished form'.[1122] Even so, the degree of 'self-sufficiency' that objective mind displays has its limits. This is due to an essential orientation towards being comprehensible – springing from the subjective, the objective orientates itself to be received back by it.

For all its 'worldliness', 'independence', and 'materialisation', objective mind must remain 'retro-related to actualisation through life' – ultimately it is the human being who

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1119 Landmann, *Fundamental Anthropology*, p. 82.
1120 *The British Museum*, <https://blog.britishmuseum.org/everything-you-ever-wanted-to-know-about-the-rosetta-stone/> [accessed 22nd April 2022].
1121 Interestingly, the script on the Rosetta Stone is an example of recursive script <https://rosettacode.org/wiki/Mutual_recursion> [accessed 27th April 2022].
1122 Landmann, *Fundamental Anthropology*, p. 82.

unlocks its content and meaning, so the human cannot be kept outside the 'idea' of it. The human being is thus always the 'locus of objective mind'.[1123]

All of this of course leads us to the question of where the mind stops, and the world begins. This is a question which is the starting point for is the hugely influential 1998 article in the philosophy of mind by David Chalmers and Andy Clark, 'The Extended Mind'.[1124] Clark and Chalmers offer us two basic positions with respect to how we answer this question. 1: the mind stops with the body – what is outside the skull is outside the mind; 2: meaning and language are not limited to internal cognition, and this externalism in meaning, translates to an externalism of mind.

Chalmers and Clark suggest a third position. What they call 'active externalism', a position they say describes the 'active' role played by the external environment in 'driving cognitive processes'.[1125] Extended cognition, or extended mind, reveals the separation of the mind, the body, and the external environment as an unprincipled distinction – technology is just a prop we use to extend our minds, and ourselves into the world.[1126] As part of this, they identify a general tendency of the human mind to lean heavily on 'environmental supports' and props – these environmental supports are what they call the 'general paraphernalia' of language, books, diagrams, culture.[1127] In other words, technics.

Active externalism supports the view that, within human cognition, the brain performs 'some' operations, while others are delegated to 'manipulations of external media' – the actual distribution of tasks is a reflection of the brain's structure; if that structure was

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[1123] Landmann, *Fundamental Anthropology*, p. 87.
[1124] Andy Clark and David J. Chalmers, 'The Extended Mind', in *The Extended Mind*, ed. by Richard Menary, (Cambridge: MIT Press, 2010), 27–42.
[1125] Clark/Chalmers, 'The Extended Mind', p. 27.
[1126] Clark/Chalmers, 'The Extended Mind', p. 27.
[1127] Clark/Chalmers, 'The Extended Mind', p. 27. The example given is that of a pen and paper being used to perform intermediate steps of calculation during an exercise in long multiplication. The intermediate steps performed using the pen are a part of the overall cognitive process.

different then the distribution of tasks would also be different (i.e., tool use by non-human species).[1128]

As way of demonstration Chalmers and Clark refer to studies which show that when playing the game Tetris, 'physical' rotation of the block using a button is quicker than 'mentally' rotating it. Not only is it quicker, but physical rotation helps in determining if the block is compatible with the available corresponding slot. This is an example of what they call 'epistemic action'. An epistemic action is an act that alters the world in such a way so as to aid or augment cognitive processes, such as recognition and search. Chalmers and Clark use this to claim that, when we undertake such an action, a part of the world 'functions' as a process that – if it was an 'internal' process – it would be recognized *as* a cognitive process. The implications of this is that 'part' of the world becomes actively integrated into the cognitive process overall, hence, cognitive processes are not 'all in the head'.[1129]

Within this process of active externalism, the human mind is linked with an 'external entity' in a 'two-way interaction' – this creates a 'coupled system'. A coupled system is a cognitive system in its own right. All the components in the system play an 'active', and 'causal' role, and they jointly govern behaviour in the same sort of way that cognitive processes do. If the 'external' component is removed, then 'behavioural competency' is altered. This sort of coupled process counts equally well as a cognitive process ,whether or not it is wholly in the head or not. The relevant external components are 'active' because they play a 'crucial role in the here and now of the cognition taking place'.[1130] External components are 'coupled' with the human organism and they have direct impact on its behaviour. The external components, i.e., 'parts of the world', are 'in the loop', *rather than at the end of a causal chain*.

[1128] Clark/Chalmers, 'The Extended Mind', p. 27.
[1129] Clark/Chalmers, 'The Extended Mind', p. 27.
[1130] Clark/Chalmers, 'The Extended Mind', p. 27.

Hence, external components play an essential role within the interplay – if they are changed, then behaviour changes. The extended mind thesis holds that external components are just as 'causally relevant', as typical internal features of the brain. Cognition is then understood to be 'continuous' with external processes.[1131] The human brain can be seen as a portable cognitive resource that can incorporate bodily actions into the cognitive processes – an obvious example is using the fingers to count with.

Such a use of the fingers in cognition is a *contingent* part of the cognitive process of counting, but claim Chalmers and Clark, contingency does deny them their 'cognitive status' – the fingers play an 'active' role, remove them from the equation and the cognitive process is altered. Consequently, they speculate that the biological brain may have evolved in a way that factors in the presence of an external environment that is available to us for manipulation. In other words, our success seems to indicate that evolution has favoured cognitive capacities which are especially geared to use the local environment to 'reduce memory load'.[1132]

The extension of cognitive processes into the environment is not incompatible with the view that true mental states, experiences, beliefs, desires, emotions, etc., are determined by 'internal' brain states. But there are cases where 'external factors', make a significant contribution to mental states; beliefs can be constituted partly by the environment. If environmental features do in fact play a role in driving cognitive processes, then the mind 'extends' into the world as a coupled system that incorporates biological and non-biological elements. Chalmers and Clark conclude by saying that future developments in new 'user-

[1131] Clark/Chalmers, 'The Extended Mind', p. 27.

[1132] Clark/Chalmers, 'The Extended Mind', p. 27. Visual systems can be seen is this way as systems that have evolved to 'rely' on the environment. If evolution has found it advantageous to exploit the possibility of the environment being in the 'cognitive loop', then 'external coupling' is part of the basic cognitive capacity that we bring to the world. Language is the most basic means by which cognitive processes are extended into the world and language may have evolved to enable such extensions of our cognitive resources within actively coupled systems. Individual learning 'moulds' the brain through reliance on cognitive extensions – the brain develops in a way that 'complements' external structures and 'learns' to function within a 'unified' coupled system. The fundamental role played by our environment in 'constraining the evolution and development of our cognition' shows that 'extended cognition is a core cognitive process, not an add-on extra'.

sensitive' technology will only serve to intensify this – our minds and our identities are becoming ever more 'deeply enmeshed in a non-biological matrix of machines, tools, props, codes, and semi-intelligent daily objects'.[1133] Thus, the human 'naturally' dovetails their minds and skills to the 'shape' of their current tools and aids. Bu it is when these tools and aids start dovetailing back – when our technologies actively, automatically, and continually tailor themselves to us as we do to them – then the line between tool and user becomes less and less distinguishable. Information based technologies are especially relevant in this respect.[1134]

This is an important point, this process describes a *two-way relation* – the action works both ways. Thus we can understand the process as one of circular recursion or mutual recursion – a process where two functions invoke each other as the recursive effect, and within which they are defined in terms of each other, dependent on each other, and where each is a necessary condition of the other.[1135] This is the same dynamic that Landmann sees as underpinning the notion of objective mind. Objective mind 'stems' from subjective mind *through* objectification. It retroactively shapes and influences the growth and development of subjective mind. Each comes into view only within the context of the other, and – in an essential way – each one includes, as part of it, the other. Thus, we are *products of our own products*; we are retro-shaped by our own objective creations. The genesis of our objective creations is to be found within subjective mind which is in turn shaped and developed by its contact with them.[1136] And this is the important point, the process of *exteriorization is simultaneously a process of interiorization* – it is a two-way process, recursive and self-referential.

[1133] Clark/Chalmers, 'The Extended Mind', p. 27.
[1134] Clark/Chalmers, 'The Extended Mind', p. 27.
[1135] David Matuszek, *All About Recursion* <https://www.cis.upenn.edu/~matuszek/cis554-2011/Pages/recursion.html> [accessed 22nd April 2022].
[1136] Landmann, *Fundamental Anthropology*, pp. 89–90.

This is a conclusion that philosopher Bernard Stiegler also comes to in his classic *Technics and Time, 1: The Fault of Epimetheus*. As a result, Stiegler posits technics as always already the constitutive conditions for the human being to *be* the human being.[1137] He says that the human being and the technical are 'co-original […] the technical did not emerge out of the (already constituted) human being or the human out of the (already constituted) technical', rather they are two 'ontological domains', that co-constituted in and through each other from the very start.[1138]

Stiegler draws considerable influence from palaeontologist André Leroi-Gourhan, whose work he understands to reveal the existence of a 'fundamental continuity', from the biological to the sociological – a continuity that took place through the mediation of technology. Early tool-making as a result of an upright position is conceptualised by Leroi-Gourhan as a dynamic process of *exteriorization*. A process through which the mechanisms of evolution were transferred from the 'zoological' to the 'technical' sphere.[1139]

Evolution is thus understood as the continuation of 'life by other means'. In our prehistory, and by way of a response to our reduction in instincts, human beings developed the ability to be a 'generalist'. But this was a generalist who also specialised *as* conditions dictated. This was achieved through the exteriorization of our specialised capabilities. Capacities which became manifested outside the biology of the human body – to exist and function within the technical domain. Thus, the human being is an 'essentially technical being', and as such, is one that 'exceeds biology' – although biology remains an 'essential

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[1137] Bernard Stiegler, *Technics and Time, 1*, p. 50. Siegler's work is ultimately a critique of the entire Western philosophical tradition and the fact that it has systematically forgotten our 'technical condition'. Whereas Heidegger critiqued the tradition for its forgetfulness regarding the meaning of the question of Being, Stiegler accuses all of philosophy, Heidegger included, with 'forgetting its technical conditions of possibility'. See, Peter Lemmens, 'The System Does Not Produce Pleasure Anymore : an Interview with Bernard Stiegler', *Krisis,* 1 (2011), 33–41 (p. 35).

[1138] Lucas Introna, 'Phenomenological Approaches to Ethics and Information Technology', *Stanford Encyclopedia of Philosophy* (2017) <http://plato.stanford.edu/entries/ethics-it-phenomenology> [accessed 8th June 2019].

[1139] Introna, 'Phenomenological Approaches to Ethics and Information Technology'.

part of the technical phenomena itself'.[1140] This process is at the same time reflected back at us as a process of 'interiorization', as we internalise the technologies that we use externally.[1141] The comparison can be easily seen between this concept and Landmann's idea of the synthesis of subjective and objective mind.

Stiegler goes on to define the human being as a 'prosthetic being'. The evolution of our prosthesis – which is not itself alive – is what defines the human as a living being – it constitutes the dynamic of human evolution as 'the paradox of living being characterised in its forms of life by the non-living or by traces its life leaves in the non-living'.[1142] This 'extra-genetic co-evolution', is the 'epiphylogenesis' of the human and the technical. For Stiegler, it is this underlying co-originary evolution that is the foundation of and genetic conditions necessary for the possibility of culture. Where culture itself is understood to be 'the inorganic organisation of memory' – achieved in and through the process of exteriorization through technics.[1143] A process which we argue arises as the interplay between real and ideal factors, and as such, is a process that describes the end of *purely biological evolution*.

5.3 CLOSING THE ONTOLOGICAL GAP: *HOMO FABER* RECONSIDERED

5.3.1 CO-EVOLUTION AND CO-CONSTITUTION: THE SELF EMERGES IN AND THROUGH TECHNICS

At this point we have established that the human being's late-stage physiological and cognitive development took place in a pre-existing cultural/technical environment, meaning that technics is a co-originary and co-constitutional condition of our evolution, i.e., it describes a *co-evolution of the human and the technical*. Language was a necessary condition

[1140] Stiegler, *Technics and Time, 1*, p. 50.
[1141] Introna, 'Phenomenological Approaches to Ethics and Information Technology'.
[1142] Stiegler, *Technics & Time*, *1*, p. 50.
[1143] Introna, 'Phenomenological Approaches to Ethics and Information Technology'.

for this and – more importantly for our investigation – material culture and a theory of mind were also necessary conditions. We have just assessed technics in this regard, now we must do the same with theory of mind. We have already asserted the significance of the self for the entire scope of this investigation, now we must address it in terms of origins. If technics is co-originary with the human being, then technics must also be co-originary with the self.

Obviously, the very aspiration to recognise the 'self', or the 'modern' mind, or 'complex cognition', in prehistorical archaeology is not an easy task, with a necessary speculative element to it.[1144] When asking if and how the thinking of *Homo sapiens sapiens* is unique and can be differentiated from other species/subspecies of hominis, we need to look for 'technologies and behaviours' that are not evident in other species.[1145] A good working example of just such a technology and associated behaviour is the use and fabrication of the bow-and-arrow.

There is no other species that uses such complex technology, and there is no evidence that such a technology was used by any other hominin species apart from us in prehistory. A technical system like the 'bow-and-arrow system', would have required a lot of innovation for it to develop, and it would also require an underlying, and highly complex 'chain of thought and action' – hence, its usefulness in attempting to explore human cognition.

Environmental scientist, lawyer, and engineer Braden Allenby, and professor of science and society Daniel Sarewitz begin *The Techno-Human Condition* (2011) with the following: 'Most experts on early human evolution agree that primitive tools and human brains co-evolved; that the imaginative capacities of the tool-maker was both a product of and a requirement for the development of more effective stone tools and more rapid innovation'.[1146] Thus, in conjunction with what we have just established, we can assert with

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[1144] Frederick L. Coolidge, Miriam Noël Haidle, Marlize Lombard, & Thomas Wynn, 'Bridging Theory and Bow Hunting: Human Cognitive Evolution and Archaeology', *Antiquity*, 90/349 (2016), 219–228 (p. 219).
[1145] Coolidge et al., 'Bridging Theory and Bow Hunting', p. 189.
[1146] Allenby and Sarewitz, *The Techno-Human Condition*, p. 16.

some amount of confidence that the human being represents the end of purely biological evolution. We are *always already technical*. Thus, in a mundane way, we have always been transhuman – always transitional. The human and the technical are co-evolving and co-constitutional, and this situation is one that is essentially characterised by human self-consciousness.

Or, in Schelerian terms, a situation that is essentially characterised by the fact that the human being as the bearer of *Geist*. With the human being, *ideas* became a factor in evolution. With the human being, the process of evolution itself has become self-referential. With the human being, the cosmos is aware of itself, and aware of the fact that it is aware of itself. With the human being, the Ground of Being is bending back on itself, so that Being recognises itself, and recognises the very act of recognition too.

Evolution is both a cosmological and a biological phenomenon *without* the inclusion of the human being. With the human being, it is also a cultural/technological phenomenon. This is in and of itself profound, and philosophically significant. While it is obviously a matter of debate exactly how we interpret this, it is clearly an issue of Philosophical Anthropology. Scheler’s thought serves as a theoretical underpinning for assessing this, he offers us a metaphysical framework within which we can contextualise things. Such a framework seems to present a coherent way to establish the broadest possible scope and perspective on things, it is still only a preliminary move. It is still only the establishment of an analytical framework within which proceedings can begin.

At this stage, there is still a lot of leeway in terms of exactly how we understand the key concepts, how they interrelate, where the problems lie, what the possible contradictions or paradoxes are etc. These are mostly technical details to be worked out at some point later (I will tentatively sketch out a position on some of the main issues of concern in the last section, and give some suggestions for possible future trajectories of enquiry), for the moment we are only really laying the groundwork.

Hence, at this preliminary stage, I think there is only one fundamental criterion that needs to be satisfied if one is to accept the basic assumptions of the framework, i.e., ontological reductionism is an untenable position. As such, the position outlined is a fundamental critique of the assumption that consciousness and biological life can be reduced to – and completely described, and fully explained by – the laws of physics.

Despite the fact that my understanding of things, has obvious parallels with the basic assumptions of transhumanism – i.e., human nature is not fixed, the human and the technical are co-evolving, the human and the technical are con-constitutional, what has evolved will continue to evolve, evolution is a cosmological, biological, and technological phenomenon – it is fatally in opposition to the views of the majority of transhumanists because of reductionism. Reductionism seems to be the default position within transhumanism – in general, it informs its metaphysics and epistemology, thus shaping the commonly accepted worldview. It also characterises the engineering perspective, which means it has methodological and practical implications across the board.

I have already suggested that our complex technologies mark us as unique in such a way that it can be seen to reflect Scheler's defining characteristic of the human being as a bearer of *Geist*. There is an observable connection between human cognitive processes, and the particulars of our technological artifacts – this connection can be seen to leave an identifiable mark on the material form of technological products, a mark that refers directly back to the cognitive process involved in the material production of the artifact itself, and which gives some indication of the cognitive capacities of the producer such as foresight, anticipation, imagination, creativity. From this, I conclude that human technology reveals – in a concrete manner – a unique ability of the human being for ideation and abstract thought, an ability that is not revealed by a similar assessment of the too-use of other hominin species and non-human animals.

Thus, human technology bears a trace of human mind, human technology bears a trace of *Geist*. This reflects, and is a reflection of, the capacity we have for foresight – the capacity to ‘imagine, plan for, and shape the future’, a capacity that, as we shall see, ‘may have been a prime mover in human cognitive evolution’.[1147] Archaeological records show that ‘the ancestors of modern humans already prepared for the future hundreds of thousands of years ago’, and contemporary studies show that non-human animals also display some capacity for future planning.[1148] Despite this there is little evidence to suggest that non-human animals can ‘ponder the more distant future’ in way that is comparable to us.[1149] This capacity for foresight is also intrinsically tied to the expertise that is needed to develop complex technology.

Thus, we can return to the bow-and-arrow as a system which represents what widely recognised as marking a significant progression in the evolution of cognition. The fabrication process associated with a functional bow-and-arrow system is one that – in comparison to simpler tools – necessitates a ‘longer temporal extension of activity, stretching the consideration of forthcoming conditions much further into the future’.[1150] Thus, the entire system – projected outcomes included – must be considered *in relation*, and the best way to do this ‘is to place oneself in an imagined future state and evaluate the imagined future situation’.[1151] Hence, the development of effective bow-and-arrow technology is linked to the emergence of what is known as *episodic memory*.

[1147] Thomas Suddendorf, ‘Foresight and Evolution of the Human Mind’, Science, 312/5776 (2006), 1006–1007 (p. 1006).
[1148] Suddendorf, ‘Foresight and Evolution of the Human Mind’, p. 1006. Suddendorf references Kohler: ‘The time in which the chimpanzee lives is limited in past and future’.
[1149] Suddendorf, ‘Foresight and Evolution of the Human Mind’, p. 1006.
[1150] Coolidge et al., ‘Bridging Theory and Bow Hunting’, pp. 189–224.
[1151] Coolidge et al., ‘Bridging Theory and Bow Hunting’, pp. 189–224.

Episodic memory is a 'neurocognitive (brain/mind) system', which is unique in contrast to other memory systems – it allows the human being to 'remember past experience', and allows us to upend the otherwise constant unidirectionality of time's arrow.[1152] Experimental psychologist and cognitive neuroscientist Endel Tulving posits that the human ability to remember the past allows us to subvert the 'irreversible' flow of time, and bend its arrow into a loop – maybe not in the reality of physics, but in terms of mental reality, episodic memory allows us to travel back in time and violate an inviolable law of the physical world.[1153]

What makes this significant is that – for the human being – mental reality is just as important as physical reality, and just as importantly for our investigation, *episodic memory appears to be a capacity that is limited to our species*.[1154] Subjective time does not seem to be a constituent of animal consciousness. Thus, a sense of subjective time is not an issue of biological necessity – but without it, we would not have the ability for 'mental time travel'.[1155] Of note, there appears to be a qualitative difference between the conscious experience of remembering the past and the conscious – 'online' – awareness of being in the present and perceiving the world around us; the experience of imagining a future scenario; or the experience of dreaming. All are conscious experiences, but remembering – based as it is in autonoetic awareness – has a unique character that is lacking in the others.[1156]

Episodic memory requires a *sense of self that exists in subjective time*. This is more than the self-awareness we attributed to non-human animals earlier as response to the findings of the MSR test – that type of self-awareness is based solely in the present. The capacity for mental time travel requires three components; a sense of subjective time,

[1152] Endel Tulving, 'Episodic Memory: From Mind to Brain', *Annual Review of Psychology*, 53 (2002), 1–25, (p. 1).
[1153] Tulving, 'Episodic Memory', pp. 1–2.
[1154] Tulving, 'Episodic Memory', p. 2.
[1155] Tulving, 'Episodic Memory', p. 2. Tulving describes it as an 'evolutionary frill'.
[1156] Tulving, 'Episodic Memory', p. 2.

autonoetic awareness, and a sense of *self* (as existing in subjective time). Taken together these form the neurocognitive system of episodic memory.[1157]

Considered to be a 'recently evolved, late-developing, and early-deteriorating, past-orientated memory system', episodic memory 'shares many features with semantic memory, out of which it grew' and upon which it depends.[1158] It is characterised by features unique to it, and which are lacking in the semantic memory system itself.[1159] In basic terms, episodic memory allows – through autonoetic awareness – for the re-experiencing of previous experiences. Remembering – or conscious recollection – is the retrieval of information from episodic memory and is dependent upon the three components listed above: self; subjective time; autonoetic awareness.

Saying that, episodic memory – as a memory system – is not just 'a particular type of retained and retrieved information', nor is it simply 'a particular kind of mental experience'.[1160] It is nevertheless 'systematically related' to both of these phenomena. Rather than understand it as a particular type of 'memory task', episodic memory is grasped with more nuance when conceptualised as a 'memory system', a system within which all specific tasks are 'multiply determined'.[1161] Different memory systems are assumed to have emerged at different stages in the evolution of a species, and to emerge at different stages of development with respect to individual organisms. This allows for an ordering from 'lower' to 'higher' to be established – which serves to describe the way in which the emergence of

[1157] Tulving, 'Episodic Memory', pp. 2–3.
[1158] Tulving, 'Episodic Memory', p. 5.
[1159] Tulving, 'Episodic Memory', p. 5.
[1160] Tulving, 'Episodic Memory', p. 5.
[1161] Tulving, 'Episodic Memory', pp. 5–6. Here, we can assume the following definition for 'memory system': Memory systems are 'organised structures of more elementary operating components', which – consisting of a neural substrate and an associated behavioural or cognitive correlate – can be shared by all memory systems, some memory systems, or be unique to a particular memory system, thus, a given memory system 'makes it possible for organisms to perform memory tasks that entail operating components unique to that system'.

new systems with novel capabilities represents a numerical increase and an increase in the sophistication of memory functions, for an organism or species.[1162]

Another unique characteristic of episodic memory is that, unlike any other type of memory or memory system, episodic memory is 'oriented to the past' – it is the only memory system that allows one to 'consciously re-experience past experiences'.[1163] Theory holds that episodic memory evolved from out of a pre-existing foundation of semantic memory. Like many non-human species today, early humans had the capacity for well-developed semantic memory, and the ability to acquire considerable stores of 'flexibly expressible information'.[1164] With anatomically modern humans, episodic memory emerged as a kind of 'embellishment' of semantic memory. Tulving suggests that for such a system to evolve within nature is remarkable, and the significance of this fact is often overlooked or underappreciated.[1165] He concludes by considering how episodic memory has evolved only once, a fact he says that 'presumably reflects the complexity and biological cost of such a system, in terms of both structural components and their operations'.[1166]

Hence, a cognitive model based on 'episodic memory', can be used to describe how we might have come to develop and effectively use complex technology. Episodic memory 'allows for the recollection of past experiences', and when we perform such recollections and recall a past event, we project ourselves temporally backwards so that we can have a

[1162] Tulving, 'Episodic Memory', p. 6.
[1163] Tulving, 'Episodic Memory', p. 6.
[1164] Tulving, 'Episodic Memory', pp. 6–7.
[1165] Tulving, 'Episodic Memory', p. 7. There is some debate regarding whether or not non-human species enjoy the capacity for episodic memory. Some argue that there is evidence for a limited type of episodic memory in non-human species. A distinction can then made between 'episodic memory' and 'true episodic memory' or 'autobiographical memory', as subset of episodic memory unique to *homo sapiens sapiens.* See, Coolidge et al., 'Bridging Theory and Bow Hunting', p. 225.
[1166] Tulving, 'Episodic Memory', p. 7. The exact details are of course a matter of speculation, and there is not universal consensus on whether or not it fits cleanly within the (neo)Darwinian framework. It may be the case, as Tulving points out, that episodic memory represents a case of the what is known as the 'Baldwin effect'. The Baldwin effect is an 'evolutionary mechanism which transforms a culturally invented and acquired trait into an instinctive trait by the means of natural selection'. See, Piotr Podlipniak, 'The Role of the Baldwin Effect in the Evolution of Human Musicality', *Frontiers in Neuroscience*, 11/542 (2017) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5635050/> [accessed 25th March 2022].

‘conscious re-experience of the event’.[1167] This fits with Gehlen and Landmann’s idea of anticipation and how the human being is orientated in an essential way, toward what is not there in space and time.

When we perform this temporal projection we are aware that this ‘re-experience of the event is qualitatively different from the initial experience’, and as part of this there comes also an awareness that if spatio-temporal events that we have experienced can be re-experienced and changed in some crucial way, then time itself has a subjective aspect to it. The act of recollection situates the self in a past memory, and in doing so it reveals our ability to consciously manipulate our memory of past events.[1168] It is easy to see from this how episodic memory would be a necessary condition of bow-and-arrow technology.

Of particular note is the fact that episodic memory is described as ‘constructive’ rather than ‘reproductive’. As a result, it is consequently ‘subject to all kinds of errors and illusions’ – there is a creative aspect to event recollection, and a space of imagination opens up where things that actually happened can easily become conflated with the imaginary.[1169]

The implications of this are important. When we recall a past event as a re-experience – and subject it to examination and modified re-construction – it is generally toward the goal of learning from it, so as to help us prepare for future events. The projected future that we then imagine must be open-ended and cannot be ‘an exact representation of the past’.[1170] Our ability to imagine future events must be flexible in such a way that what we learn through the re-experience of past events – and the *way* that we can re-construct and recombine them – can be utilised toward ensuring the success of our anticipated future behaviour.[1171]

[1167] Coolidge et al., ‘Bridging Theory and Bow Hunting’, p. 224.
[1168] Coolidge et al., ‘Bridging Theory and Bow Hunting’, p. 189. The authors reference Endel Tulving in describing this as ‘autonoetic awareness’.
[1169] Coolidge et al., ‘Bridging Theory and Bow Hunting’, p. 225.
[1170] Coolidge et al., ‘Bridging Theory and Bow Hunting’, p. 225.
[1171] Coolidge et al., ‘Bridging Theory and Bow Hunting’, p. 225.

Episodic memory is sometimes also called 'autobiographical memory'. This is because it is uniquely defined by the fact that it 'involves a clear sense of one's self in the event's recollection'.[1172] It appears then, that the relationship between the recollection of past events, and the construction of possible future events generates an accompanying awareness of one's sense of self, even if this may not necessarily be an essential component of the process as a whole.

There is also evidence to suggest that 'a sense of self and self-representation may have its neurological foundations in the superior medial parietal lobe', i.e., the 'precuneus'.[1173] Even though it may be simply coincidental, episodic memory is also thought to be linked to that area of the brain. Thus, the relationship between our constructive capacities for recalling past event, imagining future ones, and creating an idea of the self, may have a neurological basis in this part of the brain. Not only that, recent evidence suggests that there may have been 'precuneal expansion in recent H. sapiens not shared by Neanderthals'.[1174]

Thus, the bow-and-arrow technical system appears to be a technology for which a 'fully modern' episodic memory system is a functional prerequisite. The cognitive requirements for the successful use of this technology would seem to include 'autobiographical memory retrieval', and the capacity for 'constructive episodic memory simulations'.[1175] This implies that early users of this technology most likely were in possession of fully 'autonoetic awareness' and in this respect were unique compared to other hominin species. Also, there is strong evidence to 'suggest that personal goals, which rely upon personal abstract knowledge, provide an important framework for the overall organisation of imagined events' – this strengthens the idea that a sense of one's self is an

[1172] Coolidge et al., 'Bridging Theory and Bow Hunting', p. 225.
[1173] Coolidge et al., 'Bridging Theory and Bow Hunting', pp. 225–226.
[1174] Coolidge et al., 'Bridging Theory and Bow Hunting', pp. 225–226.
[1175] Coolidge et al., 'Bridging Theory and Bow Hunting', p. 226.

integral part of the 'constructive' processes associated with episodic memory (and more specifically autobiographical memory, or 'true episodic memory').[1176]

If the argument that 'a personal sense of self and awareness of one's goals is critical to linking and organising successful future simulations' is correct, and such a process characterises the use of the bow-and-arrow as a technical system, then there is a case to be made that 'a near modern or fully modern sense of self' emerged around 35,000 years ago, and perhaps earlier than 60,000.[1177] A conclusion that fits with what we learned from Mithen and the evidence from cognitive archaeology above.

5.3.2 TECHNICS AND THE SELF-CONSCIOUS SELF

Psychiatrist and author E. Fuller Torrey says it is a matter of fascination that not only did 'our brain evolve, but it also evolved in a way that enables us to comprehend the process by which it evolved, to write about that process, and to think about its implication for our lives'.[1178] Identifying the capacity for religious experience and the ubiquitous compulsion to believe in gods and the transcendent, as a defining human characteristic that is linked to this process, Torrey describes human evolution as a 'journey' that brought us 'gods and formal religions'.[1179] He enquires into the possible origin of gods, and asks did 'ancient hominis also have gods'?[1180]

Torrey holds that 'the gods arrived after the human brain had undergone five specific cognitive developments', and that these developments were 'necessary for being able to

[1176] Coolidge et al., 'Bridging Theory and Bow Hunting', pp. 219–227.
[1177] Coolidge et al., 'Bridging Theory and Bow Hunting', pp. 219–227.
[1178] E. Fuller Torrey, *Evolving Brains, Emerging Gods: Early Humans and the Origins of Religion* (New York: Columbia University Press, 2017), pp. xiv–xv. Torrey works with the distinction between *hominids* and *hominins* that recognises the former as referring to all 'great apes', and the latter as referring to the human line that separated from the former some six million years ago, thus it includes *Homo sapiens* and 'all our immediate ancestors'.
[1179] Torrey, *Evolving Brains, Emerging Gods*, p. xv.
[1180] Torrey, *Evolving Brains, Emerging Gods*, pp. 1–2.

conceive of gods'.[1181] His analysis begins with *Homo habilis*, who about 2 million years ago he says underwent a 'significant increase in brain size and general intelligence'; he then describes how *Homo erectus* began to develop an awareness of self, sometime around 1.8 million years ago; next, he says that Archaic *Homo sapiens*, beginning around 200,000 years ago experienced the emergence of a theory of mind; after that, early *Homo sapiens* became able to reflect on their own thoughts in an introspective manner allowing them to 'not only think about what others were thinking but also about what others were thinking about them and their reaction to such thoughts'; Finally, *Homo sapiens* developed what is commonly referred to as 'autobiographical memory' around 40,000 years ago, which he says is the 'ability to project ourselves backward and forward in time'.[1182]

The significance of this for Torrey is that, for the first time in the development of the hominin line *Homo sapiens* had an understanding of death as 'the termination of personal existence', and by implication also had the ability to 'envision alternatives to death, including places where our deceased ancestors may still exist'.[1183] Key to all this is the development of a theory of mind, or the 'ability to think about what others are thinking', which according to Torrey, 'would presumably have provided a major evolutionary advantage to any hominin species that acquired this skill'.[1184]

It is widely recognised that a theory of mind is probably a necessary prerequisite for religious beliefs and belief in existence of gods, gods who – logically enough – would also be attributed a theory of mind. Hence, gods were routinely assumed to be able to know the thoughts of people and natural phenomena explainable in terms of their malevolence or benevolence.[1185] Torrey says that it is unlikely Neanderthals believed in gods, yet they had bigger brains than ours, and possessed both an awareness of self and an awareness of others.

[1181] Torrey, *Evolving Brains, Emerging Gods*, p. 3.
[1182] Torrey, *Evolving Brains, Emerging Gods*, p. 3.
[1183] Torrey, *Evolving Brains, Emerging Gods*, p. 3.
[1184] Torrey, *Evolving Brains, Emerging Gods*, p. 59.
[1185] Torrey, *Evolving Brains, Emerging Gods*, pp. 65–66.

Despite this, he says that they lacked 'an introspective ability to think about their own thoughts as well as an ability to use the detailed past and present to plan the future'.[1186]

According to Torrey's account, all Early Humans/Archaic *Homo Sapiens* were probably self-aware since *Homo erectus*. Still, they lacked an ability to 'think about themselves thinking about themselves', nor could they imagine themselves in 'time past' and 'time future', i.e., they lacked autobiographical memory/episodic memory.[1187] Thus Mithen's creative explosion which marks the Cognitive Revolution, is described by Torrey as an indication of some sort of 'major cognitive leap forward', a leap that Torrey says can be understood as an indication of 'the introspective self'.[1188]

Referring to the MSR test, Torrey says that the type of self-awareness that this test is an indication of, develops for human children at around two years of age. At around four years of age, an awareness of the thoughts of others emerges, i.e., a theory of mind. This is followed at around six years of age by the what is known as a 'second order theory of mind', i.e., 'thinking about what one person thinks another person is thinking'.[1189] Torrey suggests an analogous development in evolutionary terms, with hominin self-awareness emerging around 1.8 million years ago, and sometime around 200,000 years ago, the subsequent emergence of an awareness of the thoughts of others.[1190]

First order theory of mind accounts for 'simple human interactions of how one person thinks another person thinks', but can't fully accommodate complex social interactions.[1191] Human social interactions assume that people are thinking about what the content of other people's thoughts are – not just *that* they are thinking – and are also thinking about what

[1186] Torrey, *Evolving Brains, Emerging Gods*, p. 67.
[1187] Torrey, *Evolving Brains, Emerging Gods*, p. 69.
[1188] Torrey, *Evolving Brains, Emerging Gods*, p. 74.
[1189] Torrey, *Evolving Brains, Emerging Gods*, p. 75.
[1190] Torrey, *Evolving Brains, Emerging Gods*, p. 75. It should be noted that the analogy that Torrey is making assumes ontogeny recapitulates phylogeny – a position that is debated within biology. Recapitulation theory or the theory of biogenic law, assumes that the ontogenetic development of an organism is analogous to the phylogenic development of its species. We saw earlier hoe Mithen also assumes this position.
[1191] Torrey, *Evolving Brains, Emerging Gods*, pp. 75–76.

others think that they themselves are thinking.[1192] What is significant about this is that, according to Torrey, the 'acquisition of a second order theory of mind requires the person to view the self as an object'.[1193] Once again, it appears that Scheler has anticipated such a move.

Torrey describes this ability to objectify oneself as 'not merely looking in a mirror and recognizing the self, but rather being able to think about what you look like to other people, how they see you, and what you think about how they see you. It includes you being able to think about yourself thinking about yourself. It is, in short, the introspective self'.[1194]

He quotes sociologist Zygmunt Bauman: 'Unlike other animals, we not only know; we know we know. We are aware of being aware, conscious of "having" consciousness, of being conscious'.[1195] Interestingly Torrey then describes it in the following terms; 'this ability is marvellously reflective. Like opposing mirrors, we can contemplate ourselves, and contemplate others thinking about us, and contemplate ourselves thinking about others thinking about us, ad infinitum'.[1196] The mirror effect that he describes, is a well-known example of recursion!

5.3.3 ALWAYS ALREADY TECHNICAL: *HOMO FABER* 2.0

From the above we can argue that the human self first appeared in and through our technics. Thus, we recognise ourselves in our technical creations, because we exteriorize ourselves

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[1192] Torrey, *Evolving Brains, Emerging Gods*, pp. 75–76.
[1193] Torrey, *Evolving Brains, Emerging Gods*, p. 76. Of note; Torrey refers to the fact that the bow and arrow came into widespread use at this time.
[1194] Torrey, *Evolving Brains, Emerging Gods*, p. 76.
[1195] Torrey, *Evolving Brains, Emerging Gods*, p. 76.
[1196] Torrey, *Evolving Brains, Emerging Gods*, pp. 76–77.

through artifactual fabrication. Landmann describes these things in terms of *culturality*, Stiegler in terms of *technicity*, but ultimately what they are both saying is that there is no such thing as the human outside of *culture*, there is no such thing as the human outside *technology*. We have already conflated technology and culture the two through the idea of technics *as* material culture, so they are in effect saying the exact same thing. What we have discussed above has been toward developing the necessary theoretical support for this position.

Landmann posits the human as always already cultural and the late stages of development of the human brain taking place within culture, Stiegler shows anthropogenesis as a *rupture* that happens within the process of evolution. A rupture which occurs through a dynamic of simultaneous exteriorization/interiorization, and which means that the appearance of the human *is* the appearance of the technics. The paradoxical nature of the rupture means the tool or *technê* invents the human being, i.e., the human being invents himself or herself, in and through the technical act – by inventing the tool we have invented ourselves, in and through a process of becoming exteriorized 'techno-logically'.[1197]

The human being, and human existence and technics are bound together in a fundamental technicity which is an 'originary constitutive relationship', the consequences of which are that 'anthropogenesis corresponds point by point to a technogeneis'.[1198] This means then that it is technics that is foundational, i.e., the 'constitutive transcendental horizon' of the human being *is* technicity.[1199] Stiegler holds that if we did not externalise our memories in this way, and imbed them in organised inorganic matter, we would not be able to exist *in* time, and would be unable to experience the past, or anticipate the future, and

[1197] Stiegler, *Technics & Time,* p. 141.
[1198] Nathan Van Camp, 'Stiegler, Habermas and the Techno-logical Condition of Man', *Journal for Cultural Research*, 13/2 (2009), 125–141, (p. 145).
[1199] Introna, *Phenomenological Approaches to Ethics and Information Technology*.

unable to transcend a permanent and never-ending present tense – meaning that the emergence of time and culture could not take place.[1200]

Human beings have been able to shape, direct, and change their developmental trajectory in such a way – and to such a degree – that no other species has. This has been possible because we have been able to create 'new material forms', and take innovative approaches toward 'new possibilities of material engagement'.[1201] In other words, more than any other species, 'we become constituted through making and using technologies that shape our minds and extend our bodies'.[1202] The human being displays a 'predisposition for technological embodiment and creativity' such that the making of things – our *creative material engagement* – defines us and conveys a defining feature of human nature; denotes a unique aspect of our species; and describes the specific character of our evolution.[1203]

Traditional notions of *homo faber* have tended to present a simplified understanding of tool-use as a uniquely human activity, and were often accompanied by a chauvinistic air of human exceptionalism. Obviously, this denotation was fatally challenged as a marker of human distinctiveness, once tool-use in non-human species was observed. Hence, the need for some qualification and clarification with respect to the use of the appellation of *homo faber* 2.0 as a designation for the human being.

Clearly, there is nothing about animal tool-use that could be considered the equivalent of complex human technologies – we have established that simple tool-use is not the same as technics. Tool-use in the non-human animal kingdom comes nowhere near the sophistication and complexity of our technology. As described above, human technology is characterised by

[1200] Introna, *Phenomenological Approaches to Ethics and Information Technology*.
[1201] Don Ihde and Lambros Malafouris, '*Homo faber* Revisited: Postphenomenology and Material Engagement Theory', *Philosophy and Technology*, 32 (2019), 195–214 (p. 195).
[1202] Ihde and Malafouris, '*Homo faber* Revisited'. Ihde and Malafouris present a combination of the 'contemporary' philosophical perspective of postphenomenology and the 'long-term and comparative' archaeological/anthropological perspective of Material Engagement Theory as a means to further assess the essential nature of the human/technology relationship. They argue that one compliments the other in terms of the investigation into the 'interactivity of different technologies on human developmental experience', p. 196.
[1203] Ihde and Malafouris, '*Homo faber* Revisited', p. 195.

a dual-aspect which reflects the dual-aspect of the human being – a trace of mind that reveals conceptual content and capacity ideation. Material evidence for the difference between the human and the animal mind is to be found in the clear distinction between animal and human tools, so rather than being a death blow to the concept of *homo faber*, the tool-use of non-human animals – and how it differentiates from technics as material culture – provides the grounds upon which to articulate a definition of the human being that makes specific reference to *our* use of tools, and our capacity for material production; provided of course that we are willing to broaden and reassess the original concept of *homo faber*.

This is exactly what Don Ihde and Lambros Malafouris do through a combination of postphenomenology and Material Engagement Theory (MET). They define the human being as *homo faber*, not simply because we make things or use tools, but because that in doing so we are in turn *made by the things we make* – the use of tools by human beings has a uniquely *recursive* character that is not observable in the tool-use of other species. Ihde and Lambros point out that unlike other species, material engagement for the human being has a 'recursive effect', wherein 'the things that we make and our skills of making' seem to directly shape and influence 'human becoming'. Thus, the term *Homo faber* does not apply 'just because we make things', it applies also because 'we are made by them'.[1204]

Ihde and Malafouris reassess the concept of *Homo faber* in such a way so as to challenge the false dichotomy of nature vs. culture. They describe the human condition as 'a continuum of human-prostheses inter-relations', and as having a 'relational ontological standing' – the human being exists 'between' the imposed notional frontiers of 'nature' and 'culture', or 'mind' and 'matter'[1205] This 'relational' ontology is achieved for the most part through 'creative material engagement', and it describes – in an essential way – a view of the

[1204] Ihde and Malafouris, '*Homo faber* Revisited', p. 195.
[1205] Ihde and Malafouris, '*Homo faber* Revisited', p. 196.

human being that is explicitly dynamic, and which emphasises evolutionary and developmental change as an expression of human becoming.

Underlying this conception of human being as human becoming lies a foundational precept regarding the relation between us and the world – 'humans more than just adapting to their environments are also actively changing them (for better or worse), initiating new complex co-evolutionary paths and biosocial synergies'.[1206] Or, in the most simplest of terms: 'we make things which in turn make us' – where 'things' means 'material forms and techniques', i.e., the 'materiality of mundane objects, tools, and artefacts as much as it refers to modern technologies and new forms of digital culture'.[1207]

This conception of the human being and the idea of a relational ontology fits with everything that we have developed above, and it also dovetails nicely with the rejection of substance ontology in favour of process ontology and a systems-based approach to our philosophical analysis. It allows to understand human being as human becoming *as* the interplay between real and ideal factors

Ihde and Malafouris describe this dynamic as an 'ongoing dialectic between people and things' – one which reveals that in the most primary of ways 'humans and things are co-constituted' and fundamentally 'entangled'.[1208] Despite the fact that this basic premise is in no way new – and is widely recognised and engaged with in a variety of ways and to varying degrees in the humanities and the social and cognitive sciences – Ihde and Malafouris claim that idea itself is still one that challenges us in a profound way. This is at least partly because it throws up a number of follow on questions that – for the most part – remain unresolved and still waiting to be satisfactorily addressed. What exactly does it mean to say that the things we make also make us? How do we best understand the 'relationship of co-constituting between people and things' that is described above? The key to elucidating such issues as

[1206] Ihde and Malafouris, '*Homo faber* Revisited', p. 196.
[1207] Ihde and Malafouris, '*Homo faber* Revisited', p. 196.
[1208] Ihde and Malafouris, '*Homo faber* Revisited', p. 196.

'the place and meaning of materiality and technical change in human life and evolution' lies – they argue – in the notion of 'technical mediation'.[1209]

The human/technology relation is understood in terms of it describing a fundamental '*relational ontology* in which people and things are inseparably linked', interpenetrating in a process where our material production alters the world around us, while mediating a simultaneous transformation of our experience through a reshaping of our conceptual grasp of both ourselves and the world – this means that we ourselves change during the overall process.[1210] The focus for Ihde and Malafouris is the 'human predisposition for 'technological embodiment' […] and 'creative material engagement' […] as well as on the varieties of skill, praxis and of self-consciousness […] that come with it'.[1211]

The aim of their analysis is to highlight the 'special place that fabrication and material culture has in human life and evolution' – and highlight how this is something that is simply not found in other non-human species. Niche-construction and tool-use in non-human animals is in no way comparable to the way that the human 'life-world' is 'constituted' and 'defined', through an ever-changing relation between a vast array of 'material objects and technologies' which we use and fabricate.[1212]

This position does not intend a 'discontinuity' with evolution or other non-human species, it simply points out the unique relationship between the human being and our material culture, within the evolutionary process. The differentiation between us and other animals is not founded in 'cognitive ability, brain size or genetic substratum', rather it 'refers to the way human self-consciousness is technically and intersubjectively mediated'.[1213]

1209 Ihde and Malafouris, '*Homo faber* Revisited', p. 196.
1210 Ihde and Malafouris, '*Homo faber* Revisited', p. 197. Ihde and Malafouris highlight a number of thinkers who have explored this basic idea and offered their own articulations of it, they reference; Bernard Stiegler, Daniel Miller, Marshall McLuhan, Bruno Latour, Donna Haraway, Tim Ingold.
1211 Ihde and Malafouris, '*Homo faber* Revisited', p. 197.
1212 Ihde and Malafouris, '*Homo faber* Revisited', p. 197.
1213 Ihde and Malafouris, '*Homo faber* Revisited', p. 197.

It is in this light that the term *Homo faber* is revisited and redefined so as to be employed to conceptualise the human being in terms of the 'distinctively creative' way of human becoming. We evolve – more than any other biological species – in and through the fabrication of new materials, and new material forms, and through the development of new practices, activities, and 'socio-technical' behaviours. *Homo faber* revisited describes 'human-the-maker', rather than 'human-the-tool-maker', and is first and foremost aimed at capturing the uniqueness of human nature by virtue of the centrality of *making*, i.e., *creative material engagement* in human life and evolution'.[1214]

This is not done by simply referring to a special ability that human beings have, but rather to the special place that this ability has in the evolution and development of our species'.[1215] Of particular interest, is the fact that Ihde and Malafouris reject any association between the re-imagined notion of *Homo faber* and a view of the natural world from an objectifying and instrumentalist perspective.[1216]

An advantage of taking such an approach is that it allows us to apprehend the human being first and foremost in terms of 'practice and experience' rather than 'representation' – a move which helps to 'collapse the unhelpful opposition between knowing and making', and between 'cognition and material engagement'.[1217] Hence, the outdated conception of the mind that underlies this dichotomy can be challenged as inadequate in terms of accommodating the 'fundamental structures and features of our engagement with the material world', i.e., the primary nature of technics and its defining role in both the 'operation' and the 'evolution' of the human mind.[1218]

Ultimately what Ihde and Malafouris are asserting is that no model of human evolution can accurately describe our evolutionary trajectory without assigning an essential

1214 Ihde and Malafouris, '*Homo faber* Revisited', pp. 197–198.
1215 Ihde and Malafouris, '*Homo faber* Revisited', pp. 197–198.
1216 Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
1217 Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
1218 Ihde and Malafouris, '*Homo faber* Revisited', p. 198.

centrality to the dynamic relational 'process' within which people and things are 'inseparably intertwined and co-constituted'.[1219] They argue that this position is supported by both the 'long-term archaeological perspective' and our experience of the way that 'new materialities (e.g. digital) increasingly envelop our everyday life and thinking'.[1220] As such, the 'constitutive intertwining' of people and things and of *cognition and material culture*, has been a fundamental aspect of our prehistory – just as it still is today.[1221]

The implications of this are – according to Ihde and Malafouris – that there is no 'core', or 'essential' humanity, that pre-exists our technology. A position that we have already arrived at. It also follows for Ihde and Malafouris, that there is no essentialist conception of human nature which can be 'enhanced, extended, disciplined or threatened by technological interventions' – technology lies firmly 'at the heart of human becoming'.[1222] There is no such thing as the human being outside the dynamic of 'technical mediation', and the relational process of 'material engagement' – both are primary and essential; both define our way of being as becoming. Humans and things have always co-evolved, and we always have and still do, exist in 'mutual interdependency, beyond the nature and culture distinction'.[1223]

CONCLUSION

According to Ernst Cassirer, the human being is engaged in a continuous conversation with themselves – this is not something we can avoid. We are constituted by, and through, the cultural output with which we construct our symbolic world. We are both biological and cultural beings – the fact of our biology is experienced as always already symbolically

[1219] Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
[1220] Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
[1221] Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
[1222] Ihde and Malafouris, '*Homo faber* Revisited', p. 198.
[1223] Ihde and Malafouris, '*Homo faber* Revisited', pp. 198–199.

mediated and culturally expressed.[1224] Understanding technics *as* material culture means that this also refers to our technology – *all* of our technology, ancient and modern.

Technology which ontologically reflects our dual-aspect. Technology that reveals, reflects, nurtures, and – in an evolutionary sense – has incubated the emergent phenomenon of the self-conscious self, i.e., the self-reflectively aware, self-conscious human being. Our technics has been the evolutionary mid-wife with whose support we have emerged into the world. Our technics is the ontological anchor which grounds the feed-back loop of self-interpretation through which we are constituted. A feed-back loop that was kick-started once we recognised ourselves in the materiality of our technical fabrication, recognised a trace of ourselves in the dual-aspect of our artifacts – recognised a mark of human self-consciousness and intentionality; a mark of our minds in material production; a mark of design; a mark of *Geist*.

The human being represents the end of *purely biological evolution*. It is with the human being that the distinction between consciousness and self-consciousness is to be found. It is with the human being that evolution became self-referential. It was with the human being that recursion kicked in. In was with the human being that the system *woke up.* There is no such thing as the human being outside of technology – we are always already technical. Hence, it is the rupture of anthropogenesis which marks the true end of biological evolution – not the Technological Singularity.

Thus, we have an *idea* of the human being as an essentially technical being – constituted in and through the process of material engagement. An *essential concept* of the human being, which we can designate as *Homo faber* 2.0. As such ,we have an answer for the first part of Scheler's question – what is the human being? Now, we must see if we can provide an answer to the second part – what is our place in the cosmos?

[1224] See, Ernst Cassirer, *An Essay on Man: An Introduction to a Philosophy of Human Culture* (New York: Doubleday Anchor Books, 1944); Ernst Cassirer, *The Philosophy of Symbolic Forms, Vol. 2. Mythical Thought*, trans. by Ralph Manheim (New Haven and London: Yale University press, 1955).

CHAPTER 6: BEING BENDING BACK ON ITSELF

INTRODUCTION

If we reflect on what we have just established, some central issues come immediately to the fore. Firstly, is the *fact* of our biology. This is the starting point for Scheler, and the starting point for Philosophical Anthropology – it gives us solid ground for a point of departure. The fact of our biology implies the *fact* of evolution. Despite a few theoretical differences, philosophical problems, explanatory gaps, questions about origins etc., most people nowadays are willing to accept that evolution is a fact – one that has an enormous amount of evidential support. Hence, we can bracket some of the finer points of contention, and say that – in one form or another – evolution is a real process. From there, we can say that it is an ongoing process, and from that we can extrapolate that it will continue to be so. Again, we are still on solid enough ground.

The next question is one of perspective. What perspective do we assume with respect to evolution? Do we extend it beyond biology? Do we say that the cosmos has evolved? And if so, do we mean the same thing when we use the term evolution in a cosmological sense, as when we use it in a biological sense? I don't see that there is any reason why we shouldn't see the evolution as a single process that is both cosmological and biological. We don't need to come to any epistemological or metaphysical conclusions as a result of this recognition – at the moment the analysis can be simply descriptive.

The next step is an issue of boundaries. If evolution is a single process that stretches back to the Big Bang, or God, or some other cosmic origin, how do we understand the apparent difference between inert matter and organic matter? Is there a *real* boundary between the organic and the inorganic? We can then ask that same question in reference to whether or not we should recognise a boundary between organic life that is conscious, and organic life that is not conscious? And it is at this point that things start to get complicated. As soon as we introduce consciousness into the equation things start to become a little less defined.

At this point, I think we have a choice to make. We can argue from consciousness, or we can argue against it. To argue against it, we can assume some form of illusionism, and deny the reality of subjective or introspective aspects of consciousness as illusory, and nothing more than a side-effect of brain function. To argue from it, we take first person subjective experience seriously, and assume that the phenomenal character of consciousness is not an illusion.

The decision to choose one or the other may be nothing more than a matter of taste, for consciousness is both the most familiar thing in the world and the most difficult to clarify.[1225] In general, it seems to me that the arguments against consciousness tend to be at least partly ideological, i.e., there is a prior commitment to materialist or physicalist metaphysics, or ontological Naturalism, or some such position or outlook that assumes the explanatory authority of causality. The advantage of such a position is of course that you are under no obligation to address the mind/body problem. I find this position unsatisfactory, and am inclined to argue from consciousness. By implication of this decision, I will be faced ultimately with having to address that problem at some stage.

Thus, if the path taken is not one that seeks to deny consciousness, or one that explains it away, then we will eventually come to the impasse of trying to explain how mind and body relate, and how we understand the relationship between consciousness and the world, how Mind 'emerges' from Matter etc. This is of course assuming that we are not going to revert to divine, supernatural, mystical, or magical explanations of any description that involve a leap of faith – this would exclude theism, but not necessarily exclude deism,

[1225] Robert van Gulick, 'Consciousness', *Stanford Encyclopedia of Philosophy* (2014) <https://plato.stanford.edu/entries/consciousness/#PheStr> [accessed 28th April 2022].

and be open – in principle – to pantheism and panentheism or similar such beliefs. Other than that, we have a range of philosophical positions tending more or less toward the further ends of idealism, i.e., Berkeleyan idealism or some form or other of panpsychism.

Regardless of where we stand in terms of the technical details, I think for the moment we are still left in the same initial position, i.e., we haven't progressed beyond accepting the *fact* of our biology, and the *fact* of evolution, except that now we can choose to lean toward a reductive or a non-reductive perspective. Either way, I think the next step is two-fold: first do we accept the claim that what has evolved will continue to evolve; second do we accept the claim that evolution can be controlled or directed.

The first claim seems uncontroversial enough – yes, it makes sense that what has evolved will continue to evolve, and everything we know would seem to support this claim – regardless of how the future actually ends up turning out. The second claim would obviously need some clarification in terms of what we mean exactly by 'controlled' and/or 'directed', and there are a couple of ways we can approach it. But it is probably sufficient to acknowledge that we are *trying* to control/direct evolution, regardless of how effective or not we may be – or how things might end up.

At this point we can add technology to the equation. We can assume our future will be more rather than less technological (unless of course we go extinct or destroy the earth through nuclear war or climate change etc.), and accept that the idea of assuming full control over evolution isn't really meaningful outside the context of techno-scientific developments. Thus, we are faced with the question of how biology and technology relate. An issue we have partly addressed already through our analysis of the human/technology relation and where we arrived at the position that that the human being and the technical are co-constitutional and co-evolving, and any assumed ontological distance between the two is artificial. In a mundane sense, we are always already transhuman; always already technical. Hence, without having to endorse any form of post-biological ideology or techno-scientific eschatology, we can acknowledge that we are in fact the first known species to try and control evolution.

And this brings us to our final point. If we accept the above, then we have to address the issue of *why*? Why are we trying to transcend the limits of our biological heritage? Why do we seek to reach beyond our limits – our *physical* limits? Why are we seeking to direct biological life beyond itself? Transhumanism, and the task of post-biological evolution seem to be the ultimate radical expression of a negation of life – a re-directing of vital energies, and drives. The ultimate act of techno-sublimation. So, how can a principle that is derivative to life be the root source of the attempt to transcend life – what is the source of the techno-scientific negation of *all* biological life? This is *Scheler's challenge* to the idea of post-biological evolution.

Obviously Scheler posits a spiritual principle to address this. But this is not an option for transhumanism – the neo-Darwinian paradigm has been purged of all transcendent explanations, and the reductionism associated with it denies the option of a non-material, non-mechanical, non-causally determined explanation. But that still leaves us with how to explain the root of the denial of biological life. As we have seen, the self-mechanising mind is a paradox – one which ends up separating consciousness from the physical world that it initially set out to confine it to through a reduction to mechanism.

Thus, we have a stubborn and contradictory philosophical knot at the heart of the post-biological vision. A tangled knot of evolutionary complexification and reductionism – essentially in tension with the other, essentially incompatible with each other. A tension which is only deepened, and made even more intractable, when we consider the recursive character that the evolutionary process itself has now come to display. Simply asking about ourselves, and asking about our place in the cosmos, has cosmological implications. If increasing complexity is the defining principle of evolution, then the development of self-consciousness from consciousness marks an increase in complexity. No matter how complex a physical system is, the addition of consciousness can only increase that complexity. A subsequent shift to self-consciousness can again only represent another increase in overall complexity. In fact, self-reference is understood by some to be a principle indicator of complexity – and perhaps even its defining feature. So, Scheler's concept of life 'reporting back' to itself actually describes a process of increasing complexity. A process that Kurzweil, and transhumanism in general, define evolution *as*.

6.1 SCHELER'S CHALLENGE: SUBLIMATION, REDUCTIONISM, AND RECURSION

6.1.1 BACK TO THE SINGULARITY

As we have seen, there is a strong tendency within transhumanism to adopt a conception of technology and the human/technology relation that is shaped by the subject/object dichotomy and which is largely a persistent and unwelcome legacy from the early modern and Enlightenment worldview. This instrumentalist conception assumes technology to be value-neutral, and promotes the technology-as-tool perspective. This perspective establishes and presupposes a distinct *ontological separation*, between the human tool-user – as a subject and rational actor – and technology – as just something that is used to achieve some specific end.[1226] This is a position that we have already critiqued and rejected as untenable, outdated, and redundantly reductive. In effect, the instrumentalist conception of technology and the subject/object dichotomy operate together according to the assumptions of the mechanistic worldview. The calculative nature of ontological mechanism reveals a predisposition toward objectification, hence the instrumentalist conception of technology and the subject/object

[1226] Thacker, 'Data Made Flesh: Biotechnology and the Discourse of the Posthuman', p. 77.

dichotomy work in tandem to objectify both our bodies and our minds as a result of constituting them in mechanical terms.

Problems arise though when we view ourselves in such mechanistic terms. The adoption of the subject/object dichotomy establishes a separation between the subject – the self – and the object – the artifact. This perspective accommodates the notion of agency for the self-as-subject, and promotes an artifact-as-object-in-the-world. But if we are operating according to an ontology of mechanism, then all extended bodies – both biological and technological – are explainable in mechanistic terms, and are causally determined. When considered like this, the ontological gap between the self and the artifact does begin to close, but at the same time the space for human agency begins to recede.

Of course, one way to preserve the subject/object distinction and maintain the space for human agency is substance dualism. If the mind and the body are different types of things, the subject remains over and against the object, and the self has free will to operate outside the restraints of causal determinism – hence, human agency can be maintained. But as we noted earlier, the problem with such a substance dualism is that it leads to the mind/body problem. Proponents of such a position of dualism are faced with the seemingly intractable problem of explaining the exact nature of the relationship between the body and the mind, as well as having to explain through what mechanism the mind can exert any causal efficacy upon the body.

This problem does not exist though if one chooses to reject the dualist position, and assume a position of ontological monism, e.g., some form of ontological Physicalism. If such a position is chosen, then the gap between mind and body closes – as there are *only* physical things, and mechanistic descriptions and causal explanations serve at all levels. Still, this move remains problematic. The implications of it are that Mind is wholly reducible to Matter, and is fully explainable by the laws of physics. The problem with this type of reductionism though is that it eliminates free will, and reduces the phenomenal self-as-subject to little more than an illusion. Ultimately, the result of such a move is to pauperise first-person conscious experience to – at most – an epiphenomenon of brain function. This leaves no space for intentional human agency, let alone the hyper-agency of transhumanism that is reflected in the attempt at mastery over evolution, both in terms of biological life and cosmology.

This impoverishment of conscious experience sits in tension with the perspective generated by the subject/object dichotomy and seems deficient for a conception of technology that affords the notion of human agency such esteemed status. Hence, behind the explicit reductionism of transhumanism there lurks a persistent dualism. This causes a deep and unresolved tension to lie at its heart. This becomes especially problematic when we reflect on the idea of evolution being a self-directed process.

The issue of human agency and free-will and how we understand the self, are clearly central to the entire debate. What I have called 'Scheler's challenge' stands as a legitimate critique to the aspirations of post-biology. Saying that, I would also argue that there is nothing in Scheler's metaphysics that is essentially opposed to the basic premise of Kurzweil's concept of the Singularity. For Scheler, the human being is *bearer of Geist* and *Geist* is a primordial metaphysical principle which – by definition – must be present at a lower-than-human-level *and* be (potentially) present at a higher-than-human-level.

To understand the actualisation of *Geist* (*Verlebendigung*) we need to grasp the relational ontology at play – *the interplay between real and ideal factors*. For *Geist* to actualise, it is the real factors that are the necessary and sufficient condition for this to happen. But Scheler doesn't say that this *has* to be within an anthropomorphic context. It doesn't *have* to be the human being, that is the bearer of *Geist*. In *principle*, it could be a machine – in principle, it could be artificial self-consciousness that reveals *Geist*.[1227]

[1227] My intuition is that this issues will come down to whether or not life needs to be carbon-based or not. There may be something intrinsic to life that is inherent in the carbon atom and that simply cannot be synthesised. The

If we look back to prehistory, we can assume that what we observe in the archaeological record is the correct combination of real factors amalgamating for *Geist* to actualise. Upright position, opposable thumbs, larger brain, lowering of the jaw, development of vocal chords etc., and of course…*technics*! As we argued in the previous section, technics was a vital and necessary part of this. Thus, it was the rupture of anthropogenesis that marks the end of biological evolution, not the Technological Singularity. Key to argument is the consciousness vs. self-consciousness distinction that Scheler asserts is the defining feature of *Geist* and the human being.

Kurzweil doesn't make such a distinction, and as a result he fails to see that the universe has already woken up. For Kurzweil, there is no qualitative distinction between consciousness *per se*, and *self*-consciousness – which I assume stems from his reductionism. Without making that distinction, the only way that he can reach the Singularity – or some such radical temporal juncture – is through an accumulation of *quantitative* change. Thus, he must rely on the computing power of machines to boost, augment, amplify, replace etc., human intelligence which is clearly not up to the task. Again, this is problematic because it doesn't appear that Kurzweil distinguishes between intelligence and consciousness. He is also unclear about exactly what he means when he says that we are *spiritual* machines.

There are two main issues with Kurzweil's overall project as I see it: 1 There is a lack of conceptual clarity overall, he doesn't appear to make a distinction between intelligence and consciousness, more importantly he doesn't mark a qualitative distinction between consciousness and self-consciousness; 2 His thought is infused with reductionism, although he uses the language of transcendence, he assumes the logic of reductionism – even though he acknowledges a lot of the key issues that are associated with this, he leaves them unresolved and there remains an outstanding and hugely problematic tension between his

implication of this is that real factors will always have to carbon-based and fully disembodied self-consciousness is impossible.

reductionism and his assumptions regarding the issue of free-will, the self, and a possible metaphysical source for the unexplained transcendent tendency of the material cosmos. His use of the term 'Spiritual Machines' without the necessary conceptual clarification is an example of this. Is he trying to combine two irreconcilable concepts? Which is it, is he imbuing the machine with spirit or reducing spirit to mechanism?

Kurzweil's six stage evolutionary theory begins at the same point of origin as Scheler's – Being in its most basic state. It also ends in an almost the same place – the material universe infused with spirit or intelligence. He says that the Singularity will be a radical change in the 'method' and 'organization' of thinking. It will be the 'necessary next step in evolution', and consist of the 'freeing of the human mind from its severe physical limitations of scope and duration' – he says that evolution is 'the purpose of life', and to evolve means to move toward greater complexity, greater elegance, greater intelligence […] i.e., 'God'.[1228]

So, according to Kurzweil, evolution moves rapidly toward our conception of God, hence the 'freeing' of human thought from the limits of biology can be conceived of as a 'spiritual quest'. Even so, he ultimately avoids all the philosophical details. The question is, what does this reveal? It is almost as if his understanding of physical matter is one that inherently possess a transcendent component but he doesn't elaborate on how – or why – such a component can be reducible to the causally determined laws of physics.[1229] Hence it is an easy to assert the following: 'Biology is in the early stages of a historic transition to an information science, while also gaining the tools to reprogram the ancient information

[1228] Kurzweil, 'The Law of Accelerating Returns'.

[1229] Ray Kurzweil, 'Forward to The Third Edition', in John von Neumann, *The Computer and the Brain*, (New Haven & London: Yale University Press, 2012). The brain/computer analogy is uncritically accepted. He states, 'the best example we have of an intelligent system'…'In a grand project to understand the human brain, we are making accelerating gains in reverse engineering the paradigms of human thinking; and are applying these biologically inspired methods to create increasingly intelligent machines. Artificial intelligence (AI) devised this way will ultimately soar past unenhanced human thinking. My view is that the purpose of this endeavour is not to displace us but to expand the reach of what is already a human-machine civilization. This is what makes our species unique'.

systems of life'.[1230] And this: 'By the 2030s, we will be more non-biological than biological. Will that make us less human? I don't believe so. We have always extended our physical and mental reach with technology in a way that no other species has'.[1231] But this in no way addresses the core point of Scheler's challenge.

In *The Age of Spiritual Machines*, Kurzweil says that we identify with our 'brains' more so than our bodies, but how or why he differentiates between the two isn't clear. The overall aim of his engineering is to scan the components of the brain and re-create 'its entire organization' on a neural computer – including contents of memory. He says we don't have to 'understand' it, just need to be able to 'copy' it![1232] *This is the paradigm case of the engineering perspective.*

Also, the issue of personal identity is a central concern for Kurzweil, he predicts that it will be a 'gradual but inexorable process to transfer our minds from our biological brains to a 'more capable computing medium' – ultimately, we will understand the self as a 'mind file'. This 'new hardware' will mean a re-assessment of our mortality as our technology allows us to 'instantiate ourselves in our computational technology. This will include an evolving sense of self as 'our identity will be based on our evolving mind file', i.e., '*we will be software, not hardware*'.[1233] In other words, the 'essence of our identity will switch to the permanence of our software'.[1234] The very claim that hardware is impermanent, and software is permanent, reveals his implicit dualism – it is almost a Platonic vision, the *ideal* of software is more real than the *real* of hardware.[1235]

1230 Ray Kurzweil, 'Reprogramming Biology: Tinkering With Our Genetic Programs Will Extend Longevity', *Scientific American* (2006) <https://www.scientificamerican.com/article/reprogramming-biology-2006-07/> [accessed 4th January 2022].

1231 Ray Kurzweil, 'Let's Not Go Back to Nature', *New Scientist* (2007) <https://www.newscientist.com/article/mg19325936-300-lets-not-go-back-to-nature/> [accessed 4th January 2022).

1232 Kurzweil, *The Age of Spiritual Machines*, pp. 90–92.

1233 Kurzweil, *The Age of Spiritual Machines*, p. 94.

1234 Kurzweil, *The Age of Spiritual Machines*, p. 94.

1235 Kurzweil, *The Age of Spiritual Machines*, pp. 49–53. The issue of consciousness is obviously central, Kurzweil assesses it from an 'objective' perspective and a 'subjective' perspective. The 'objective view' of

But free will is a problem in a strictly causally determined universe. He offers a few different perspectives on how to approach the problem of consciousness: consciousness and free-will are illusions, consciousness is outside the realm of verification and hence meaningless metaphysical mysticism, consciousness as foundational principle for epistemology, consciousness as primary reality, consciousness is some 'other' form of fundamental phenomenon in the world.[1236] He goes on to say that some commentators assert that the answer is beyond our capacity to reach, our brains aren't smart enough to understand themselves, but he rejects this idea by saying that if we are sophisticated enough to ask the question we should be able to answer it – except it does appear that as things stand, we are having difficulty clearly and precisely formulating the question.[1237]

His answer? A 'synthesis' of views: each view is 'correct when viewed together, but insufficient when viewed one at a time', i.e., the 'truth lies in a synthesis of views', and there are 'many paths to the truth'.[1238] He readily acknowledges that his position is 'contradictory and makes little sense' before concluding with the assertion that evolution is 'the purpose of life' and to evolve means to move God.[1239] So, is it a matter of faith then?

It seems faith is also at play when considering if machines can be conscious. Kurzweil says that by 'scanning the brain for the purpose of downloading it', will allow for the 'entire organization' of it, including the 'brain's memory', to be re-created on a digital-analog

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consciousness, is one that holds consciousness to be a 'certain type of intelligent skill', i.e., the ability to 'reflect on one's own self and situation'. Within this objective view, any skill or capacity that defines consciousness can be replicated non-biologically according to Kurzweil. Whereas the 'subjective view' of consciousness holds that a fully objective view does not allow for the fact that the it may be the case that the 'essence of consciousness is subjective experience', not 'the objective correlates of that experience', i.e., behaviour.
He then asks, can a machine be capable of having 'spiritual experiences'? before saying that first person subjective 'spiritual experiences' are 'the very real but ultimately unmeasurable issue of consciousness'. So he acknowledges that the problem is how to 'convey' the particularities of subjective experience – the very thing he just said was immeasurable! He then asks at what point do we consider a machine to 'a conscious agent with its own free will'? This lack of conceptual clarity abounds.

[1236] Kurzweil, *The Age of Spiritual Machines*, pp. 51–53.

[1237] Kurzweil, *The Age of Spiritual Machines*, pp. 51–53.

[1238] Kurzweil, *The Age of Spiritual Machines*, pp. 51–53.

[1239] Kurzweil, *The Age of Spiritual Machines*, pp. 51–53.

computer'.[1240] But the question is, would the resulting 'mind-file'/'entity' be conscious? [1241] He then asks: 'At what point do we consider an entity to be conscious, to be self-aware, to have free-will? How do we distinguish a process that is conscious from one that just acts *as if* it is conscious?[1242] Will the 'new entity be capable of spiritual experiences'?, and if so how will we be able to tell because there no 'objective test can absolutely determine consciousness, i.e., we cannot objectively measure subjective experience'.[1243] We can measure only 'correlates' of it, such as behaviour – so the new entities can *appear* to be conscious but whether or not they actually *are* conscious will have no not affect their behaviour. Thus, we will have no way to directly determine machine consciousness.[1244] Kurzweil's response? He simply states that from 'a practical perspective, we will accept their claims'.[1245] It's as simple as that apparently, and this seems to be his final position on the issue.

Kurzweil says that he is from what can be called the 'thinking is as thinking does' school of thought. His ideas on the matter are based on the concept of the Turing test – which he understands as 'a test of thinking', i.e., a test for 'conscious intentionality'.[1246] He claims that the 'issue of computer thought' will be resolved in this way, i.e., the machines will *convince us they are conscious*, that they have their own agenda which is worthy of our respect. We will come to believe that machines are conscious in much the same way as we believe it of each other. Even more than we currently do with our pets, we will 'empathize' with the 'professed feelings and struggles' of the machines, and this is because 'their minds

[1240] Ray Kurzweil, 'The Coming Merging of Mind and Machine', *Scientific American Reports* (2009), 20–25 (p. 24). <https://www.scientificamerican.com/article/merging-of-mind-and-machine/> [accessed 5th January 2022].
[1241] Kurzweil, 'The Coming Merging of Mind and Machine', p. 25.
[1242] Kurzweil, 'The Coming Merging of Mind and Machine', p. 25.
[1243] Kurzweil, 'The Coming Merging of Mind and Machine', p. 25.
[1244] Kurzweil, 'The Coming Merging of Mind and Machine', p. 25.
[1245] Kurzweil, 'The Coming Merging of Mind and Machine', p. 25.
[1246] Kurzweil, *The Age of Spiritual Machines*, p. 53.

will be based on the design of human thinking', i.e., they will 'embody human qualities' and 'claim to be human' – and we will believe them.[1247]

These problems would seem to be a result of Kurzweil's lack of distinction between intelligence and consciousness, and between consciousness and self-consciousness. Ultimately, he will believe that the machine is conscious because he *wants* to believe the machine is conscious. He says that intelligence is a 'complex' and 'mysterious' process, it is the 'most powerful phenomenon in the universe', and that intelligence is the ability to achieve goals – he offers a simple formula: the ability to solve 'definable problems' through 'brute force' combined with correct formulations, i.e., 'simple methods combined with heavy doses of computation', combined with 'examples of the problem', or a 'well defined statement' of the problem.[1248]

Kurzweil embodies the engineering perspective, his thinking operates according to a guiding principle of design, and he understands the principle of design in terms of problem solving and design resolution. Hence, his approach to the body – understood as a machine – is to see it in terms of design limitations and see it in terms of an overall 'redesign process'.[1249] He articulates this as a 'fundamental and radical redesign of the extremely inefficient and limited functionality of the huma body version 1.0' – this 'process of reverse engineering and redesign will also encompass the most important system in our bodies: the brain'.[1250]

Kurzweil refers constantly to intelligence rather than mind or spirit and this reveals his reductive materialism and his unwillingness to posit mind as anything other than a function of life or an epiphenomenon of physical complexity and patterns of increasing order. The matter in the universe before the rupture of the Singularity is 'dumb' matter, mindless

[1247] Kurzweil, *The Age of Spiritual Machines*, p. 53.
[1248] Kurzweil, *The Age of Spiritual Machines*, p. 61.
[1249] Ray Kurzweil, 'Human Body 2.0', in *The Scientific Conquest of Death: Essays on Infinite Lifespans* (Buenos Aires: LibrosEnRed, 2004), pp. 93–106, pp. 99–100.
[1250] Kurzweil, 'Human Body 2.0', pp. 100–101.

and inert until sufficiently complex and arranged in precisely the right way so as to become self-aware. Without recourse to another 'mind-like' principle Kurzweil's metaphysics must rely on the assumption that evolution is inherently progressive, always directed toward increasing order. Without this directionality there is nothing within dumb matter to ensure that it becomes arranged in the specific way required to transition to progressive levels of indirection. It is evolution that creates the patterns of information needed for matter to evolve to a more ordered state. But without being able to identify an *oppositional* principle, as Scheler does with his conception of *Geist*, Kurzweil is left with the problem of explaining evolution in terms of function which amounts to an explanation through a description of its effects, i.e., exponential growth.

Thus – *in principle* – Scheler can get to the Singularity but it doesn't appear that Kurzweil can if he continues to follow the reductionist path![1251] For all of his visionary sweep, Kurzweil seems locked into a reductionism that spans both his metaphysics and his methodologies. He also seems to operate with a conception of technology that is clearly instrumentalist. Perhaps this does not matter, he is driven and motivated, well-funded and well-positioned to affect large scale change – in this respect perhaps faith is more significant than being epistemologically correct or metaphysically rigorous.

[1251] See, David Chalmers, 'The Singularity: A Philosophical Analysis', *Journal of Consciousness Studies*, 17 (2010), 7–65 (p. 10). Chalmers provides a rigorous philosophical analysis of the possibility of the Singularity. He holds that the practical and the philosophical intersect within the notion of the Singularity – at the root of the practical attempt to usher in the Singularity lie outstanding and currently unresolved philosophical questions relating to the nature of the relationship between mind and matter. He says that there are four basic options: *brain emulation*; *artificial evolution*; *direct programming*; and *machine learning*. Ultimately this will come down to the issue of whether or not non-biological systems can be fully conscious. According to Chalmers, there are two opposing views on this with respect to what the physical conditions under which consciousness can exist in the world are, the biological view – only biological systems can be fully conscious, and the functionalist view – whether or not a system can be conscious depends on the causal structure of the system, hence, if organised correctly, a non-biological system can be conscious. Clearly, if the biological view is correct, then a silicone-based conception of post-humanity is not possible. If the functionalist view is correct, the way is open – in principle – to uploading etc. He says that arguments for the Singularity tend to depend upon 'an uncritical acceptance of the assumption that there is such a thing as intelligence and that it can be measured' – this applies especially to the notion of 'general intelligence'. For example, the attribute of 'intelligence' is only one possible way of 'evaluating cognitive agents', and even if there was a 'canonical notion of intelligence within the human sphere', this does not automatically necessitate that this could be 'extended to arbitrary non-human systems, including artificial systems'.

6.1.2 SUBLIMATION: HOW BEING BENDS BACK ON ITSELF

If *Geist* is a primordial aspect of the Ground of Being, it must have – in an ontological sense – been there all along in some shape or other, and to some degree or other. This means that the process of interaction between *Geist* and *Drang* must be a temporal one – *Geist* cannot suddenly appear for the first time at a temporal interval somewhere in the middle of that process, i.e., simply *appear for the first time* with the human being. As Spader puts it: 'If *Geist* is one of the two primal elements, it must be present from the beginning in some form or other. It must have some early manifestations, manifestations other than human *Geist*'.[1252] Human *Geist* appears in and through the human being as *new principle* in the universe, one that is not reducible to evolving biological life. Saying that, it is clear that it cannot be the case that it only come into existence for the first time overall in the cosmos with the appearance of the human being.

Spader correctly points out that *Geist* is present at all levels of Being, and goes on to suggest that the transition from the inorganic to the organic – as part of 'psychic-becoming' – is a result of a differentiation in the manifestation of *Geist*.[1253] By the time the transition between the inorganic and the organic has taken place we are starting to talk about Life (*Leben*) as a manifestation of *Drang* that is the principle opposing *Geist* as part of the interplay between the real and the ideal. By the time we get to human *Geist*, *Leben* – as a manifestation of *Drang* – is a highly developed and coherent' phenomenon, far removed from the 'blind' original state of *Drang*.[1254]

As the source of the power of vital energy and the 'material' forces of physical reality – *Drang* is the 'force that underlies all real existence' – existence that we perceive not as a 'field' of 'concentrations of force', but as the world of 'material things'. Thus, what Scheler

[1252] Spader, *Scheler's Ethical Personalism*, p. 206.
[1253] Spader, *Scheler's Ethical Personalism*, p. 207.
[1254] Spader, *Scheler's Ethical Personalism*, p. 208.

calls *Bilder* (*Bild*) are the 'phenomenal forms through which the real centres of force', are experienced by us, and given to us in perception *as* 'objective appearances'.[1255] *Bilder* are 'absolute' for us as 'vital' beings – they are 'relative to life rather than to individuals', and this implies the *Gestalt* principle, which assumes the 'primacy of imagination over perception'.[1256]

Even though *Bilder* are not just phenomena of our subjective consciousness, i.e., they are 'outside consciousness', they are nevertheless made of the same 'stuff' as dreams and fantasies – hence we can be mistaken in our perception of them. *Bilder* are objective in the sense that they are independent of human imagination, but – being made of the same 'stuff' as dreams and fantasies – they must still be the 'work of imagination'. Hence, they are the 'work of a power of productive imagination in the divine *Drang*'.[1257] The *Bilder* of perception are the work of *Drangphantasie*, i.e., 'Nature' is produced by the creative and imaginative 'play' of the Absolute as *Drang*.[1258]

What this is describing is that there is a 'phenomenal distinction' between the centres of 'pure physical force', and the 'centres of vital force' as constitutive of living things, i.e., there is a distinction between *inorganic* and *organi*c impulsion. Pure 'physical energy' is only one manifestation of *Drang*. *Drang* is also manifested – in a simultaneously original way – as life-energy or 'all-life'. This principle of vital impulsion harnesses physical impulsion so as to advance organic life and vital life-energy through the incorporation of the 'constellations' of energy that are produced by *Drangphantasie* to advance vital life.[1259]

[1255] Spader, *Scheler's Ethical Personalism*, p. 208.
[1256] Spader, *Scheler's Ethical Personalism*, p. 208.
[1257] Spader, *Scheler's Ethical Personalism*, p. 208.
[1258] Dunlop, *Scheler*, pp. 75–76.
[1259] Dunlop, *Scheler*, p. 76.

Space and time have their roots – like reality – in the 'four-fold dimensional manifold of vital energy' that is *Drang*.[1260] *Drang* is 'pure, irregular fluctuating "variation" – it has 'no substance as bearer of its existence', and it is comparable to 'wave patterns in atomic energy whose reality, according to Scheler, also rests on vital impulsion'.[1261] Hence, space and time are unseparated at this level of reality. Time-consciousness presupposes the self-activity functioning at the bottom of all life and living beings ("urge"). So does the self-spatialization of life and living beings with regard to the occurrence of spatial perceptions, etc'.[1262]

As individuals the human being can also partake in the acts of the 'higher-than-individual' *Geist,* but only through a process of 'acting jointly' with it. This is done by way of the essential connection that exists between an *act* and an *idea*. This essential connection is a necessary postulate of a 'self-realizing order of ideas in this world', an order that is independent of human consciousness, and which can be assigned to Primordial Being.[1263]

The uniqueness of *Geist* is captured in the 'act of ideation'. This is a specific spiritual act that is differentiated from other acts of intelligence, reductive thinking, and the acts of non-human animals. Mathematics provides an example of ideation as an inquiry into essences and essential nature. As already established, non-human animals have no more than 'vague representations of plurality', whereas humans can 'disconnect' numbers from plurality and make calculations that can produce mathematical entities that can operate as independent objects. The 'ideal' objects and findings of mathematical enquiry can be applied to 'real' things by humans in a way that is not possible for non-human animals. The grasping of essential qualities and structures in the world – through the act of ideation – provides insight

[1260] Manfred S. Frings, *The Mind Of Max Scheler*: *The First Comprehensive Guide Based on the Complete Works* (Milwaukee: Marquette University Press, 1997), p. 186.
[1261] Frings, *The Mind Of Max Scheler*, pp. 186–187.
[1262] Frings, *Max Scheler'*, pp. xii–xiii.
[1263] Scheler, *The Human Place in the Cosmos,* p. 34. It is within this joint-acting that the human being can access an 'order of essences' (through 'knowing' *Geist*), an 'objective order of values' (through 'loving' *Geist*), and an order of purpose in the world-process (through 'willing' *Geist*).

into reality that are 'valid *beyond* the limits of our sense experience'.[1264] The validity of these insights extends beyond the 'reality' of our world – thus, they are valid in any possible reality, i.e., they are *a priori*.[1265]

Scheler holds that, for the natural sciences, these insights into essences are the 'basic condition of axioms' which set the limits of successful application of the scientific method as such, they are delimited by this method. For metaphysics, which aims at the elucidation of absolute Being, insights into essences are what Scheler describes – adopting Hegelian terminology – as 'windows into the absolute'.[1266] He states that a 'genuine essence' cannot be 'reduced to itself', nor can the existence of the 'something' of such an essence be reduced to 'empirical causes of a finite kind'.[1267]

Such essences are attributable only to higher-than-individual *Geist* as one of the two essential attributes of the higher-than-individual *Ens a Se* – their existence can only be grasped as a positing of *Drang*, as the second essential attribute of the *Ens a Se.*[1268] This ability to 'separate essence from existence' establishes the fundamental character of human *Geist* and it acts as the foundation for all other characteristics. For Scheler, it is the capacity for *a priori* knowledge through which we can constitute the essence of the human being.[1269]

The act of ideation works in a way that Scheler describes as a 'suspension of the reality' of both the world and of things. It can be understood as a kind of 'technique' of comprehension through which the *logos* of essences is 'peeled off from the concrete and sensory world of things through objectification'.[1270] The human being can in this way say 'No' to this reality.

[1264] Scheler, *The Human Place in the Cosmos,* pp. 35–36.
[1265] Scheler, *The Human Place in the Cosmos,* p. 36.
[1266] Scheler, *The Human Place in the Cosmos,* p. 36.
[1267] Scheler, *The Human Place in the Cosmos,* p. 37.
[1268] Scheler, *The Human Place in the Cosmos,* p. 37.
[1269] Scheler, *The Human Place in the Cosmos,* p. 37.
[1270] Scheler, *The Human Place in the Cosmos,* p. 37. Parallels are drawn with the Buddha, Plato, and Husserl.

This technique of 'reduction' works according to the nature of our experience of reality. Because sensation and perception do not give direct impressions of reality and only allow us to know the 'what' of things and not their existence, existence – as 'being real' – is only given to us in an experience of resistance of an already disclosed sphere of world. This resistance occurs only in the drives that originate from our 'central life impulsion' – reality is given to us in the 'experienced impression of resistance against the lowest and most primitive levels of our psychic life'.[1271] This means that underlying sense perception, conscious forms and unities and relations, lies a 'powerful impression' of reality – the impression of the 'reality of the world' which is 'bare and freed from any kind of specificity'.[1272]

This 'original' experience of reality as the 'experience of resistance of the world' precedes all 're-presentation' and 'per-ception', as well as any and all consciousness (*Be-wusstsein*).[1273] Because an 'impulse' in the 'impulsion of our life' is the necessary pre-condition for any possible sensation or perception, the 'resistances' of reality are experienced in terms of a temporal process of a 'becoming-perception' – this is *before* any conscious 'image' can be generated. These resistances are 'exercised' on our impulsion by 'force-centres and force-fields that form the basis of the phantasmic images of the environs' – as a result, the experience of reality is 'pre-given' to our representation of the world, not after.[1274] The result of this is that through an act of ideation or 'de-realization' the human person can negate and re-direct vital energies.

This saying 'No' means that we suspend reality to free ourselves from the 'angst' of our vital existence. Reality – because it *is* reality – is first and foremost a 'constraining' and 'inhibiting' pressure that has 'pure angst' (without an object) as its correlate. Hence, this act of 'de-realizing' reality is essentially an 'ascetic act' – it consists of a 'cancellation' of the

[1271] Scheler, *The Human Place in the Cosmos,* p. 37.
[1272] Scheler, *The Human Place in the Cosmos,* p. 38.
[1273] Scheler, *The Human Place in the Cosmos,* p. 38.
[1274] Scheler, *The Human Place in the Cosmos,* pp. 38–39.

impulsion to which the world appears to us in the experience of resistance. The crux of Scheler's position is the conclusion that this act of 'de-realizing' could only possibly be carried out by a being with *Geist*. It is only *Geist*, – in the form of 'pure will', and within an act of 'inhibition' – that could effectively 'de-realize' the centre of vital impulsion that conditions our access to reality.[1275]

By virtue of *Geist*, the human being can adopt this ascetic position and take an 'ascetic attitude' to life. This means we can repress and supress our own drive impulses, and refuse them their 'sustenance' by denying them the necessary 'perceivable images and representations'.[1276] Non-human animals always say 'Yes' to life, and to reality. In comparison, the human being is never fulfilled by its environment, and always strives to break free of its confines and 'transcend' their reality – *including the reality of his or her self.*

This ability to say 'No' to the world – to override our drives and instincts – is a constituent part of our nature. It allows us to 'build an ideal realm of thoughts' – a realm which is above and over the perceptual realm. By doing this, we can further 'divert more and more of the energy dormant in the repressed drives into our spirit' and *sublimate* drive-energy into spiritual activity.[1277]

This is done by a rejection by the spiritual will of the 'images' that are necessary for drive-driven action. Scheler describes this as a 'luring away' of the drives with the 'bait' of appropriate ideas and values. This coordinates the drives so that they will 'execute the *project of the will posited by spirit, and* make it real'.[1278] This process of coordinating the drives 'steers' them through both an 'inhibiting' and 'un-inhibiting' by the spiritual will – this

[1275] Scheler, *The Human Place in the Cosmos,* p. 39.
[1276] Scheler, *The Human Place in the Cosmos,* p. 39.
[1277] Scheler, *The Human Place in the Cosmos,* p. 40.
[1278] Scheler, *The Human Place in the Cosmos,* p. 41.

directs them by presenting before them an idea or value that can be realised by virtue of this overall movement of the drives.[1279]

Because *Geist* is impotent it cannot 'produce nor withdraw any energy in the drives', neither can it 'increase or diminish' this energy. But what it *can* do is summon 'various drive-*gestalts* which allow the organism to do *Geist's* will. This 'regulation' of the drives originates from *Geist*, and is 'mediated' by a regulation of 'images' in a 'positive' way.[1280] The goal of attaining an increase in power and activity of *Gei*st, is part of an overall independence from life and part of it becoming *freer*. This is the 'coming to life' of *Geist* and Scheler sees it as *Drang's* 'sublimation' towards *Geist*. He does not recognise it as some kind of 'mystical' process where spirit originates 'from' the repressed drives but which is still in some way capable of producing novel spiritual qualities.[1281]

Thus, the act of sublimation cannot have its origins in the drives. The drives cannot be the source of ascetic acts of repression. *Geist* simply receives energy from these acts. [1282] Saying 'No' to reality, and the 'deactivation' of both reality and the 'phantasmic images' emanating from the drives, does not in fact equate to the 'being' of *Geist*. Rather it is a case that these acts are providing *Geist* with the energy that is latent in the repressed drives, and as such they only represents *Geist's* ability to manifest.[1283]

Scheler's concept of *Geist* understands it as an attribute of 'that which is itself', and it becomes manifest *in* the unity of the human person. In its pure form, *Geist* is without power, without force, and without activity. In order to gain these there must be an 'additional factor' such as the ascetic act or the repression of drive energy and its accompanying sublimation.

Within this interplay between *Geist* and *Drang* it is the 'higher' categories of Being and values that are in essence the weaker. The 'currents of force and effect' by which we

[1279] Scheler, *The Human Place in the Cosmos,* p. 41
[1280] Scheler, *The Human Place in the Cosmos,* pp. 44–45.
[1281] Scheler, *The Human Place in the Cosmos,* p. 45.
[1282] Scheler, *The Human Place in the Cosmos,* p. 40.
[1283] Scheler, *The Human Place in the Cosmos,* p. 40.

posit the existence of things are ordered from the bottom up rather than the top down. The inorganic world has 'autonomous laws', and a 'proud independence of its own' – in some isolated places it can contain something 'like' life.[1284] Plants also enjoy this independence, as do animals. Because animals rely on plants more than plants rely on animals the 'direction' of animal life contains both a 'benefit' and a 'cost' because the animal is not immediately related to the inorganic world the way plants – who draw nourishment from the ground – are.[1285] Hence, the purer *Geist* is the more it becomes 'bare of all power and effectiveness' – according to Scheler, this reflects the 'true original order of the relations existing between higher and lower forms of being, between categories among values, and between forces and powers in which these forms realise themselves'.[1286]

Thus, what is highest is impotent and every higher form of being – lacking power relative to what is lower – is unable to realise itself by its own force and must be realised by those forces that are lower. All processes of life are by themselves *gestalt* processes 'in time' – within which their own structure and are 'exclusively *realized* by the material and the forces of the inorganic world'.[1287] It is by virtue of the process of sublimation that *Geist* can gain power. This outcome though is *not pre-determined*. The life-drive may or may not enter, under the laws of *Geist* into the 'structure of ideas and meanings that *Geist* holds out before the drives'.[1288] It is within the 'interpenetration' of *Drang* and *Geist* that the impulsion of drive-life makes powers available to *Geist* which is originally lacks any energy of its own. This occurs – *as* the interplay between real and ideal factors – in both individuals and in history.[1289]

[1284] Scheler, *The Human Place in the Cosmos,* p. 47.
[1285] Scheler, *The Human Place in the Cosmos,* p. 47.
[1286] Scheler, *The Human Place in the Cosmos,* p. 47.
[1287] Scheler, *The Human Place in the Cosmos,* p. 47.
[1288] Scheler, *The Human Place in the Cosmos,* p. 47.
[1289] Scheler, *The Human Place in the Cosmos,* pp. 48.

It is the higher forms of being that determine the 'essential regions of the world' – but a higher form 'realized' only through the opposing lower principle, i.e., *both Geist* and Drang must interact act as the principles of primordial Being. *Drang* – as co-original principle – 'creates' reality, thus it is the force centres in the inorganic world that are most powerful phenomena in our world. They are what Scheler designates the 'lowest energy-quanta' within impulsion, and they lack ideas, forms, or *gestalts*. Drawing on research in theoretical physics Scheler suggests that these force-centres obey only laws of a statistical nature – they have 'no ontic laws' with respect to their 'behaviour toward and away from each other'.[1290]

It is the human being who introduces 'natural laws' into the equation – laws which human reason subsequently 'reads' and 'interprets'. This happens, according to Scheler because of 'biological' necessity, not 'rational' necessity. This enables the human being to *act* and he states that 'there are no laws behind the chaos and chance of caprice in an ontological sense', rather 'it is chaos that towers up behind all formal mechanical laws'.[1291]

The implications of all natural laws being statistical, and of all natural processes the 'totalities' of random interactions of units of force, are that 'our whole view of nature would have to undergo a remarkable change', and the 'true ontic laws' would turn out to be 'laws of *gestalts*', which are laws that prescribe a 'certain temporal rhythm' to events and to the 'static forms of physical existence'.[1292] Because laws of *gestalt* enjoy validity within spheres of both psychic and physiological and life 'lawfulness in nature would again be a strict *uniformity'*.[1293] Scheler says that there is nothing within this unity that would 'exclude the possibility of formalizing the concept of 'sublimation' in regard to all events in the world' – this would allow it to be present within 'every process of the world. Thus, in principle, any

[1290] Scheler, *The Human Place in the Cosmos,* p. 48.
[1291] Scheler, *The Human Place in the Cosmos,* p. 48.
[1292] Scheler, *The Human Place in the Cosmos,* p. 48.
[1293] Scheler, *The Human Place in the Cosmos,* p. 48.

‘lower’ sphere of Being, could gradually come to be at the ‘service’ of a higher structure of Being and becoming.[1294]

Scheler offers two examples: the forces between electrons coming to be at the service of the atomic *gestalt* pattern; and the forces of the organic world turning to the service of the ‘*structure* of life’. [1295] What he is describing here is the self-organization that characterises living organisms. He says that if he is correct in this, then the ‘becoming’ of the human being and of *Geist* must then have to be understood as the ‘last process up to now of sublimation in nature’.[1296] This *becoming* of human and spiritual as the last process of sublimation in nature would be identifiable within a manifestation of itself through an ‘always greater application of external energies to the most complicated organic processes we know of’ i.e., the stimulation of the human cortex.[1297] There would also be an accompanying ‘analogous process of drive-sublimation which is manifested as the transfer of drive-energy to ‘spiritual’ activity’.[1298]

Human becoming is the ‘highest sublimation known to us and becoming human is the ‘most intimate unification of essential regions in the world – for it is the human person who unifies all ‘essential regions’ within themselves. This vision is one that works to bridge the ‘conflict’ between a mechanical worldview and a teleological worldview and leads ultimately to the highest Being, i.e., the ground of the world.[1299] Being is simply described by Scheler as that ‘upon which everything else is dependent’ and ‘that which is through itself’ – he understands that the Ground of Being is structured according to the established ‘primordial

[1294] Scheler, *The Human Place in the Cosmos,* p. 48.
[1295] Scheler, *The Human Place in the Cosmos,* pp. 48—49.
[1296] Scheler, *The Human Place in the Cosmos,* pp. 48–49
[1297] Scheler, *The Human Place in the Cosmos,* p. 49.
[1298] Scheler, *The Human Place in the Cosmos,* p. 35–36.
[1299] Scheler, *The Human Place in the Cosmos,* p. 50.

tension' between *Geist and Drang.* Hence, this antagonism cannot describe the relationship between the Ground of Being and the world.[1300]

Because the 'pure spiritual attribute' within the 'ultimate ground of all finite being' lacks any 'creative power', the idea of 'creation out of nothing collapses, leaving Scheler to formulate the relationship as such: 'the Ground of Being had to un-inhibit its world-creating impulsion when its *deitas* willed to *realize* the fullness of things and of values that were (in potency) residual in it; so that the Ground of Being could realize itself in the temporal course of world processes – the Ground had to pay a price, as it were, to *realize* its essence in and through this process';[1301] In other words, 'Being-Through-Itself could become Being worthy of divine existence only to the degree to which it realized the eternal Deity in the impulsion of world history *in* and *through* the human being'.[1302] Thus, the human being is the locus of the becoming of ultimate Being. A becoming that is recursively structured – Being bending back on itself on both the micro and the macro level!

This process itself is 'timeless', but it shows itself in 'the time of finite experiences'. The Ground of Being can 'get closer to its goal of a self-realization of the deity only to the degree to which what is called 'world', becomes a perfect embodiment of the eternal substance' – for it is only within the 'raging of this enormous storm of the 'world' that an *adaptation* can take place of the order of the forms of being and values to factually effective powers, and vice versa'.[1303] This is essentially in opposition to a theistic scheme of Being and Scheler says that such theism 'falsely puts the goal at the beginning. His scheme sees God as becoming God. A becoming which 'may' take place in the form of a 'gradual *reversal* of the

[1300] Scheler, *The Human Place in the Cosmos,* p. 50.
[1301] Scheler, *The Human Place in the Cosmos,* p. 50.
[1302] Scheler, *The Human Place in the Cosmos,* pp. 50-51.
[1303] Scheler, *The Human Place in the Cosmos,* p. 51.

original relationship between the weaker and higher forms and between stronger and lower forms of being'.[1304]

Thus, Being as a becoming god can be seen as a *mutual interpenetration* of originally impotent *Geist* and of originally demonic *Drang* that is blind to ideas and values: an ideation-in-becoming and a *spiritualization* of impulsion's sufferings from resistance (*Drangsale*) behind the images off entities, as well as the simultaneous empowerment or vitalization of spirit. That is – according to Scheler – the goal and end of finite Being and history.[1305]

This four step process leads Scheler to the conclusion that it describes a 'stepladder' from which 'the Ground of Being – in the structure of the cosmos – keeps turning back on itself, more and more in order to become aware of itself, on ever-higher levels, and in ever-new dimensions. In the end, the Ground of Being *entirely* has and takes hold of itself in the human being'.[1306] This is one and the same process – a recursive dynamic of self-consciousness bending back onto itself in progressive concentration on and reflective awareness of its own existence. Thus, this establishes an analogy between macro and micro level evolutionary dynamics, and is ultimately an articulation of the concept of the human being as a microcosm.

If – as we have argued so far – technics has indeed been pivotal in the development of human self-consciousness, then we can assume that if Scheler's scheme is correct it will also play an analogous role in Being coming to know itself (in whatever shape or form this *may* take, or to whatever extent this *may* happen). The process Scheler outlines in his metaphysical scheme, has – just like Kurzweil's does – an essentially recursive character. The terms might be slightly different but they describe the same thing, i.e., a positive feedback loop/reporting back to a self-conscious centre.

[1304] Scheler, *The Human Place in the Cosmos,* p. 51.
[1305] Scheler, *The Human Place in the Cosmos,* p. 51.
[1306] Scheler, *The Human Place in the Cosmos,* pp. 30–31.

What is important to note is that, within a recursive process feedback/reporting back causes system-wide tipping points or phase transitions. This is a critical point in a system when radical change takes place and the system's essential character can be fundamentally changed and new ontologies can emerge. In a complex system, there is what is known as hyper-sensitivity to initial conditions, meaning that the smallest factor early on in the system's formation can have far reaching and profound effects at some unknown, and unpredictable future point in its development. Complex systems can also have multiple 'chaos points' – the point at which they maintain equilibrium, and the point at which sensitivity to initial conditions ensure that the effects of the smallest change can be amplified to a tremendous degree. It is at these chaos point that the system hovers when it needs to explore new ways of being and transition to novel equilibriums if it wants to continue to exist. Hence, by definition, complex systems have an inherent capacity to evolve built into them.

Everything we have done up to this point then allows us to consider the rupture of anthropogenesis as marking the initial conditions of the system when we speak of human evolution – and as shown, technics was a vital constituent of those initial conditions. As such, we can assume technics will play a role in the further development of that system. Whether or not the change they affect will be *radical* change remains to be seen – *unpredictability* is a also a defining feature of complex systems.

6.1.3 UPLOADING: THE ULTIMATE ACT OF TECHNO-SUBLIMATION

Philosopher James Collins says that it is in *The Human Place in the Cosmos* that Scheler 'advocates unconditionally the radical philosophical asceticism which was present in germ in the earlier work'.[1307] For Collins, this shows in Scheler a renewed certainty regarding the need for a methodology that assumes the necessity of an initial 'break' with our 'instinctive urges' followed by a similar break with the 'senses and their affirmation of contingently existing modes of being'.[1308] Collins says that Scheler entire metaphysics rests on the notion that it is only through such an 'initial denial' of the 'life impulse' that we can clear the ground and create the necessary 'condition for mounting to the region of ideas and essences'.[1309] Thus, there is a necessary distinction made between 'the actual as the vitally resistant and the existent as sense-grounded being', and through a technique of 'ascetic detachment' – which Scheler has adopted as his methodology – 'a suspension of the actual traits of things' can be achieved through a 'radical displacement of sense perception and its existential significance'.[1310]

Scheler's argument is – according to Collins – that the 'logical loosening of essences from the belief in their existential context rests upon a more radical, ontologico-moral reduction of the existential to the essential, the contingent to the necessary' – hence, Scheler's claim for the 'autonomy and presuppositionless' of philosophy rests ultimately upon a 'primary act of detachment from the actual world'.[1311] It is only within this splitting of the 'knowing operation', from the 'psycho-physical organism' that the mind will 'cease to be hemmed in by the condition of common sense and scientific knowledge'.[1312]

The idea is that this will establish the distinctive standpoint of philosophy – achieved through a 'break-through, not so much *to* contingent actuality as *beyond* it to the essential structure of the world', and Collins understands this as Scheler's take on the rallying cry of phenomenology, 'back to the things themselves' – where Scheler's 'return' is made only

[1307] James Collins, *Three Paths in Philosophy* (Chicago: H. Regnery Co., 1962), , p. 114.
[1308] Collins, *Three Paths in Philosophy*, p. 114.
[1309] Collins, *Three Paths in Philosophy*, p. 114.
[1310] Collins, *Three Paths in Philosophy*, pp. 114–115.
[1311] Collins, *Three Paths in Philosophy*, p. 115.
[1312] Collins, *Three Paths in Philosophy,* p. 115.

when the things themselves are 'regarded in their essential constitution, unclouded by the concerns of existence'.[1313]

Even so, this does not entail that the 'world denying' move is complete in and off itself. Scheler does not hold 'contingent existence and instincts' are to be understood as something that needs to be 'eliminated' through sublimation – they are more like 'hindrances to the initial ascent of the philosophical mind to the being of the world as ordained to the absolute'.[1314] In this way, Scheler allows for the 'eventual return of the philosopher to the actual world in order to reconstitute it from the perspective of the absolute' and – like Husserl – he finds room for finite existence as long as the 'incorporation of existential modes is carried out upon his own terms'.[1315] For Collins the question that arises when one considers Scheler's metaphysics is simply whether or not 'this project can be successfully executed'.[1316]

The question of whether or not Scheler's metaphysics can be 'successfully executed' is obviously contentious. For Collins, the ontological consequence of Scheler's thought is the problematic 'presence of a deep-seated dualism in God and man'.[1317] Similarly in a biography of Scheler, John Raphael Staude states that Scheler's 'metaphysics of the dialectical interplay between mind and life' reveal the two 'worlds' of the human being; biologically, we are part of nature, and spiritually, we are part of mind. For Staude, this dualistic concept of the human being is a reflection of the very dualism that has 'haunted Western philosophy since Plato'.[1318]

Collins concludes that it is 'only God that is beyond finite actuality in the way Scheler wants man to be beyond and above it', and the developmental stages of the evolutionary

[1313] Collins, *Three Paths in Philosophy*, p. 115.
[1314] Collins, *Three Paths in Philosophy*, p. 115.
[1315] Collins, *Three Paths in Philosophy*, p. 115.
[1316] Collins, *Three Paths in Philosophy*, p. 115.
[1317] Collins, *Three Paths in Philosophy*, p.116–126.
[1318] John Raphael Staude*, Max Scheler 1874–1928: An Intellectual Portrait* (New York/London: The Free Press, 1967), p. 215.

process of 'realization' within which he situates 'cosmorphic man' remain little more than 'abstractions'.[1319] Hence, he says that it is only within 'Scheler's Faustian imagination that this twin birth of God and man transpires'.[1320] Kurzweil we can be sure would offer another solution – *uploading.*

In this respect, we must look at the act of sublimation itself as the key to drawing all the different components together. It is in and through the act of sublimation that the human assumes their structure and – in doing so – that the cosmos can become aware of itself. Scheler's conception of sublimation is one which assumes the existence of an essential capacity – of both the human being and the cosmos – for self-consciousness. As described earlier, organic life is characterised by 'inwardness' for Scheler. As life develops it increases in complexity and as it does, the experience of having an inner sense of being becomes more pronounced, sophisticated, and individuated. The sense of inwardness can then begin to coalesce around a centre of being within which the original experience of reality manifests, and where external sense data is processed by the organism. In this respect, the original experience of reality and the sense-data generated through engagement with the external world 'reports back' to the organism's centre of being.

The sense of inwardness is such that – for the organism – the overall experience is one in which the life-form is given back to *themselves*. The human being – as a bearer of *Geist* – is given back to themselves an additional time in comparison to other non-human species. It is within this additional feedback loop that consciousness can develop into self-consciousness. For this to happen – for self-consciousness to emerge – real and ideal factors must align appropriately. This describes an overall recursive process, one which applies equally on the macro scale as it does on the micro – both in the human being as the microcosm, and the universe as the macrocosm. Thus, we cannot avoid metaphysics.

[1319] Collins, *Three Paths in Philosophy*, pp. 128–129.
[1320] Collins, *Three Paths in Philosophy*, p. 129.

As we have seen, Scheler critiques ontological Naturalism as fundamentally unable to address necessary metaphysical questions. The issue of consciousness within contemporary evolutionary theory can be taken as an example of this. The reductionism of Naturalism is thus unable to account for Scheler's notion of *Geist*. I argue that this inability is a source of tension for Kurzweil's conception of evolution and for the philosophy of transhumanism in general – if we are denied any recourse to ideal metaphysical principles, then how do we explain the repression and suppression of our vital life drives in the cause of what can accurately be described as 'spiritual' goals of post-biological transcendence. How can a principle originate from 'within' biology – as the sphere of the vital life – that ultimately aims to usurp and transcend it?

It is at this point that we can draw parallels between Scheler's ascetic act of sublimation and the transhuman aspiration of post-biology. The very idea of post-biology can be interpreted as the techno-scientific expression of the human capacity – assumed by both Philosophical Anthropology and transhumanism – to liberate ourselves from the confines of our environment. The idea that we could upload our minds onto a computer and the aspiration of post-biology represent a kind of techno-scientific saying 'No' to both the reality of our biological embodiment and biological life per se.

Scheler's metaphysical scheme posits the existence of *Geist* as an oppositional principle to life, but without making this move the transhuman position is left with having to explain the emergence from *within* the sphere of vital life of a principle which strives to transcend biological life itself? Scheler's concept of sublimation works to explain how the forces of the organic world can be turned to the services of a spiritual will in a way that is not available for transhumanism – despite the fact that its worldview seems to inherently assume the possibility of such a process. Without positing *Geist* as an oppositional principle to life, the philosophy of transhumanism can't even develop up to this point – let alone beyond it to a post-biological future. Hence, it is widely critiqued as mysticism and ideological faith-based beliefs rather than critical philosophical reflection – as Hauskeller puts it, *logos* always points back to *mythos*.[1321]

Scheler's concept of human being as human becoming, and his idea of the actualisation of *Geist* as the most recent historical process of sublimation in nature, describe *Geist* as manifesting itself in and through an always greater application of vital energies derived from the constantly increasing complexity of evolving organic life. Increasing complexity is the definition of evolution given most by transhumanist thinkers. Evolution is thus understood as a process of increasing *complexification* within which the most complex structure we know of is the human brain – the holy grail of post-biological engineering. As such, there is an explicit and essential connection between the human becoming and evolutionary becoming for both Scheler and transhumanism. This is why Philosophical Anthropology is of primary significance – the idea we have of ourselves plays a functional role in our development. Hence, conceiving of ourselves reductively is inherently problematic.

Reductionism has persisted as a serious philosophical problem throughout. It remains as such when we consider for a moment that the instrumentalist conception of technology – that we have already identified as redundant – is the conception of technology that has been traditionally employed within biotechnology. As Thacker points out, biotechnology represents a 'unique relationship between the biological and the informatic' – a relationship within which the human and the machine come to be defined by a 'special emphasis on informational pattern'; an informational pattern which is capable of connecting the biological with the technological, both practically and metaphorically.[1322] Thus, alongside the instrumentalist conception of technology, Thacker identifies what he calls 'informatic

[1321] Hauskeller, *Mythologies of Transhumanism*, pp. 1–9.
[1322] Thacker, 'Data Made Flesh', pp. 72–77. Thacker references Ben Rosen, chairman of Compaq Computing, who says that 'biology is becoming an information science'.

essentialism' at work within transhumanism. He traces the roots of this to Claude Shannon's information theory and Norbert Wiener's cybernetics.

Thacker says that, for Shannon, information is not an object, but rather 'a resultant measurement' from a process, or a 'differential between some two values' – information is sent, encoded in a specific technological/communications format, transmitted through a particular technological medium, and decoded on arrival before being received.[1323] Hence, three distinct elements can be identified within this process – meaning/content or the 'message', information, and the medium – and these highlight the fact that Shannon's model is not based upon a simple form-content dichotomy. Rather, information is 'situated between the meaning or content it codes and the medium that supports it'.[1324] What is important here is that there is very little emphasis on the actual details of the medium or hardware involved within the overall process of information transmission – the medium is always simply 'assumed to unproblematically mediate information'.[1325]

This is significant because, as Thacker says , such 'downplaying of the medium' effectively shapes and affects the mediation of subjects and bodies within the field of biotechnology.[1326] When information is separated in this way from the medium it is transmitted through it is perceived 'as a value independent of material instantiation', as such, it becomes a 'universal' which is 'disconnected from the material-technical necessities of the medium, the process, and the context'.[1327] This process of 'universalising and decontextualising' of information is one of the main reasons that Wiener was able to 'conceive of machines and organism as the same, from the perspective of cybernetic systems operating through feedback loops'.[1328]

[1323] Thacker, 'Data Made Flesh', p. 82.
[1324] Thacker, 'Data Made Flesh', p. 82.
[1325] Thacker, 'Data Made Flesh', p. 82.
[1326] Thacker, 'Data Made Flesh', p. 83.
[1327] Thacker, 'Data Made Flesh', p. 85.
[1328] Thacker, 'Data Made Flesh', p. 85.

The position that Thacker describes as informatic essentialism presents us with a view of information where it is 'not intimately constrained by the contingencies of embodiedness'.[1329] This physically unrestrained conception of information dovetails neatly with the tendency within transhumanism to assume that – when attempting to synthetically replicate an organic system such as the human brain – achieving lower level functional parity will be enough to realise a degree of replication across the whole system so as to ensure fidelity in terms of the accurate replication of the system's higher level properties. Hence, there is a tendency to try and objectify a higher level property like consciousness in such a way as to account for the possibility of it being re-created in, or transferred or copied to, a machine.

Because this essentialist conception of information describes a situation where content is not constrained by material concerns when it comes to biological organisms, it is information itself which has become 'foundational to considerations of the body'.[1330] As such, informatic essentialism establishes a perspective wherein the relationship between the biological body and information technology ensures that the body is viewed 'through the lens of information' – and comes to be understood 'essentially' *as* information.[1331] Following the logic of the instrumentalist view of technology, Thacker says that transhumanism ultimately adopts this informatic essentialism and the associated underlying perspective that biological bodies can – in a fundamental and foundational way – be understood in terms of information.[1332] As such, the biological (and non-biological) body is 'interpreted and thus reconfigured through an informatic worldview', where it is 'subject to the same set of technical actions and regulations as is all information'.[1333]

[1329] Thacker, 'Data Made Flesh', p. 86.
[1330] Thacker, 'Data Made Flesh', pp. 85–86.
[1331] Thacker, 'Data Made Flesh', p. 86.
[1332] Thacker, 'Data Made Flesh', p. 86.
[1333] Thacker, 'Data Made Flesh', p. 86.

In a similar way as happens in genetic engineering, Thacker says that the body – when conceived of as information – is understood as something that can be 'programmed and reprogrammed'.[1334] The result of this is that the '(re)programmable' body 'becomes valued less according to any notion of materiality or substance (as we still see in modern biology) and more according to the value of information as the index to all material instantiation – a kind of source code for matter'.[1335] Thacker sums it up like this: 'information equals the body, which by extension implies that information equals biology and/or materiality, which leads from the contingency of the biological body to the emancipation of the biological body through the technical potential of informatics. Change the code, and you change the body.'[1336]

This view of both the biological and the mechanical *as* information – whether explicit or implicit – is vital to grasping not only the principles of biotechnology and the other technologies associated with the idea of Technological Convergence, it also characterises the assumptions that underpin any talk of synthetically replicating the human brain and/or reproducing consciousness or of uploading consciousness to a computer. I would argue that it is this underlying essentialist view of information that allows proponents of uploading to posit that the self can be *preserved* during any such process of transference or replication, i.e., human personal identity can be extended beyond the limits of the finite biological body and uploaded into a machine of some description simply by transferring the contents of your mind – understood *as* information and informational patterns – into a more robust and physically durable non-biological form.

[1334] Thacker, 'Data Made Flesh', p. 86.
[1335] Thacker, 'Data Made Flesh', p. 86. The resulting tension which arises from not having to deny materiality, while at the same time interpreting it and the body as informational patterns, is described by Thacker as 'an asymmetrical, strategic move'. This strategic move appears to be the same 'functionalist' move that More makes.
[1336] Thacker, 'Data Made Flesh', p. 87.

When the biological body is re-interpreted in informational terms and defined, not by reference to the material substance that makes up its physical form, but rather to the data configurations which are taken to constitute it, it is easy to see that any ontological gap that might exist between human and machine might seem as if it is beginning to close.

Hence, the instrumental conception of technology establishes – through the objectification of the technological artifact and the overt promotion of the notion of human agency within the human /technology relation – a degree of separation between the rational tool-using human being, and the technological objects we employ to achieve our goals. Even so, there is nevertheless a fluidity and interchangeability in terms of our use of metaphor when we try to describe the essential nature of both the biological and technological, as well as when we attempt to conceptualise the *informational* fundamentals of the human/technology relation.

This conceptual fluidity emerges in both biology and technology, as all things come to be understood as fully explainable – and essentially constituted by – the information patterns that underlie them. Having a common constituent which defines the underlying reality of both biological and synthetic systems allows the metaphors we employ to work *unrestrained* both ways – biology becomes subject to the methods and principles of technology, and technology becomes increasingly modelled on the unique (and potentially irreducible) properties of biology. This is the dynamic previously identified as a defining characteristic of the field of synthetic biology, within which we can observe a reversal and interchanging of metaphors between artificial and natural systems, and beyond the traditional one-way application of mechanistic principles to the natural world associated with the notion of a clockwork universe.

Ultimately though, and despite this current reversal of metaphors, the objectification associated with the machine metaphor and the instrumentalist conception of technology eventually predominates within transhumanism when it comes to conceptualising the human being within the human/technology relation – the human being seems to always end up being reduced to a 'thing' – and a second-rate thing at that, always in need of an upgrade. As we shall see, this applies equally for the human body as it does for the human mind, the latter of which is – for the most part – simply understood algorithmically in terms of inputs and outputs, and the objects and physical processes associated with the operations of programmable data. The brain/computer analogy that is so prevalent, not only within transhumanism, but across the entire range of associated technologies and industries, means that the physical brain itself is viewed as hardware, while the contents of the mind are viewed as software, both of which are reducible to physical processes and information patterns, and are assumed to be quantifiable, measurable, and – in principal – subject to the mathematical precision of engineering precepts, standards, and control.

The consequences of understanding the human body and consciousness in this way are far ranging and profound. Our very sense of self is fundamentally shaped and defined by these assumptions and, especially in light of the idea of post-biology, the brain/computer or human/machine analogy is increasingly articulated in terms that reflect information as being a vital component that ties the biological to the technological in profound and fundamental ways. Not only does information serve to link us with our machines, it also serves to link us to the physical world around us. The significance of this can be observed contemporaneously on both the 'micro' and 'macro' levels of human development – both of which are increasingly becoming defined by a ubiquitous intensification of the human /technology relation that is specifically expressed in informational terms. This has not only resulted in a blurring of the line which has traditionally been assumed to separate the human from the technological, it has also potentially opened up a way for those that champion the human/machine merger to envision such a union free from the restraints of the dualism associated with the subject/object dichotomy and the constraints and problems associated with the instrumentalist conception of technology.[1337] What is most interesting here is the fact that information is actually understood as an *anthropological principle*, i.e., it gives us an *essential* concept of the human being.

It is widely recognised that the roots of the Information Age are to be found in the DNA Revolution. The idea that the human being – in some essential way – *is* information, is rooted in the discovery of DNA and the notion that a genetic code lies at the source of all life, a *digital* genetic code. This data-based metaphysics underpins Kurzweil's entire scheme. And in a sense, it does so in a logical and meaningful way. If you understand ultimate reality to be constituted informationally, then the idea that you *are* data is a coherent one. It is also very likely to determine your perspective on uploading. If you *are* information, then the idea of uploading yourself onto a computer makes sense. If you don't think *you* can be reduced to an information pattern, then you probably don't think the idea of uploading makes sense. Again, we have an insight based in Philosophical Anthropology, i.e., the *idea* that you have of yourself plays a functional role in mapping your future.

It is intriguing to speculate about how much of a factor this might be for Kurzweil with respect to his quest to usher in the Singularity. As head of engineering at Google, he is in a position where he could potentially have a significant impact on the future of humanity. I wonder to what degree his overall goals and motivations are given shape by the essential concept of the human being he assumes – the human being as essentially an information pattern?

[1337] See, N Katherine Hayles, 'Wrestling With Transhumanism', in *H+–: Transhumanism and Its Critics*, pp. 96–101, p. 96. This leads to philosophical problems across the board. For example, as literary critic N. Katherine Hayles states, the notion of 'disembodied information' developed by Claude Shannon that underpins transhumanism, has been extended and used well beyond its means in its application to a phenomenon such as consciousness, which means that the very ideas of uploading consciousness to a machine that transhumanism is concerned with may in fact mistakenly rely on a 'decontextualised and disembodied construction of information'. If Hayles is correct, a misinterpretation through a mistaken reduction, marks the first step in the development of the idea that the essence of the human being can be captured as a pattern of information and – being substrate independent – can be transferred with full fidelity into a computer.

Self-image plays a functional role in our development, the idea that we have of ourselves shapes and influences our decisions. Philosophical Anthropology matters. Especially now in light of the self-referential character of our evolutionary trajectory. The idea that we now have of the human being, includes within it, the notion that we can assume control of evolution. This is almost unthinkable – in any serious sense – outside the context of the advanced technological developments of latte-modernity. Thus, our self-image is technologically mediated – given shape and definition through our technological engagement with the world. The idea that we *are* our DNA, could never have developed if we hadn't first discovered it – a discovery that could not have taken place without technological instrumentation. *Technology mediates our existence and informs our self-image.*

In this way, we can interpret the notion of uploading one's mind onto a computer as representing the ultimate aspirational expression of sublimation – techno-scientific sublimation. The negation of all biological drives, vital impulses, and instincts – the sublimation of all biological *life*. But without positing a spiritual principle, transhumanism seems unable to explain the root-source of this sublimation. Because of its explicit rejection of transcendent principles it struggles to maintain coherence between its commitment to reductionism and its salvific dreams of redemption from biology.

Overall, it is quite telling that, despite the techno-scientific sheen, things still look decidedly like they are simply just more of the same, i.e., the same old anxieties and aspirations; the same old hopes and dreams of salvation; the same old infinite mind trapped in a finite body; the same old dualism. And it is to that dualism that we now must turn, for just as it hangs unwanted in the background for Kurzweil and transhumanism, it also casts its shadow over Scheler – a shadow that some commentators feel he is unable to come out from under.

6.2 THE MIND/BODY PROBLEM IS A MACRO-LEVEL PROBLEM

6.2.1 THE CHARGE OF DUALISM: SCHELER'S *GEIST* AND *DRANG* DISTINCTION

Despite the fact that Scheler denied the charge, and that *The Human Place in the Cosmos* was meant to offer a remedy for the mind/body problem and Descartes' substance dualism, Spader interprets Scheler's concept of *Geist* and *Drang* as a clear form of dualism. A form of dualism whose two constituent elements are 'antithetically' prescribed, leading Spader to insist that – as with any dualistic system – there is an immediate imperative for Scheler to clarify if there is any interaction between these two elements. And if so, what is the nature of that interaction, and how does it occur?[1338]

For Scheler, it was Descartes' division of substance into thinking *things* and extended *things*, that forced him into a situation where he had to 'accept the nonsense of denying the existence of a psychic nature in both plants and animals', but nevertheless still having to explain the 'appearance' of such – thus Descartes found himself compelled to explain, in strictly 'mechanical' terms, everything that was outside human thinking and consciousness.[1339] Ultimately, it was Descartes that effectively tore the human being 'away from the maternal arms of nature', says Scheler.[1340] For Scheler, Descartes' mistake was to not see that physiological and psychic processes are ontologically equivalent – they are only different in a 'phenomenal sense'. Neither is mechanical, both aim for wholeness – the *physiological* and the *psychological* are two sides of *one* process of life, both in their 'structure and functional interplay'.[1341]

[1338] Spader, *Scheler's Ethical Personalism*, p. 186.
[1339] Scheler, *The Human Place in the Cosmos*, p. 51.
[1340] Scheler, *The Human Place in the Cosmos*, p. 51.
[1341] Scheler, *The Human Place in the Cosmos*, p. 53.

This describes a simultaneous internal and *external* biology – a situation where in the biological organism there is a '*system of drives*', which is the unit of mediation between life and the contents of consciousness.

This is the situation that Descartes failed to grasp, and what Scheler is trying to assert is that Descartes' substance dualism denied the '*unity of life*', a unity that describes '*one and the same ontically uniform process of life*' and which is subject to the influence of both physiological and psychological factors. Accordingly, all psychic functions have physiological parallels.[1342]

From here, Scheler posits that all *spiritual acts* must possess physiological *and* psychic parallels – for it is from the vital sphere of drives that spiritual acts derive their 'entire energy'.[1343] Psycho-physical life is one and the same – a unity that holds for all living beings.[1344] Thus, it is not the lived human body and soul, nor the objective body and soul, nor the brain and the soul, that is an indication of any kind of 'ontological dualism'. No, the antithesis that Scheler identifies in the in the subjective experience of the human being, is of a much 'higher' and more 'fundamental order' – it is the antithesis of *Geist* and *Drang*. An ontological cleft that 'reaches deeper into the Ground of all Things' than even the distinction between biological life and the inorganic world.[1345]

What Scheler is trying to show here is that by taking the psychic and the physiological to be two sides of the same coin – two sides of the one and unified process of life – we can apprehend that each corresponds to a different perspective on the same process. Hence, the X that acts out the two perspectives of the one unified process must by necessity be greater and more foundational than a body/soul substance dualism. X is of course *Geist*, and the unified process of life reveals it to be non-spatial but temporal. This means that an organism *is* a

[1342] Scheler, *The Human Place in the Cosmos*, p. 55.
[1343] Scheler, *The Human Place in the Cosmos*, p. 55.
[1344] Scheler, *The Human Place in the Cosmos*, p. 56.
[1345] Scheler, *The Human Place in the Cosmos*, p. 57.

process – a process who's 'apparent static state of the body' is maintained and given coherence in and through the life process itself. *Geist* is trans-spatial *and* trans-temporal – its 'intentionality intersects with the temporal course of life'.[1346]

Regardless of any dualistic implications derived from the above, Scheler says that – with respect to the human being – *Geist* and *Drang* need each other (*aufeinander angewiesen*). *Geist* ideates *Drang*, but it is *Drang* which provides the initial impetus and force needed to rouse *Geist* and animate it toward its possible realisation.

It is clear then that there is in fact *interaction* between *Geist* and *Drang*. An essential interaction, one in which *Geist* – which is initially powerless – must re-direct the 'blind' force of *Drang*. But if they are two autonomous and independent principles, how do they interact? This the 'interaction problem'.[1347]

Geist is initially impotent but possesses 'vision', whereas *Drang* is without 'vison' but possesses power. Within the intersection of mutual interpenetration of the two principles, *Geist* becomes 'forceful' and *Drang* becomes 'something' – this process is one which occurs in and through the human being.[1348] What this reveals is that the 'cause of reality' is not with the *ideal*, rather it is with the *real*, in the ideal vs. real distinction. Reality is revealed – first and foremost – as resistance to *Drang*, a stage at which *Geist* is powerless and impotent.[1349] This may be somewhat problematic – if *Geist* is to steer *Drang* and usurp its power, how does that process get started?

Kelly sees that this problem reflects Scheler's reformulation – within the transition from the earlier to the later stages of his thought – of the concept of *Geist* itself. *Geist* has gone from being the 'ontological ground' of human consciousness, and the 'autonomous will

[1346] Scheler, *The Human Place in the Cosmos*, p. 51.
[1347] Spader, *Scheler's Ethical Personalism*, p. 202.
[1348] Spader, *Scheler's Ethical Personalism*, p. 186. What Scheler presents in a metaphysical sense – within this synthesis of becoming – is a description not of an 'all-powerful personal God' that one would associate with theism, but rather a vision of a 'becoming God'.
[1349] Spader, *Scheler's Ethical Personalism*, p. 191.

of moral agents', to being passive and impotent, and unable to directly or originally shape and determine the course of historical world events. But now – in a metaphysical sense – *Geist* is paradoxically given an apparently 'creative and active role in the cosmos'.[1350]

Philosopher Martin Buber says that Scheler's concept of the Ground of Being and its two constituents of *Geist* and *Drang* actually reveal a hidden 'origin in the constitution of the modern soul'– even so, Buber says that there is a 'deep and insoluble contradiction' within this notion because of the initial powerlessness of *Geist* in its 'pure form'.[1351] Buber holds that Scheler's theory actually presupposes and requires a conception of *Geist* that includes some original power if it is to be coherent. Without it, Buber says that Scheler's idea of the Ground of Being is in fact just one more 'gnostic' attempt to 'strip the mystery from the biblical God'.[1352]

The issue is of course how the two opposing principles interact, or 'interpenetrate'. As Weiss puts it, 'how can spirit, a nonspatial and nontemporal realm of reality, guide and direct a psychic process which occurs in space and time'?[1353] But can it not be argued that there is not a real dualism per se between *Geist* and *Drang*, that they are 'complementary' rather than of a completely different order of things? Weiss says that yes, Scheler does see them as complementary, but then asks can they in fact be so? His simple answer is no, they cannot – he states: 'It is simply not clear how two radically distinct spheres of reality can complete one another'.[1354]

Despite the fact that Scheler says that *Geist* and *Drang* are 'integrated' in the Ground of Being, Weiss still holds that this does not serve as 'an adequate defence against the charge of dualism' – the primordial status attributed to *Geist* and *Drang* as the ontological roots of

[1350] Kelly, *Structure and Diversity*, p. 176.
[1351] Matin Buber, 'The Philosophical Anthropology of Max Scheler', trans. by, Ronald Gregor Smith, *Philosophy and Phenomenological Research*, 6/2 (1945), 307–321 (pp. 311–312).
[1352] Buber, 'The Philosophical Anthropology of Max Scheler', p. 313.
[1353] Weiss, 'Scheler and Philosophy', p. 19.
[1354] Weiss, 'Scheler and Philosophy', p. 20.

ultimate reality simply serves to push the 'charge of dualism one step back', says Weiss.[1355] He says that having the Ground of Being – rather than the human being – as the response to the 'seemingly impossible task of unifying two metaphysically distinct realms of being' does not solve the issue.[1356] For Weiss, the ultimate problem is that the 'question of how an originally impotent spirit can guide and direct an originally blind force remains essentially unanswered'.[1357] He also asks how *Geist* – as an 'infinite', and 'ideating', principle that is an attribute of the Ground of Being – relates to *Geist* as an attribute of the human person. He concludes that the interpenetration of *Geist* and *Drang* are left 'essentially mysterious' by Scheler.[1358]

Spader counters Weiss by saying that Scheler did not deny *all* power to Geist, he just denied it original *creative* power. This is evident if we consider that Scheler denies the 'negative thesis' of *Geist*, the theory that holds *Geist only* 'arises' *with* the negation or repression of instinctual energies.[1359] This still leaves us with the 'interaction problem', i.e., how does *Geist* lure *Drang* if *Drang* is 'blind'? In response to this, Spader says that by the time *Drang* has become manifested in human life, 'it is no longer completely blind and can indeed see the images because by the time you get to the human being 'seeing' is part of the process of life instincts'.[1360]

When Scheler talks about the 'negative theory', he is referring to materialism and the idea that *Geist* is the 'product' of sublimation, not its source.[1361] From Scheler's perspective, *Drang* is 'stronger' than *Geist,* thus the inorganic world is 'independent', while the organic world is 'dependent' on it. Similarly, plants are 'independent' of animals, while animals are

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[1355] Weiss, 'Scheler and Philosophy', p. 20.
[1356] Weiss, 'Scheler and Philosophy', p. 21.
[1357] Weiss, 'Scheler and Philosophy', p. 21.
[1358] Weiss, 'Scheler and Philosophy', pp. 22–23.
[1359] Spader, *Scheler's Ethical Personalism*, p. 203. The problem with this is that it does not say what it is in the human being that allows for this repression, i.e., what is the source of this negation.
[1360] Spader, *Scheler's Ethical Personalism*, p. 205.
[1361] Stark, 'Editor's Introduction', in Max Scheler, *The Nature of Sympathy*, p. xxviii. In contrast, when he speaks of the 'classic theory', he is referring to the tradition of idealism which bestows original and creative 'potency' to *Geist*.

‘dependent’ on them. In the same way, plants and animals are ‘independent’ of humans, while humans are ‘dependent’ on them.[1362] Accordingly, Scheler’s conception of *Geist* is that it lacks its own creative power, i.e., it cannot create something out of nothing. What *Geist* can do, is reveal *what* something, that already *is* – *Geist* can uncover meaning, but it cannot give an account for the existence of the object of that meaning.[1363] What this establishes then is that *Geist* cannot be the only constituent of ultimate reality – it is faced with an already given reality which ‘resists’ it. The ‘resistance’ of reality that *Geist* encounters is essential for the realisation of ‘ideas’. Thus, an ‘impotent’ *Geist* interacts and interpenetrates with a ‘realizing resistance’, to make ideas real and give meaning to reality.[1364] Frings uses the analogy of a symphony and composer to describe this relationship.

A musical composition can only be realised *through* its performance – the musical ideas that the composer has require an orchestra, a conductor, and a variety of other components if they are to become an ‘audible reality’ – *as* a symphony. The symphony becomes something real in and through its performance. There are certain factors that must be present so as to accommodate the realisation of the ideas that underlie the symphony – factors that those ideas come into existence *with*, as they are realised.[1365]

This analogy serves as a way to visualise Scheler’s metaphysical position. The principle of resistance is symbolised within the analogous figure of the conductor – around whom the entire performance hinges. The figure of the conductor represents the ‘metaphysical side’ of the principle of resistance, which accounts for ‘possible reality that spans the micro-world of atoms, world, and God’, i.e., *Drang*.[1366] *Drang* is *universal*, in that it ‘permeates all matter, life, world, and God’, and is also *individual*, in that it resides in ‘each

[1362] Stark, ‘Editor’s Introduction’, p. xxix.
[1363] Frings, ‘Max Scheler: Early Pioneer of Twentieth-Century Philosophy’, p. 278.
[1364] Frings, ‘Max Scheler’, p. 278. Thus this concept of *Geist* is a challenge to traditional philosophical and religious notions that held spirit to be powerful and a force capable of creation *ex nihilo.*
[1365] Frings, ‘Max Scheler’, pp. 278–279.
[1366] Frings, ‘Max Scheler’, , p. 279.

living person, animal, and plant', *as* a 'life-centre whose vital energy propels forward all organic functions and their relations'.[1367] As such, the cosmos is characterised by *Geist* and *Drang* as 'eternally self-becoming through their interaction – a self-becoming that relies on 'human history' as the means of becoming real.[1368]

This is a move beyond the Augustinian model of '*ideae ante res'*, the philosophical position that supports a notion of providence, and 'plan of creation', that existed before the world was realised. Scheler asserts that ideas are nor 'prior to', 'in', or 'after' things, they are only 'with' them – they are 'produced' in eternal *Geist*, in and through the act of the continual realisation of the world (*creatio continua*). Our participation in these acts is more than just 'discovery', or 'detection', of entities that are independent of us – it is a joint-acting with supra-individual *Geist* in 'genuinely *cocreating* and coproducing the essences coordinated with the eternal logos, eternal love, and eternal will – and ideas, values, and purposes cocreated and coproduced from the very centre and the *origin* of the things themselves'. [1369]

6.2.2 A WAY OUT OF DUALISM?

So has Scheler been able to side-step the dualism problem or is he caught like everyone else seems to be? In the 'Introduction' in *The Human Place in the Cosmos*, Eugene Kelly applies the designator of 'property-dualism' to Scheler's philosophical position. He states that, Scheler's 'philosophy throughout his life was dualistic, although not a substantialist dualism such as Descartes', but rather a phenomenal one'.[1370] Kelly describes this property-dualism in terms of an isomorphism of psychical and physiological events, i.e., for every physiological

[1367] Frings, 'Max Scheler', , p. 279.
[1368] Frings, 'Max Scheler', p. 279. Thus, after everything, we have a vision within which 'humanity, world, and God' are 'one becoming unity in the process of continued realisation'.
[1369] Scheler, *The Human Place in the Cosmos,* pp. 34–35.
[1370] Kelly, 'Introduction', in *The Human Place in the Cosmos*, p. xv.

event there is a corresponding psychic function – consciousness does not arise *from* biological life, rather it arises *with* the life-impulsion itself, and it serves the ends of the organism as a whole in terms of survival, propagation of the species etc., and in doing so it also serves the ends of organic life *per se*.[1371] Kelly holds that this account is *consistent* with Physicalism insofar as it 'postulates psychic events as functions of one and the same process of advancing life, and grants to life a physical or organic basis.'[1372]

For Kelly, Scheler's position – despite being compatible with Physicalism – 'denies the possibility of reducing life to a function of inorganic matter', thus it breaks with Naturalism. And it is here that things get messy, because Scheler has posited a spiritual principle in the human being that is *not* rooted in psychic life – and he has done this by making a *qualitative* distinction between consciousness, as described above in terms of an isomorphic property-dualism, and self-consciousness as an attribute of *Geist*.[1373] Does the property-dualism break down once *Geist* enters the picture?

Kelly, I think, is correct to describe Scheler's position as property-dualism. But the question is, how do we understand the term? Kelly's inference suggests a usage that one would find in the philosophy of mind. But is there a straight translation and one-to-one equivalence in terms of its usage in metaphysics? This brings us back to Weiss' critique earlier – the problem is only pushed back a step by Scheler, it hasn't been resolved. It seems that the property-dualism that Kelly describes is a property-dualism of consciousness and physical biology, that's why it is compatible with Physicalism. But the dualism that we are interested in is the one between *Geist* and *Dang*. Is it accurate to describe that in the terms of property-dualism?

Clearly, substance-dualism is not even in the equation, so property-dualism seems like the only option to accurately describe Scheler's position – but it must be in reference to *Geist*

[1371] Kelly, 'Introduction', p. xi.
[1372] Kelly, 'Introduction', p. xiii.
[1373] Kelly, 'Introduction', p. xiii.

and *Drang*. So it is a *metaphysical* property-dualism we are talking about and we need to ask is *that* property-dualism compatible with Physicalism. If the positing of a spiritual principle represents a break with Naturalism, does this not entail a break with the Physicalism that underpins it? What applies on one ontological level must apply across all levels. With respect to the interaction problem, asserting that property-dualism is compatible with Physicalism might solve the problem of interaction at the level just below biological life. But if a spiritual principle is introduced at this level and its irreducibility does not undermine the Physicalism underpinning that level, then that maintenance of coherence must be because of a metaphysical principle at the *lower* level. If the mind/body problem doesn't re-emerge, then the interaction we are interested in must be at the lower level – thus, it is the lower level where the interaction problem has to assessed.

If the introduction of *Geist* doesn't make the isomorphism of the psychic and the physiological collapse, then there is some unity at the level beneath psychic-life. It is there that we must inquire into how the two properties of the dualistic relation interact. So, in effect, all we *have* done is push the problem back a step, just as Weiss has already suggested. Has Scheler escaped the dualism charge or has the can just been kicked a little further down the road? We still need to explain how the two-properties interact if we are going to assume some form of property-dualism.

Weiss feels that Scheler's thought is almost fatally weakened by this metaphysical dualism. He states that Scheler's 'metaphysical dualism' – which underpins his conception of the human as a 'vital being capable of spiritual acts' – does not in fact 'meet the basic tenet' of a unified account of the human being.[1374] Thus, Scheler's Philosophical Anthropology itself is called into question.[1375] Weiss also states that because Scheler positions the human being's essence in the 'spiritual realm', he lessens both our 'cultural nature' and our

[1374] Weiss, 'Scheler and Philosophy', p. 14.
[1375] Weiss, 'Scheler and Philosophy', p. 13.

‘embodied nature’. In effect – and because Scheler’s Philosophical Anthropology is concerned with ‘essences’ – he excludes ‘knowledge of culture, tradition, and history’, and in a similar way to what happens to our biological heritage, such knowledge is also denied any role in our ‘special nature’.[1376]

For Weiss, this is a result of Scheler mistakenly making *Geist* ‘completely independent’ of our ‘biological and psychological realities’, i.e., the claim that we can be and are ‘liberated from organic reality’.[1377] Weiss says that the problem is attempting to draw a line between us and other biological species. If we are simply biological, then there is nothing really special about us, it is the fact that we aren’t simply biological that makes us special, but the question remains, does being ‘special’ entail an ‘essential frontier’ between us and other animals?[1378]

While Weiss is willing to acknowledge that Scheler’s insisting on an essential difference between us and other species can be interpreted as a rejection of a reductionist account of the human being – where biology is extended to all aspects of explanation for our nature, including our spiritual aspect.[1379] He is nevertheless seemingly unconvinced overall and insists that Scheler’s ‘dualism’ remains an intractable problem – one which results in a disassociating of human ‘mental acts’ from all and any psycho-biological baggage. Hence, for Weiss the two principles of *Geist* and *Drang* seem to be essentially distinct in a way that is not reconcilable. Scheler’s view of the human being *and* of ultimate reality is dualistic – as such, he has failed to provide a unified account of the human being, meaning he has failed in the task of Philosophical Anthropology.[1380]

Scheler scholar Susan Gottlöber also says that Scheler’s attempt to solve the dualism problem seems to be unsuccessful. She says that Scheler’s thought is caught ‘between’ his

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[1376] Weiss, ‘Scheler and Philosophy’, p. 14.
[1377] Weiss, ‘Scheler and Philosophy’, pp. 16–17.
[1378] Weiss, ‘Scheler and Philosophy’, pp. 17–18.
[1379] Weiss, ‘Scheler and Philosophy’, p. 18.
[1380] Weiss, ‘Scheler and Philosophy’, pp. 22–23.

inclination toward a philosophy of life, and a dualistic philosophy split along the lines of *life/nature* against *spirit*.[1381] What is of interest here is the fact that this is the same tension that Meyerhoff described at the very beginning of our investigation – the same tension that I argue lies at the heart of transhumanism. A tension that has persistently dogged Scheler's philosophy, but one which nevertheless there may be a solution to.

The designation property-dualism can – I feel – still be used to accurately describes Scheler's position. But it must be understood in terms of metaphysics. As such, we may have to surrender its compatibility with Physicalism. If it is a *reductive* Physicalism, then there can be *no compatibility*, i.e., if both properties are ultimately explainable through recourse to physical laws, then this does not fit with Scheler's basic criteria of irreducibility. If the conceptual understanding of Physicalism is *non-reductive*, and flexible enough to accommodate the concept of emergence and a non-reductive account of emergent properties, then this position should be compatible with Scheler's as a property-dualism.

Even if we accept the above, we are still left with the interaction problem in an *epistemological* sense, i.e., we don't *know* how the two properties interact, there is an explanatory gap, in our knowledge, we can still satisfy the irreducibility criteria but we just can't say exactly what the nature of the dynamic of interaction between the properties is. Even if we accept that they are – ontologically – two properties of the same ground, we can't know *how Geist* can steer *Drang* so the process of sublimation might work.

Differentiating between epistemological facts and metaphysical facts like this may seem unsatisfactory to some, but I think it just highlights the fact that the mind/body problem *is* the problem. The reason we are here in the first place is that the explanatory gap *is* the interaction problem. If we take a non-reductive stance and hold that *Geist* is irreducible, and

[1381] Susan Gottlöber, 'The Role of Aesthetic Values, Art and the Artistic Genius in Scheler's Ethical Personalism', in *Socrates and Dionysus: Philosophy and Art in Dialogue*, ed. by Ann Ward (Newcastle Upon Tyne: Cambridge Scholars Publishing, 2013), pp. 159–174 (pp.162–163). However, in recent discussions with me she considered the grounding of the two *Urphänomene* in the Ground of Being to be a potential solution.

follow Scheler's metaphysics to their logical conclusion, I'm still not sure if we can provide a solution for that problem. We just don't *know* how Mind and Matter relate, we just don't *know* how consciousness and self-consciousness relate to each other and to organic life – or where they fit within the physical universe. These are after all metaphysical problems, it tends to come with the territory.

Also, maybe it is a case that we just don't know for now. And this brings me back to a point that perhaps it is only a problem *if it is a problem*. Even if we don't know the answer, or have a solution to these specific metaphysical problems, it is still the source of much wonder – and *trying* to find an answer is interesting and worthwhile in and of itself. With the human being, evolution has become a self-referential process – that in and of itself is profound. Not having all the answers does not take away from that. We still are compelled to enquire, to ask and try and answer the questions – *this is the process*!

By way of reflection, consider quantum theory. Quantum theory is perhaps the most successful and significant scientific theory in history – but we don't *understand* quantum mechanics.[1382] At the heart of quantum theory lies an inexplicable *duality*! A wave particle duality that challenges everything classical physics teaches us. The prime example of this is the concept of the quantum *superposition*. In the superposition, the state of a particle cannot be designated an 'identity' of one or zero, and is in fact in both states simultaneously, until it is actualised through observation when it adopts one or the other identifiable states. Thus, quantum reality suggests that there is more in the idea of the *possible* than in the *real*.

At the quantum level things are not only stranger than we think but possibly stranger than we *can* think. Its reality is cloudy and one of probabilities and potentials.[1383] Yet we do not reject quantum theory because it is too speculative or messy. Perhaps it has mathematical

[1382]See, John, Polkinghorne, *Quantum Theory: A very Short Introduction*,(Oxford: Oxford University Press, 2002); Euan J. Squires, 'One Mind or Many: A Note on the Everet Interpretation of Quantum Theory, *Synthesis*, 89/2 (1991), 283–286; Carlton W. Berend, 'A Note on Quantum Theory and Metaphysics', *The Journal of Philosophy*, 39/22 (1942).
[1383] Polkinghorne, *Quantum Theory*, pp. 85–91.

and experimental footing that lends it legitimacy beyond anything that metaphysics or the *a priori* can hope for. Also, quantum theory's subject matter *is* metaphysical – dealing as it does in ultimate reality and the fundamental level of existence. There is also evidence to suggest that quantum processes may have some essential ontological connection to the existence and nature of consciousness – the blurred line between the classical world and the quantum world has led some to believe that the 'idea of universal consciousness might one day be subject to proper mathematical description'.[1384] Still it remains for most that 'metaphysical issues will not be solved by physics'.[1385]

Chalmers says that the problem of quantum mechanics is nearly as intractable as the hard problem of consciousness. He says that there is a deep tension within quantum theory between its calculus, how we *interpret* the information generated from it and what its applicability to the *real* world is.[1386] There are more than a few philosophers and physicists who think that the issues of quantum indeterminacy and consciousness may be fundamentally linked, and while there are many interpretations of quantum mechanics, overall there is a considerable amount of agreement that its core problems relate in some essential way to act of observation and to conscious experience.

Some even suggest that consciousness may be explainable by the collapse of the quantum wave function itself.[1387] The idea of the quantum superposition itself is dualistic – a quantum entity can be *both* a particle and a wave. It is matter of interpretation after that exactly what role consciousness plays when the superposition collapses into *either* a wave or a particle as a result of observation. It is a problem of interpretation, because we know *that* quantum mechanics works, we just don't know *how* or *why* it works.

[1384] Squires, 'One Mind or Many', pp. 283–286.
[1385] Carlton W. Berend, 'A Note on Quantum Theory and Metaphysics', p.610.
[1386] Chalmers, *The Conscious Mind*, p. 333.
[1387] Chalmers, *The Conscious Mind*, p. 333.

So within quantum theory there is a similar dynamic at work as there is within our attempt to produce a solid metaphysical description of consciousness and the cosmos. There is an *explanatory ga*p – an explanatory gap in our understanding of how Mind and Matter relate, and how they interact. Despite the interaction action problem, Scheler's philosophy is nevertheless rigorous – it is *rigorous first philosophy*. And the example of quantum mechanics lends support to his claim that the idealism vs. realism dichotomy is a false one.[1388]

It is very hard to avoid dualistic language when speaking about these things. It may be *impossible* to avoid – the dual-aspect of the human being; the dual-aspect of technical artifacts; the dual-aspect of the ground of Being; quantum wave/particle duality. It's very hard to get away from it. That is why I think we should focus on orientation, i.e., either toward or away from consciousness, either reductive or non-reductive. The same applies to the process ontology vs. substance ontology choice. Following Scheler allows to move incrementally along, step by step, but moving along by rigorous philosophy and genuine analysis. Overall, Scheler has gotten us to the point where – in principle – the universe wakes up. A point Kurzweil wants to get to, believes that he can, and will continue to try to reach – even if he has been led down a one way street to the dead end of reductionism.

Before we move on and in brief, I would call attention to another *possible* solution. We could ascribe a position of *neutral monism* to Scheler. This might serve better than property-dualism. While it is beyond the scope of this investigation to do more than point out the possibility of a future assessment of *Geist* and *Drang* and their relation to the Ground of Being in such terms, it is worthwhile sketching out a few preliminary details.

In general, neutral monism comes in the *neither* or the *both* varieties. Put simply, we have ultimate reality which is posited as an ontological monism, i.e., metaphysically there is

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[1388] Max Scheler, 'Realism and Idealism', in *Selected Philosophical* Essays, ed. and trans. by David R. Lachterman (Evanston: Northwestern University press, 1973), pp. 288–356.

only one *type* of thing. The world that this ultimate realty underpins contains Mind and Matter, and to understand this we posit a neutral monism, constituted by *both* Mind and Matter, or *neither* Mind or Matter. In Scheler's case, I would imagine that the both option would be the better fit, i.e., the Ground of Being is monistic as ultimate reality; it has two primordial and co-constituting aspects of *Geist* and *Drang*; the Ground of Being is constituted by *both Geist* and *Drang*. That seems intuitively more in keeping with Scheler than the *neither Geist* or *Drang* scenario. Neutral monism offers a potential new way to approach Scheler's metaphysics and maintain the dynamic of *Geist* and *Drang* as the interplay between real and ideal factors. A possible synthesis with theoretical physics could be achieved if we designate *information* as the ideal factor and *energy* as the real factor.

It is also of interest to note that neutral monism has recently become a topic in philosophy of mind that is being discussed with respect to the hard problem of consciousness and what is known as the *meta-problem of consciousness*.[1389] It also worth noting that in the recently published *Transhumanism Handbook*, philosopher Ojochogwu Abdul suggests neutral monism as a description of Kurzweil's metaphysical scheme – *a neutral monism of information*.[1390]

In saying the above, we may perhaps for some, be straying perilously too close to faith. Quantum theory; the interplay between the real and ideal; neutral monism – perhaps the explanatory gap is so big that we are faced in a sense with being able to produce nothing more than a kind of metaphysical equivalent of a negative theology. I think that because we are working at the limits of our knowledge and experience, this goes with the territory – we keep coming up against the limits of what we can say and what we can know, because that's where the issues are located. If we mark the distinction between epistemological facts and

[1389] Derk Pereboom, 'Russellian Monism, Introspective Inaccuracy, and the Illusion Meta-Problem of Consciousness', *Journal of Consciousness Studies*, 26/9–10 (2019), 182–193. The meta-problem of consciousness can be understood as the problem of *why* we think there is a hard problem of consciousness.

[1390] Ojochogwu Abdul, 'Advancing Neutral Monism in Big History and transhumanist Philosophy', in *The Transhumanism Handbook*, ed. by Newton Lee (Cham: Springer, 2019), pp. 717–740.

metaphysical facts, then this doesn't have to be a fatal problem. The product of epistemology requires interpretation, metaphysical interpretation, and as long as we make sure that all assumptions, findings, and conclusions stay subject to revision, we can continue as we are. Sometimes the decision to orientate oneself ontologically may be based on intuition because the necessary facts are not available. As long as we are aware of such things, and not dogmatic, the analysis can remain rigorous.

Thus, for now let us establish that Scheler's position is one we can call property-dualism, but – to remain consistent – it must assume an orientation toward a non-reductive ontology. This is necessary to satisfy the criteria of irreducibility of *Geist*. The implications of this are, that if Physicalism is to be compatible with such a property-dualism – and vice versa – it must be *ontologically non-reductive*. Such a concept of Physicalism must be capable of accepting the ontological validity of genuinely emergent properties and new ontologies associated with complexity. This is a necessary step because – regardless of anything else – Scheler has shown us the issue of human self-consciousness and the mind/body problem is not a micro-level problem – the mind/body problem is in fact a macro-level problem, *it is a metaphysical issue of cosmological significance.* An issue that has been moving further and further onto centre stage of the contemporary context, and not just with thinkers associated with transhumanism. An indication perhaps of a possible *metaphysical* turn in the sciences?

6.2.3 THINKING WITH SCHELER BEYOND SCHELER

In *The constitution of the Human Being from the Posthumous Works Volumes 11 & 12*, Scheler describes his understanding of metaphysics.[1391] He says that knowledge – of all types

[1391] Max Scheler, *The Constitution of the Human Being: From the Posthumous works, Volumes 11 & 12*, trans. by John Cutting (Milwaukee: Marquette University Press, 2008).

– and all cognition represent the participation of a ‘knowing subject’, with an actually existing and independent Being. Metaphysics then, is ‘equally the eternal attempt by human beings – by virtue of their spontaneous reason – to participate in the absolute reality of things themselves’.[1392] Metaphysics is not religion. Religion privileges revelation, metaphysics aims for knowledge based in evidence – either hard evidence or probable evidence. Metaphysics does not trade in ‘faith’ or ‘belief’.[1393] Metaphysics seeks out ‘ultimate reality’ – and it is this that differentiates it from conventional science for Scheler. Absolute reality, is the level of reality at which ‘existence and nature is no longer influenced in any way by the special organization of the psycho-physical make-up of the human being’.[1394] Ultimate reality is not contingent, its existence is necessary – hence, the *objective* status of the ‘absolute’.[1395]

Unlike the individual sciences, metaphysics aims at a universal or ‘total’ type of knowledge. Scheler says that the knowledge of metaphysics can be described as ‘wisdom of the world’ (*Weltweisheit*) – it incorporates and reintegrates ancient and forgotten wisdom and empirical facts about the world. Hence, its method is unlike any scientific method. Metaphysics though is not simply the gathering up and grouping of knowledge generated by the sciences so as to construct a model of reality. The metaphysical perspective is unique – metaphysics takes a view that is not *scientific* – a holistic view within which the knowledge of the different sciences can interact and inform each other.[1396]

Genuine metaphysics is something we *do* – this is by virtue of being human, i.e., a ‘mental and spiritual creature, who is active and knowledgeable’.[1397] Metaphysics is constitutive of the basic comportment of the human being – Scheler says that it is in fact *essential* to it. Thus, the ‘choice for each and every one of us is only whether it is good or bad

[1392] Scheler, *The Constitution of the Human Being*, p. 11.
[1393] Scheler, *The Constitution of the Human Being*, p. 11.
[1394] Scheler, *The Constitution of the Human Being*, p. 11.
[1395] Scheler, *The Constitution of the Human Being*, p. 11. In this sense, metaphysics is ‘first philosophy’.
[1396] Scheler, *The Constitution of the Human Being,* pp. 12–13.
[1397] Scheler, *The Constitution of the Human Being*, p. 13.

metaphysics, whether we are conscious or unconscious of it, and whether it is a traditional variety or self-formulated'.[1398]

There are several ways we can access and partake in ultimate reality: thinking; sensory perception; intuition; feeling; drives or will; spiritual means; techniques of life. Scheler closes the door on none of them – this is a genuine enquiry, and 'only by bringing to bear the total human being to the task, can the totality of existing things be grasped'.[1399] For it is only the human being – in their entirety – that is equal to the entirety of what there is: it is only the human being that is a *microcosm*.

This *is* our place in the cosmos. And as such, the human being is an 'open system' – a *process*, evolving simultaneous along two pathways, both *real* and the *ideal*. As a result of this, the human being is 'equally at liberty to apprehend ideas and to co-determine which ones will be realized in nature', as well as being able to 'penetrate into the drive-based ecstasis' which underpins 'universal life and its imagistic world'.[1400]

Thus, 'metaphysical participation in ultimate reality is twofold' – it is both spiritual and vital. Because the world is in 'process', it is 'always the correlative of some act', and as such, it is 'continually brought forth by the interplay of the divine spirit and the divine *Drang*'.[1401] This is a continuous process of creative becoming through the interpenetration of the spiritual and the vital. Thus, metaphysics of the Absolute is more than contemplative 'study' – it must have an element of 'vital involvement and affirmation'.[1402]

It is in this way that Scheler's metaphysics comes to be characterised by the 'dualism' of *Geist* and *Drang* – they are two most fundamental features of his metaphysical scheme. Likewise they are the two most fundamental features of his Philosophical Anthropology. For it is at the point of this 'duality' that the human is distinguished from other non-human

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[1398] Scheler, *The Constitution of the Human Being*, p. 18.
[1399] Scheler, *The Constitution of the Human Being*, p. 13.
[1400] Scheler, *The Constitution of the Human Being*, p. 243.
[1401] Dunlop, *Scheler*, p. 73.
[1402] Dunlop, *Scheler*, p. 73

animals – i.e., we uniquely possess *Geist*.[1403] *Geist* is attributable to the human being and the *Ens a Se* – thus, it is the principle that allows us to 'objectify'. But because *Geist* exists 'solely as act', *it itself cannot be objectified*.[1404]

Metaphysics for Scheler is concerned with the 'grasp of the nature of ultimate reality', and it starts with a sense of 'wonder'. Religion is concerned with salvation. Saying that, there is 'an ultimate coincidence in the objects of the two activities' – the 'unity' of the human spirit partly ensures this, and there is also a '*de facto* identity between the intentional objects' of religion and metaphysics, i.e., ultimate *reality* and ultimate *good*. The possibility of salvation must be dependent on the nature of ultimate reality to some degree or other, and the 'absolute holy' must also be the 'absolute real'.[1405]

In this sense, metaphysics also underlies epistemology – knowing is a 'relationship of being', a relationship of 'participation', the 'subject' stands before the 'object' without affecting change upon it. Every being has *Sosein* – its *itness*, i.e., it is just 'so' or it has 'certain characteristics', and *Dasein* – its *thereness*, i.e., it is 'there' or it 'exists'. We cannot participate in an object's *Dasein*, we cannot know its existence. Existence cannot be known directly, but can only be 'given in the form of resistance to striving'.[1406] Existence is known to us by virtue of our nature as acting beings, or 'conative' beings – if we were purely 'contemplative spirits', we would not be aware of existence at all.[1407]

As well as being concerned with values, essences, and their essential relations as associated with the i*deal*, metaphysics must include the domain of *real* existence,.[1408] Hence, *a priori* knowledge must be combined with the findings of the 'positive disciplines', i.e., science/maths/history, and then the results combined with 'value disciplines', i.e.,

[1403] Dunlop, *Scheler*, p. 74.
[1404] Dunlop, *Scheler*, p. 75.
[1405] Dunlop, *Scheler*, p. 60.
[1406] Dunlop, *Scheler*, p. 61.
[1407] Dunlop, *Scheler*, p. 61.
[1408] Scheler, 'Philosophers Outlook', *Philosophical Perspectives*, pp.1–12.

ethics/aesthetics/culture. This allows for 'first order metaphysics' which is concerned with asking what is life/what is matter? etc. On the other hand, 'second order metaphysics' is metaphysics of the Absolute. The two together represent the attempt to grasp the Absolute and to relate the positive disciplines to it. Metaphysics becomes then 'world-wisdom'.[1409] Between first order metaphysics and second order metaphysics comes Philosophical Anthropology.

Collins states that Scheler's metaphysics and Philosophical Anthropology is constructed according to the presupposition that the natural sciences cannot achieve the 'insights into being' and the essential 'truths' that philosophy can. This is because the 'natural outlook' – or 'common sense attitude' – that Scheler associates with the natural sciences. The natural standpoint (*Weltanschauung*) – presents reality as a 'pre-given' totality that is experienced through 'sensory perception' and is understood as being ontologically 'independent' of us.[1410] The natural standpoint assumes an 'identification between the immediate pragmatic milieu and the world at large.'[1411] Because the natural standpoint is based on such a 'practical orientation', the positive sciences are limited to the 'realm of opinion and probability' – they 'cannot extend beyond purely relative modes of being'.[1412]

As a result of this, the positive sciences 'treat being only insofar as it bears upon our vital interests' – the satisfaction of which provides an 'ontic criterion for scientific research', where 'man's biological structure becomes the centre of relevance for scientific findings'.[1413] Hence, 'the scientific world is the generalized pattern of the human milieu and retains an ultimately biological reference'.[1414]

[1409] Dunlop, *Scheler*, pp. 71–72.
[1410] Scheler, *The Constitution of the Human Being*, p. 49.
[1411] Collins, *Three Paths in Philosophy*, p. 111.
[1412] Collins, *Three Paths in Philosophy*, p. 111.
[1413] Collins, *Three Paths in Philosophy*, p. 111.
[1414] Collins, *Three Paths in Philosophy*, p. 111.

Collins goes on say that Scheler reveals that the 'structural forms of the scientific world are universal only within the context set by the natural outlook and drive to extend our control over nature'.[1415] Because the sciences 'cannot emerge by themselves from this totally relative approach to being, they cannot acquire that insight into being as such and the essential structures of being which constitute philosophical truth'.[1416] Accordingly, Collins states that 'the several forms of evolutionism and naturalism are affected by this restriction' – a 'limitation' which extends to the methods of the positive sciences, based as they are on 'observation' and 'induction' from 'empirical events'.[1417]

Hence, 'scientific propositions dependent upon this procedure are provisional, subject to revision or complete displacement, and hence only probable in strength'.[1418] Not only is philosophy not simply science's handmaid, but philosophical investigation aims toward the understanding of Being in the 'absolute sense' – in other words, for 'what it is in itself', rather than for 'what it contributes to our needs'.[1419] By dis-embedding itself from the 'contingent existential order', philosophy allows for the contemplation of 'the world in its essential purity of structure'.[1420] This facilitates the capacity to move beyond the 'drawbacks of the common sense and scientific standpoints' – confined as they are – to a perspective of Being as 'relative to the human organism and its needs', while at the same time being 'subject to the contingencies of empirical existence'.[1421]

Collins notes that Scheler does offer a 'significant qualification' to this, and he admits that 'some scientific research is conducted in a quite theoretical and objective spirit, seeking truths which need have no bearing on our welfare, even though they do not surpass the level

[1415] Collins, *Three Paths in Philosophy*, p. 111.
[1416] Collins, *Three Paths in Philosophy*, p. 111.
[1417] Collins, *Three Paths in Philosophy*, p. 111.
[1418] Collins, *Three Paths in Philosophy*, p. 111.
[1419] Collins, *Three Paths in Philosophy*, p. 112.
[1420] Collins, *Three Paths in Philosophy*, p. 112.
[1421] Collins, *Three Paths in Philosophy*, p. 112.

of finite, contingent being'.[1422] He also acknowledges that 'many mathematical propositions, and some 'natural laws', contain factors which are not at the mercy of further empirical findings'.[1423] In such instances, he allows that scientific thought 'supposes and makes application of (but not originally generate) the definitive essential insights proper to philosophy'.[1424] It is philosophy that lends this understanding and 'something of the absoluteness and universality of essential patterns'.[1425] Thus, it is the 'philosophic grasp upon the essential forms of being' that 'supplies the basic presuppositions and axioms for all the sciences'.[1426]

So, what can the above tell us about the explicitly 'metaphysical' and 'spiritual' thought of Kurzweil? Does it offer any insight into the predominance and persistence of transcendence themes within the philosophy of transhumanism? What we find in transhumanism as a philosophy and a cultural movement; in Kurzweil's evolutionary epochs and attempt to reverse engineer biology; what underpins the quest for human enhancement technology; and the very idea of post-biology – might in fact be an indication of a 'metaphysical turn' within science and technology. I have hinted at this a little throughout by reference to the engineering perspective that is characteristic of transhumanism, and through the use of the phrases engineering transcendence, engineering salvation etc., and it is common to assess transhumanism in terms of transcendence, quasi-religious characteristics, eschatological tendencies etc. I actually think this is one of the better perspectives to take on transhumanism, the religious/spiritual overtones are explicit in Kurzweil, and the Singularity

[1422] Collins, *Three Paths in Philosophy*, p. 112.
[1423] Collins, *Three Paths in Philosophy*, p. 112.
[1424] Collins, *Three Paths in Philosophy*, p. 112.
[1425] Collins, *Three Paths in Philosophy*, p. 112.
[1426] Collins, *Three Paths in Philosophy*, p. 112.

operates very much like an apocalyptic end-of-times event, a techno-scientific rapture of sorts.[1427]

But, regardless of how accurate such a lens might be in the analysis of transhumanism, as a philosophy it is still on the fringes of mainstream science. Could these 'metaphysical' characteristics actually indicate an inclination toward metaphysics outside of transhumanism, and closer to the mainstream? If we accept the findings of Chapter 2 and recognise the human being as essentially technical, and if we take the re-considered concept of *homo faber* seriously, then we must accept that *technics is existential*. If this is so, by implication so too is all engineering. If technics is primary, and if it marks an existential and anthropological act of being as becoming, then engineering in its highly complex late-modern form does also – thus, engineering is itself an essential existential activity.[1428]

It should be evident at this stage that we do in fact have a situation wherein it is the engineers that are now the ones asking the big questions. This is not limited strictly to those inclined toward or associated with transhumanism. In 2014 the proceedings of an interdisciplinary conference from 2012 were published as collected edition: *Engineering and The Ultimate: An Interdisciplinary Investigation of Order and Design in Nature and Craft*,[1429] the point of departure is the deep and meaningful connection between engineering and philosophy and theology. The initial position states that the object of interest of theology and philosophy – the *ultimate* – is also the object of engineering.

Perhaps only implicitly, but even without being explicitly reflected upon, principles of the ultimate that inform philosophy and theology are – according to the editors – 'thoroughly

[1427] See, Hauskeller, 'Reinventing Cockaigne: Utopian Themes in Transhumanist Thought'; Hauskeller, *The Mythologies of Transhumanism*; Tirosh–Samuelson, 'Religion'; Tirosh-Samuelson, 'Transhumanism as a Secularist Faith'.
[1428] Samuel C. Florman, *The Existential Pleasure of Engineering* (New York: St Martin's Griffin Press, 1996).
[1429] Jonathan Bartlett, and Dominic Halsmer, and Mark R. Hall, eds, *Engineering and The Ultimate: An Interdisciplinary Investigation of Order and Design in nature and Craft*, Proceedings of the 2012 Conference on Engineering and Metaphysics (Broken Arrow: Blyth Institute Press, 2014).

embedded within engineering'.[1430] Both in act, and in purpose, engineering is closer to philosophy and theology than it is to science and mathematics they claim – the overall aim of the conference was the investigation of nature from an engineering perspective, and a simultaneous investigation of engineering from various different perspectives on nature. Of most interest is the application of reverse engineering techniques to natural systems and the attempt to transfer biological principles to engineering and engineering principles to biology.[1431]

What the above also reflects is the fact that reductionism has by far been the dominant approach within modern science. Simply put, the modern scientific project assumes the reduction of all phenomena to the fundamental laws of physics.[1432] Despite the historical predominance of reductionism, for many it is clear that the 20th Century in fact marked the 'demise of the reductionist dream'.[1433] Despite its success, reductionism has struggled to address the most important issues directly relating to the human being. Phenomena of an irreducible character abound across a multitude of fields, processes and relations that cannot be reduced to their constituent parts are evident in a multitude of places, from the economy to biology.

The anti-reductionist perspective – encapsulated in the moto 'the whole is more than the sum of its parts' – is found in a variety of disciplines and fields of study and research. Joined – as they are – through a realisation that the characteristics of irreducibility can be identified in both natural and artificial system, the proponents of the anti-reductionist perspective tend toward the view that the study of such phenomena cannot be limited to a single discipline, i.e., it *must* be interdisciplinary in nature. Historically, there have been a number of formulations of this ideal, including – amongst others – cybernetics, synergetic,

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[1430] Bartlett, 'Introduction', in *Engineering and the Ultimate*, pp. 1–5, p. 1.
[1431] Bartlett, 'Introduction', in *Engineering and the Ultimate*, pp. 1–5, p. 1.
[1432] Melanie Mitchel, *Complexity: A Guided Tour* (Oxford and New York: Oxford University Press, 2009), p. ix.
[1433] Mitchel, *Complexity*, p. x.

systems science, and complex systems science.[1434] It is complex systems science that we are concerned with .

One of the main concerns of complex systems science is that it aims beyond the traditional reductionist paradigm as a way to understand and grasp the nature of seemingly 'irreducible systems'.[1435] How do natural systems that we designate as 'adaptive' and 'complex' produce the behaviour associated with them from the 'simple rules' that underlie them?[1436] For example, complexity theory is concerned with the study of how apparent order can be generated from chaotic motion through the phenomenon of self-organisation. Of interest is the way in which the macroscopic order that is generated by self-organising systems is not reflected in that system on the molecular level. At the molecular level, the motion is deterministic and chaotic. But this is chaos with a slight bias, for the motion isn't entirely random – it displays an intrinsic bias towards generating order.[1437]

As a science, complex systems science is concerned with how self-organisation generates novelty within a system. Novelty which is understood in terms of *new ontologies*, i.e., new ways of being. As such, the study of complexity has an explicitly metaphysical aspect to it. And in this regard, there are two very relevant facts about it to consider.

The first is that the principles of complexity apply across systems that are both natural and artificial. Ontologically, this means that a *process* perspective rather than to a *substance* perspective is better suited. Properties and principles that are common to different types of system may not be identifiable if analysis is conducted in terms of the *parts* of the systems. Such characteristics may become observable if a holistic systems level approach is adopted. Systems-level analysis also helps facilitate the attempt to theoretically clarify phenomena associated with relation and transition. It allows us to define the boundaries of the system

[1434] Mitchel, *Complexity*, p. x.
[1435] Mitchel, *Complexity*, p. xi.
[1436] Mitchel, *Complexity*, p. xii.
[1437] Jim Al-Khalili, and Johnjoe McFadden, *Life on the Edge: The Coming of Age of Quantum Biology* (London: Transworld Publishers, 2014), p. 398. This is sometimes referred to as 'order from chaos'.

itself, i.e., when investigating the human/technology relation, we can see both as part of the one system, and apply analysis accordingly – allowing us to collapse the ontological gap. Thus, the system being studied can also be analysed at various different levels of abstraction. For example, the analysis of consciousness can be conducted at the level of neurons; the level of the brain; the level of brain/computer interface; the level of the internet.

Secondly, as a science, complex systems is *computer dependent*. If we did not have the computing power and process capacity of computing machines, we would not be able to generate the models necessary to study complexity. Thus, in an essential way it represents the technologically mediated study of ontological change and transition. Complexity aims to elucidate the nature of reality at a deeper level than the level of human sense perception – it aims to find unifying principles that operate independently at that level and which underpin reality at the human level. Complexity aims in a way at a form of *total* knowledge. All of this bears striking resemblance to Scheler's conception of metaphysics.

There is a reason for this focus on complexity. Taken on its own, I feel complexity would serve as paradigm well suited to developing Scheler's thought in. The complexity paradigm is essential opposed to reductionism and mechanism that we identified earlier as a root problem within transhumanism. Complexity also highlight the essential tension within transhumanism, and it also highlights the fact that the core principles of the substance ontology and process ontology are straining against each other in tension more generally within late-modern technology – the tension between reductionism methodologies and transcendent goals. A possible reason for this is that complexity and the ability to evolve are characteristics of both biological and artificial systems.[1438]

As shown earlier, complexity also informs the idea of evolution that is most commonly assumed within transhumanism – the idea that evolution represents a process of

[1438] See, Cagnoni et al, *Evolution, Complexity and Artificial Life*.

increasing complexity, i.e., complexification. This in and of itself is not necessarily a problem. Problems arise though if there is a concomitant reductionist ontology because the Second Law of Thermodynamics holds that a closed physical system will inherently move from a more ordered state to a less ordered state. This describes a move from order to chaos, i.e., *entropy*. It is for this reason that many transhumanists express their ideas in terms of extropy. Extropy as a concept works to negate the negative implications for life that occur because of the Second Law – ultimately the universe as a closed system must succumb to the entropic principle, and according to the standard theory of thermodynamics, this will eventually result in what they call the 'Cold Death' of the universe. Such a predicted outcome is to be the eventual fate of the cosmos – a scenario that most people don't lose much sleep over, but which becomes problematic and something that needs to be taken into consideration if you intend to live forever post-Singularity or through the technological life enhancement/augmentation of post-biology.

The evolution of life is a process which also has a potentially problematic relationship with entropy – life seems to 'evade' entropy, and *biological systems move away from rather than to thermodynamic equilibrium*. The only way to explain this – and stay faithful to the Second Law – is to define the biological organism, system or evolution of life itself as an open system that operates locally within the larger closed system of the universe. A local increase in complexity is explained in terms of an equivalent loss of order in some other part of the cosmos – overall, entropy increases, complexity decreases, and the universe moves from a more to a less ordered state.

Defining *biological* evolution as complexification is also problematic because complexity is not an essential outcome for the successful evolution of life – it is a mistake to assume that the *appearance* of increased complexity, and the *appearance* of an overall and directionality to evolution mean that complexity and increased order are the defining feature of the evolutionary process. To say the least, some theoretical hoops have to be jumped through to square everything up, but ultimately there remains a tension between wanting to understand evolution in terms of complexity, and a commitment to the reductionism associated with the physics paradigm that upholds the hard and unyielding justice of the Second Law of Thermodynamics. Again, I argue that this is something that Scheler's thought anticipates and allows us to accommodate. By way of brief example let us take the emergence of the relatively new field called cosmic evolution.

Cosmic evolution is the idea that the universe and everything in it are all part of an ongoing and constant evolutionary process. The concept of cosmic evolution only emerged as a unified idea in the last half a century or so – a century after Darwin.[1439] As a field of study, cosmic evolution takes a biological perspective on physical evolution. Extending the scope and range of biological thought beyond its previous disciplinary boundaries – the notion of taking seriously the idea of a 'biological universe' is a defining feature of the field.[1440] Another central component is the attempt to extend analysis beyond both physics and biology – to culture. The idea of extra-terrestrial life is taken seriously, and the implications of the evolution of intelligent life on earth is that it is possible in other parts of the universe, thus, the argument is that 'culture is the context of the cosmos'.[1441]

As a field of study, cosmic evolution aims to study in a unified way physical evolution, biological evolution, and cultural evolution. Exactly the things that we have been assessing here. This is a pertinent and contemporary example of the extension of the evolutionary metaphor beyond the biological – an extension of the metaphor of evolution into the cosmological and cultural/technical domains. The field of cosmic evolution aspires to a 'grand evolutionary synthesis' – incorporating physics; astronomy; geology; chemistry;

[1439] Steven J. Dick and Mark L. Lupisella, 'Introduction', in *Cosmos and Culture: Cultural Evolution in a Cosmic Context,* eds by Steven J. Dick and Mark Lupisella (Washington D.C.: US Government Printing Office, 209), p. v.
[1440] Dick and Lupisella, 'Introduction', in *Cosmos and Culture*, p. v.
[1441] Dick and Lupisella, 'Introduction', in *Cosmos and Culture*, p. v.

biology; and anthropology among others. The point of departure of such a synthesis, is the apparent rise and continued increase in *complexity* since the Cambrian Explosion.[1442] Understood in these terms, biological evolution is considered simply to be a constituent part of a larger evolutionary process – one that includes physical or cosmological evolution *and* cultural evolution.

Taken together – physical, biological, and cultural/technical evolution – we have a process that describes the directionality associated with the arrow of time, and we have an observable increase of overall complexity. Most importantly, from the beginning the aspirations are non-reductive. Leading proponent of the field Eric J. Chaisson clearly states that the science of cosmic evolution is 'not an exercise in traditional reductionism'.[1443]The issue of entropy is accommodated by the incorporation of what is called non-equilibrium thermodynamics – an older and somewhat forgotten mathematics of thermodynamics.[1444]

Of interest is the idea that technology has allowed human beings to begin to intentionally intercede in the overall evolutionary scheme. Thus, a foundational philosophical concern is 'what caused us to become conscious enough to contemplate our complex selves'?[1445] Something that is not possible without assuming the broad perspective of cosmic evolution. Again, we have a situation where Scheler seems to have anticipated developments. As a new and emerging field of enquiry, cosmic evolution has as its main concern exactly what Scheler was philosophising about in 1928 – taking a *biological perspective on cosmological evolution*. This is the essential first step – a key move, one that I have hopefully shown Scheler took with remarkable prescience with *The Human Place in The Cosmos*.

Complexity itself is a concept that is almost imbued with metaphysical tones – it is the fundamental study of new ontologies and new ways of being that emerge in and through

[1442] Eric J. Chaisson, 'Cosmic Evolution: State of the Science', in *Cosmos and Culture*, pp. 3–4.
[1443] Chaisson, 'Cosmic Evolution', p. 8.
[1444] Chaisson, 'Cosmic Evolution', p. 8.
[1445] Chaisson, 'Cosmic Evolution', p. 14.

the self-organisation that is generated by life itself. Complexity lies at the heart of so much of the discourse that engineering itself is beginning to sound metaphysical in its aspirations and scope. The ongoing crossover between engineering and biology is clearly observable, and new perspectives are constantly being generated as a result of. And this is not the fringes of science we are talking about. An observable shift in perspective that is beginning to show which possibly reflects a move away from mechanism and reductionism more generally. Changes like this happen slowly, but it is of note to see the emergence of a range of theories and fields of research that are willing to forego reductionism.

As a final example of how Scheler's metaphysics and Philosophical Anthropology can relate to contemporary concerns – beyond even the analysis of transhumanism – I would briefly call attention to the theory of biocentrism. Biocentrism is a theory developed by medical doctor and scientist Robert Lanza along with astronomer Bob Berman. Biocentrism has its roots in quantum theory and its starting point is the claim that quantum theory has cast a fatal doubt upon the traditional and established explanation of the world we get from physics. Biocentrism is a radical challenge to the idea that life can be reduced to physical laws and causal determinacy. Rather than understand the evolution of life within the cosmos as the result of a random accident – whose statistical likelihood is mind-bogglingly small – biocentrism holds that life and consciousness are in fact the key to understanding the ultimate reality and the nature of the cosmos itself.[1446]

The basic premise is simple, the orthodox picture that we use to understand the cosmos is wrong. Physics is not primary, the universe did not just happen to evolve life through some random accident. It is biology that is primary, consciousness and life are foundational principles, the cosmos has evolved like this *because* of consciousness and life, not despite them. Biology cannot be reduced to the laws of physics – it is foolish to even try.

[1446] Robert Lanza, and Bob Berman, Biocentrism: *How Life and Consciousness are the Keys to Understanding the True Nature of the Universe* (Dallas: BenBella Books, 2009).

The physical cosmos is intrinsically connected to life and consciousness. Thus, biocentrism stands as an ardent call to *re-assess the entire physics paradigm*. A call that I believe is necessary; a call that is also becoming more and more widespread; and a call that Scheler anticipated in 1928!

It is in this light that philosopher Thomas Nagel puts forth his argument against the physics paradigm. Key to Nagel's position is the understanding that mind/body is 'not a just local problem' – rather it is a problem that 'invades our understanding of the entire cosmos and its history'.[1447] Nagel argues against the orthodoxy of reductionism in the sciences in general – and more specifically against, 'psychophysical reductionism' and 'physico-chemical reductionism in biology'.[1448] All of which not only contradict the human experience, but are also grounded in assumptions that are unsupported and unverifiable. Nagel says that the orthodox worldview based on 'reductive materialism' is 'ripe for displacement, and interestingly, he suggests neutral monism as possible solution.[1449]

In a similar way to Nagel, Medical doctor, complexity scientist, and theoretical biologist Stuart Kaufmann says that we must move beyond the physics paradigm – our universe is one of *becoming* that is based on physics, but *beyond* physics.[1450] This universe of becoming is full, says Kaufmann, of 'living creatures which construct themselves', and this fact stands as a foundational challenge to scientific orthodoxy and reductionism – science is lacking a coherent and accurate idea of 'a system that constructs itself'.[1451] For Kaufmann, it is simply the case that physics aims toward simplification, while biology is ultimately concerned with complexity. A complexity that infuses our biosphere and gives it the raw

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1447 Thomas Nagel, *Mind and Cosmos: Why the Neo-Darwinian Conception of Nature Is Almost Certainly False* (Oxford: Oxford University Press, 2012), p. 3.
1448 Nagel, *Mind and Cosmos*, pp. 5–6.
1449 Nagel, *Mind and Cosmos*, pp. 3–12
1450 Stuart Kaufmann, *A World Beyond Physics: The Emergence and Evolution of Life* (2019), p. ix.
1451 Kaufmann, *A World Beyond Physics*, p. x.

materials for the creation of ever-new possibilities for life, and for becoming.[1452] Kaufmann's statement of intent is that physics cannot provide the foundations necessary from which we can derive the 'ultimate becoming' of the world – *the world is not a machine*.[1453]

CONCLUSION

The above final section is intended to highlight the relevance of Scheler for contemporary debate – a relevance that extends beyond the analysis of transhumanism. It is in this light that I will finish with one final example. Kaufmann says that the evolving cosmos cannot be explained in mechanistic terms; evolving life is not a machine; within evolution there is a split between 'mute matter' and human imagination'; these are two evolving strands of the living world; their evolution cannot be described by, and reduced to, physical laws; the outcome of their evolution is not pre-determined or fixed; their emergence is 'lawless, 'contingent', but not 'random'; and it 'bespeaks a place between mute matter and Shakespeare'. In other words, 'life itself spans between physics and art'.[1454]

Thus, Kauffmann understands life as emerging from non-life through the 'spontaneous emergence of collectively auto-catalytic sets', it surges upward in increasing complexity, spreading order, despite the second law of thermodynamics – it evades but doesn't avoid entropy.[1455] Living organisms are in a thermodynamic state of non-equilibrium, i.e., they don't succumb to entropy immediately.[1456]

For Kaufmann, what this proves is that reductionism fails – biology cannot be reduced to physics, there is no equivalent principle in physics for the principle of function in

[1452] Kaufmann, *A World Beyond Physics*, pp. xi–xii.
[1453] Kaufmann, *A World Beyond Physics*, pp. xi–12.
[1454] Kaufmann, *A World Beyond Physics*, pp. 1–2.
[1455] Kaufmann, *A World Beyond Physics*, pp. 17–21.
[1456] Kaufmann, *A World Beyond Physics*, p. 44.

biology, and the becoming of the cosmos cannot be mathematised.[1457] The emergent becoming of the cosmos is based on physics, but is beyond it. This is life, 'co-constructing itself' with the physical matter of the cosmos, so as to enable the evolutionary diversification that underpins it – Kaufmann describes this as 'self-constructing diversifying becoming'.[1458]

Hence, Kaufman gives us a contemporary *scientific* model which is remarkably similar to Scheler's metaphysical scheme. A contemporary model that is non-reductive, and non-mechanistic, and assumes an essential connection between inorganic and organic life. While Kaufmann doesn't develop in detail here the issue of consciousness, ultimately he does give us a description of Being as becoming through self-constitution, as the irreducible co-evolution of *both* real and ideal factors.

[1457] Kaufmann, *A World Beyond Physics*, pp. 109–128. Kurzweil's model of evolution through increased complexity shares many similarities with Kaufmann in respect to thermodynamics, entropy and the evolution of living systems.
[1458] Kaufmann, *A World Beyond Physics*, p. 128.

CONCLUSION: OUR PLACE IN THE COSMOS?

With the human being, evolution has become a self-referential process. We are the first known species to try and control evolution – both biological and cosmological evolution. In light of this, we can conclude that the human being represents the end of any notion of a purely biological evolution. Ideas shape and influence our historical development, they assume a functional role in our continued evolution – and by implication, the evolution of the cosmos. It is the rupture of anthropogenesis that marks the start of post-biological evolution – not the Technological Singularity. From the Cognitive Revolution onwards, ideas have guided our way into the future. Chief amongst them – the *idea* of the human being. An idea that emerged in and through material engagement, in and through the fabrication of technical artifacts – technical artifacts that usurped the logic of purely biological evolution. With technics, it is not the 'fittest' that survive.[1459]

This above is encapsulated in the concept of the cyborg, which – as an anthropological model – describes the attempt to enhance, augment, and strengthen the fragility of our physical form. But to what end? If it was toward the end of the preservation of life then the vision stops there. But it seems clear that the vision doesn't stop there. The vision continues on to the Singularity – on to complete disembodiment. A freeing of our infinite minds from our finite bodies. This reveals the cyborg to be a late-modern answer to the age-old problem of human finitude. This in itself is telling, for the part of the human being that is to survive is not the physical part – it is our mind or the *self*.

So how do we explain this attempt to direct, control, and ultimately transcend biological life? Can a principle from *inside* life aim toward that goal? This is Scheler's challenge – and it serves as a rejoinder to transhumanism and the quest for a post-biological

[1459] Taylor, *The Artificial Ape*.

and post-human future. For without recourse to a spiritual principle, and being committed to reductionism, transhumanism seems unable to explain how life can be directed beyond itself. Evolutionary success within the post-biological scenario, is not a life-promoting outcome. There is a deep-seated reductionist substance ontology that seems to be at fatally at odds with the aspiration for transcendence.

What Scheler offers us is a philosophy of *becoming*. A philosophy of the human being *as* human becoming. In doing so, he offers us the resources to assume an ontology of process which allows us to take evolution seriously – as both a cosmological and a biological process. A process that is self-referential and characterised by a mutually recursive dynamic – *the dynamic interplay between real and ideal factors*. An interplay that – in and through the acting human being – is technically mediated. The question then is, can this dynamic process of becoming actually extend beyond biology?

There is nothing in *The Human Place in the Cosmos* that insists that the bearer of *Geist* has to be the human being. So, in principle, the bearer of *Geist* could be synthetic. Ultimately, this will be an empirical matter. In principle, the necessary and sufficient conditions for *Geist* to actualise are determined through the interplay of the real and the ideal – *whatever they might be*. Perhaps artificial consciousness will be created, perhaps it will satisfy the criteria for self-consciousness which defines a bearer of *Geist*, or maybe biology represents some carbon-based upper limit to life.

But if the boundary of the psychic coincides with the boundary of the organic, and *Geist* is not reducible to a function of bio-psychic life, then the boundary of *Geist* must coincide with the boundary of the inorganic, i.e., the outer limit of *Drang*. If this is the case, then it would seem to suggest that biology does not represent an upper limit for the actualisation of *Geist* according to Scheler's model.

Hence, we can conclude that transhumanism is correct to assume that what has evolved will continue to evolve. And it is correct to view the human as representing the possibility of post-biological evolution – just maybe not in the way that is imagined. The human being represents the end of purely biological evolution in a mundane way – we have always been transitional, we are *always already technical*.

This is something that seems to get overlooked as a result of reductionism, and the assumption of the instrumentalist conception of technology. Because of these, transhumanism seems unable to free themselves from the subject/object dichotomy and Cartesian dualism. As a philosophy, it is caught in tension between reductionism and transcendence. And as such, it reveals its utopian character and the quasi-religious faith-based belief system that underpins its worldview.

Nevertheless, the philosophy of transhumanism is searching in the right direction. As we have acknowledged, it is profoundly significant that we can even *try* and control evolution, so transhumanism does aim at the absolute – from an *engineering perspective*. This can be seen to be constitutive of, and constituted by, the ontological character of late-modern technology – both with respect to the project of NBIC convergence, and as a result of the predominance of the engineering paradigm in the biological sciences as exemplified by the field of synthetic biology. The NBIC project is known as the *design* paradigm, and synthetic biology is described as an attempt to domesticate complexity and harness self-organization of living systems, i.e., *design retrieval*. Design functions as a principle that traverses disciplinary boundaries and in doing so it unites engineering and biology, and assumes a metaphysical status within transhumanism and late-modern technology.

Both Philosophical Anthropology and transhumanism work with the understanding that human nature isn't fixed. Thus, the principle of design segues with the idea that we are free to make of ourselves what we really are. It also dovetails with the notion that what we make also makes us. And this is the understanding of the human being we have come to – *homo faber* 2.0: a technically mediated becoming – co-evolving and co-constituted in and through technics as material culture. The dual-aspect of the human being is reflected in the dual-aspect of our technics – a mark of *Geist*, a mark of design. Technics is an ontological anchor which allows for the stabilisation of the ideal in and through the real. The technologically mediated human being is the interplay between the two. An interplay that is recursive in nature.

The late stages of our cognitive and physiological development took place in a pre-existing technical context – *there is no such thing as the human being outside of technics*. Scheler is correct to posit that the human being is uniquely defined by reference to our dynamic of *self*-consciousness. While other biological species may be self-aware in a way that he did not account for, there is nothing to indicate that the self-reflective awareness and consciousness of self that the human being displays, is a capacity shared by non-human animals. The sophistication and complexity of our technology stands as a testament to that. Our technology is without comparison in the tool-use of other non-human species.

Human technology is characterised by a dual-aspect that reveals ideal content – it reveals the idea *behind* and *in* the artifact. An idea that was exteriorized through material production, modified through use, and reflected back through a simultaneous process of interiorization. This describes a recursive process within which the human self and technics produce each other. Thus, the human/technology relation is one of co-constitution. The human being emerges *with* technics in a process of mutual recursion that describes a positive feedback loop of creative self-interpretation – a process within which consciousness develops into self-consciousness. For as we have shown, the use of complex technologies require autobiographical memory or true episodic memory – technics requires the presence of a presently situated temporal *self*.

The self emerges in and through technics. As such, material production is a process of self-construction *and* a process of self-interpretation. For we recognise ourselves in technics. We recognise a mark of our mind in the dual-aspect of the technical artifact. It is this that kicks off the positive feedback loop. As a result, technics is a process of hermeneutic retrieval – a process of *design* retrieval. A process of self-recognition, where the human being has transitioned from consciousness to self-consciousness – as the bearer of *Geist*, and as the microcosm.

It is in this way that the Ground of Being begins to become aware of itself. The Ground of Being bending back on itself is also a *recursive* process. The becoming of the macrocosm – in and through a recursive process of hermeneutic design retrieval – as a mirror of the becoming of the microcosm. As the microcosm, we recognise ourselves in and through technics. As the macrocosm, the Ground of Being recognises itself, in and through the human being – in and through technics. Thus, technics is a vital constituent of the Ground of Being coming to recognise itself. Technics is an ontological anchor for the ideal. Without it, we could not even begin to imagine controlling, directing, or *designing* evolution as a cosmological, biological, and a technological phenomenon.

The Human Place in the Cosmos takes a biological perspective on cosmology, and this has been developed here specifically in terms of technics. Technics *as* material culture, describes a co-constitution, and co-evolution of the human being and technology. A co-constitution and a co-evolution as the interplay between real *and* ideal factors. What this shows us is that the mind/body problem is a macro-level problem. As such, it *is* the problem – we don't know how Mind and Matter relate. Scheler gives us a working metaphysical model – Mind emerges *with* Matter, as the interplay between real and ideal factors.

With the human being, evolution has become a self-referential process. This is a seemingly simple and observable fact, yet its implications are profound. It lies under the surface of all that we do. While not always explicitly recognised, this self-referential dynamic informs all of human history and human prehistory. It also describes in a fundamental way the very essence of the human condition – *self*-consciousness. Human self-consciousness on the micro-level has a macro-level correlate in the self-referential character of evolution. Our becoming is reflected in the becoming of the cosmos. This is something that Scheler recognised and which he expressed in the concept of the human being as microcosm. A concept that we must conclude does in fact seem to accurately describe our place in Being.

If we accept that any ontological gap between the human being and technology is artificially constructed, then we must be willing to give up some of our oldest assumptions about ourselves and the world around us. We must also accept that, what initially appears as beyond the pale of serious discussion within transhumanism, may not be as radical as it seems. Of course, the idea of post-biological evolution is speculative, any talk of our future will be. But we can also conclude that, whatever direction our future evolution does take, it will be *technologically determined*.

The strength of Scheler's thinking is that it allows us to imagine and assess such possibilities as post-biological evolution in a rigorous way that is not ideological nor utopian. Without recourse to the promise of late-modern technology, Scheler brings us step by step to the same point that Kurzweil brings us to. From this, we can conclude that – in principle – the Technological singularity is in fact *possible in a metaphysical sense*. Even so, we must also conclude that Kurzweil's scheme is fatally flawed. The biggest issue is obviously reductionism – the default setting of the entire physics paradigm. Scheler's metaphysics and Philosophical Anthropology are inherently anti-reductionist. As such they offer a foundation upon which to develop an possible alternative to the current orthodoxy.

The questions that concern transhumanism are the big existential questions, they are questions that we have always asked, and they are questions that will only become more urgent within a post-biological context. This is because these existential questions now have a *practical* aspect to them. Despite the language of transcendence, the overriding logic remains that of reductionism. For transhumanism, we are on the cusp of providing a solution to all of our age-old hopes, and aspirations – an *engineering* solution, a *designed* solution. From this, we can conclude that Scheler is correct to say that a metaphysical investigation in the Absolute is constitutive of human nature. We are compelled to form a metaphysical opinion – the question is simply whether or not it is *good* or *bad* metaphysics.

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