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The Ontology of Technology: a Heideggerian Perspective

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THE ONTOLOGY OF TECHNOLOGY

A Heideggerian Perspective

By

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Abstract

The question concerning technology lies at the heart of human existence. As such it must take a central place in philosophy today. This importance, however, is veiled by a historical interpretation of technology as instrumental. This instrumentalism is the result of an ambiguity in the Aristotelian legacy that arises from an understanding of reality rooted in a theory of the categories, on the one hand, and a theory of causality on the other. This has left us with an ambiguous understanding of human making split by the twofold structure of artistic and representational thinking. The former is characteristic of empirical knowledge, the latter epistemological knowledge. This thesis follows Heidegger in arguing that an integral understanding of technology can only be achieved through a creative retrieval of Aristotle's ontology that interweaves the question of causality and the question of the categories, which we have outlined below as the interplay between potentiality and actuality, between being and non-being, and between truth and untruth. While indebted to Aristotle, this involves an important re-thinking of the nature of ontology, for it is made possible by exposing the limits of Aristotle's theory of time, which understands time as a succession of present instants, and moving towards the Heideggerian understanding of presencing as the opening of a horizon in which things perdure. Consequently, this is an ontology in which technology is tied to our notion of time just as much as to our notion of being. After establishing this temporal ontology as the basis for an understanding of technology, in a unique way we apply it to the particular case of 3D printing and come to see that this technology is indeed more than an instrument; it is an interweaving of the epistemic and the poetic, the rational and the artistic. Thus I accept the consensus in contemporary philosophy of technology that questions of technology must be understood in terms of their political and social implications. However, unlike many thinkers in this field I also argue that they can be fruitfully understood in terms of a temporal ontology.

Table of Contents

For Dan, Laura, Maria, and Ciara. I love you.

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Introduction

> The globalization of the technocratic paradigm "is the way that humanity has taken up technology and its development according to an undifferentiated and one-dimensional paradigm. This paradigm exalts the concept of a subject who, using logical and rational procedures, progressively approaches and gains control over the external object. This subject makes every effort to establish the scientific and experimental method, which in itself is already a technique of possession, mastery and transformation. It is as if the subject were to find itself in the presence of something formless, completely open to manipulation".
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> --Francis (Jorge Mario Bergoglio)[1]

The question concerning technology lies at the heart of human existence. As such it must take a central place in philosophy today. This importance, however, is veiled by a historical interpretation of technology as instrumental. This instrumentalism is the result of an ambiguity in the Aristotelian legacy that arises from an understanding of reality rooted in a theory of the categories, on the one hand, and a theory of causality on the other. This has left us with an ambiguous understanding of human making split by the twofold structure of artistic and representational thinking. This thesis addresses the lack of clarity in the contemporary understanding of modern technology, which it diagnoses as arising from the fact that technology is, in its essence, not a collection of artifacts and inventions, or a system of production. Contrary to such a common understanding, this thesis will show that technology is a type of consciousness. As such, it is a particular way of thinking. Technological consciousness admits to a twofold structure of practical and representational thinking.[2] Martin Heidegger identifies this twofold understanding of technology as crafting and calculating. The former is characteristic of empirical knowledge, the latter epistemological knowledge. In crafting, the intellect approaches the material thing externally from a particular point of view, uses symbols to express its findings, and yields knowledge that is relative to it.[3] In calculating, epistemology is the process of intuition. We call the

[1] Pope Francis, *Encyclical on Climate Change and Inequality On Care for Our Common Home* (Brooklyn, London: Melville House, 2015), III, 115.

[2] Herbert Marcuse, *One-Dimensional Man,* (Boston: Beacon, 1964), p. 1.

[3] Henri Bergson, *An Introduction to Metaphysics* (New York: The Liberal Arts Press Inc., 1955). Here Bergson identifies two types of knowledge, empirical and metaphysical. We are using his distinction here, p.1.

former production metaphysics and tend to trace it back to Aristotle who concludes that for a thing "to be" it must be produced. We call the latter eidetic metaphysics and tend to trace it back to Plato, who concludes that for a thing to exist it must participate in an eternal and immutable form.

Drawing on the pragmatism of Heidegger, this thesis will show that the modern world as dominated by technological thinking beholds everything merely for its instrumental value, an appraisal of beings merely for their actual utility, novelty, and efficiency. Even time is reduced to a calculable value, something not to be wasted. As a consequence humans regard everything, including humanity itself, as a product of technical reason and action. However, while Heidegger's carefully crafted ontology of being has provided this work with a fundamental framework, I argue that Heidegger does not overcome his attachment to pre-modern technologies and so can never be receptive to advanced technologies that are ubiquitous in the world today. Therefore, I extend Heidegger's ontology of being to include the powerful resources of mathematics, the discipline Heidegger was most suspicious of. In the tradition of Charles Sander Pierce's pragmatism, I argue that human beings develop technologies arising from the ability to project onto a future a creative and rational imagination.

This speculative ability is the inner movement of reason and *poiēsis*, and it is the condition of the possibility of innovation. This movement of consciousness is what I call speculative ontology, or *hyperology* (Chapter 4). While Heidegger was concerned with the *hypokeimenon* or essence of technology, I propose a philosophy of technology that integrates both causal and speculative philosophy. This is not a return to ancient crafting or medieval science, as they were immersed in the same technological consciousness. Rather it is being receptive to all technologies including computer technologies, nanotechnology, and biotechnologies. Hyperology, therefore, is the study of modern consciousness shaped by the ongoing importance of craftsmanship but also by modern mathematical formalism.

Thus, beyond Heidegger, this work demands that we take seriously both poetic and epistemic knowledge. What we take from Heidegger is a return to ancient metaphysics to remind us of what is lost, a worldview that does not treat

nature as a standing reserve. The historical return to the Ancients implies the historicity of technology. Heidegger's diagnosis of the nihilistic crisis of our technological age addresses the two-fold nature of technology and its relation both to the history of ideas and our understanding of its relation to truth. Precisely for this reason, we will trace the central ideas that bring about our current relation to technology from the Ancients and Scholastics through to the Enlightenment and contemporary thinking, with a special emphasis on our understanding of being and time which changes our relation to truth. This work will uncover three specific ways in which technology opens up horizons of being; as truth**,** as time, and as art.

The association of truth and technology is not arbitrary. Latent in technology, from the ancients to the present day, lies a metaphysical orientation to the world. Historically we have understood this in terms of truth; truth as form (Plato), truth as substance (Aristotle), truth as agreement (medieval), or transcendental idealism (Kant). Heidegger redefines the concept of truth in *Being and Time,* as a *hermeneutical phenomenology*[4] and later as *alētheia*. This is other than our ordinary use of the term truth, which has more recently become primarily associated with mathematical and logical reasoning, specifically arising from the proofs gathered by the logical mathematicians in the late nineteen hundreds. For them all mathematics and hence all of nature can be reduced to a set of formula. This reductive materialism fueled the philosophical mindset for the next 150 years. Heidegger's claim is that truth is both anti-reductive and transcendent. Historically these two concepts of truth (rational and disclosive) form the essence of technology and have been identified by Heidegger as ancient technology and modern technology.

For Heidegger, the essence of ancient technology, *technē,* is a mode of truth.[5] Technology, therefore, is more than its instrumental value. It is a cultural phenomenon, where human beings come together and experience the world and dwell (Chapter 2). Modern technology, on the other hand, is not concerned with

[4] GA 2: *Sein und Zeit*. Edited by Friedrich-Wilhelm von Herrmann, 1977; first edition 1927. *Being and Time*. Translated by John Macquarrie and Edward Robinson. New York: Harper Row, 1962. *Being and Time: A Translation of Sein und Zeit*. Translated by Joan Stambaugh, revised by Dennis J. Schmidt (New York: State University of New York Press, 2010). Here after Joan Stambaugh's translation as BT unless otherwise stated.

[5] BW, 1978, 318, 319.

the intrinsic value of nature or the human being. Humanity surrenders to the conditions set by technology (Chapter 4).[6] Modern technology arises from the metaphysical framework grounded in absolute truth, which today we think of in terms of a set of logical facts. It is characterized by accuracy, efficiency, and speed (with the promise of novelty). The specific outgrowth of this type of thinking results in information technology and works on the basis of a set of looping algorithms, devoid of any materiality. In 1931 Kurt Gödel wrote

> [t]oday's calculating machines have a fixed set of directives built into them; these directives correspond to the fixed rules of inference of formalized axiomatic procedure. The machines thus supply answers to problems by operating in a step-by-step manner, each step being controlled by the built-in directive. [7]

Gödel argued that regardless of the ingenuity of built-in mechanisms, there are numerous problems that fall outside the scope of a fixed axiomatic method. The idea of a formal system in mathematics is the move to an "axiomatic system divested of all appeals to intuition" [8] that separates truth from meaning, in mathematics. Formalism arises once it is recognized that there can indeed be non-intuitive systems, e.g. non-Euclidian space.[9] For in the axiomatic system of Euclid, axioms were based upon self-evident or intuitive concepts of space, e.g. that a straight line is the shortest distance between two points. Yet, with formalism came the questioning of such appeals to intuition with the intent of offering a "higher standard of certainty" so that recourse to intuitions prove unnecessary.

Truth then, in the formal system, becomes stripped of its "meaning," i.e. of its content and intuition. The only meaning that exists is the one given by the formal rules of the system, all of which make no claims to intuitive truth or correspondence

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[6] Heidegger, Martin, *The Question Concerning Technology and Other Essays*, trans., William Lovitt (New York: Harper & Row, 1977), p.14. Hereafter QCT.

[7] Ernest Nagel & James R. Newman, *Gödel's Proof* (New York: New York University Press, 1968), 100.

[8] Rebecca Goldstein, *Incompleteness: The Proof and Paradox of Kurt Gödel* (New York: W.W. Norton 2005), 129.

[9] For an accessible historical background to formalism emancipation from Euclidean intuitions as leading up to Gödel's Incompleteness Cf. Ernest Nagel and James Newman, *Gödel's Proof* (New York: New York University Press 2008), 8-25.

to reality. In other words, the axioms of formalism need not, as in Euclidian math, correspond to any fundamental, self-evident intuition. Axioms are simply axioms, and not about anything or any kind of truth. It is worth noting that such a system, devoid of intuitive appeals to truth, remains wholly mechanistic and algorithmic, for mathematical operations become nothing but a sequence of operations deduced from given axioms, which appeal to nothing beyond themselves. Formalism becomes nothing more than the manipulation of mathematical symbols divested of meaning. Thus, formalism, devoid of truth content *qua* intuition, is, *ipso facto*, reductionistic, insofar as truth can only mean provability, since there remain no true intuitions to which to refer.[10] Formalism is then a kind of qualified subjectivism concerning truth, insofar as truth is what is merely constructible formally without any reference beyond itself.

This type of formal truth is not an adequate account of being, nature or beauty, according to Heidegger. The *fact* that there are "eternal truths" [such as Newton's] will not be adequately proven until it is successfully demonstrated that Da-sein has been, and will be for all eternity. As long as this proof is lacking, the statement remains a fantastical assertion which does not gain in legitimacy by being generally "believed" by philosophers.[11] On the contrary, truth is a "discovery", a process of interpretation. Heidegger sees the world interpreted as a mathematical process giving rise to modern technology. By uncovering the essence of modern technology as mathematics, Heidegger means to elucidate technology as a derivative of truth. The rise of this type of technological society and "one-dimensional reality"[12] has roots in Plato's' dialectical logic and Aristotle's *Organon*. One-dimensional reality removes all contradictions.

This connection between truth and technology, however, may seem to take us further than ever from the question of the history of ideas. For truth, insofar as it is *not* reductive, must be both anti-materialist and transcendent. But this might seem to suggest that truth is eternal in the Kantian sense as a universal structure of subjectivity, or in the Platonic sense as an ideal form. Heidegger's response is to

[10]For a discussion, from a mathematician's perspective, concerning a critique of Hilbert's reductionism *vis-à-vis* Gödel Cf. Freeman Dyson, "The Scientist as Rebel," *The American Mathematical Monthly* 103 no. 9 (1996) 800-805.

[11] BT, 227/208.

[12] Marcuse, 1964, 124.

say that both of these concepts are metaphysically bound; in neither case are they dealing with the "factual" subject.[13] Truth is not formal, ideal, or subjective. Rather truth is inseparable from being. Truth and being "are" *equiprimordially*. Beings appear within the constellation of a world[14] (Chapter 1). Thus, to tie technology to the question of truth is not to set it free from the contingencies of history into an absolute realm of pure formal thought. In fact it means re-traversing the history of our relation with our ideas.

This relational notion of being and truth can be summarized with appeal to Heidegger's "trichotomy"[15] of ontic, ontological, and ontico-ontological. The totality of human existence is inclusive of factical existence, circumspection, and relation. Factical existence includes both natural and manmade things, for example, both a rock and radium, a human and a house. Circumspection involves a self-conscious reflection about the existence of a thing. Finally worlding asks about the ways that human receptivity allows for a thing to appear as such. C.S. Peirce's (1839-1914) architecture of three's is similar to Heidegger's structure of being. Written in early 1888, "Trichotomic" is a short essay outlining Peirce's categories of ontology and the principles of being. To summarize this he writes:

> First is the beginning, that which is fresh, original, spontaneous, free. Second is that which is determined, terminated, ended, correlative, object, necessitated, reacting. Third is the medium, becoming, developing, bringing about. A thing considered in itself is a unity. A thing considered as a correlate or dependent, or as an effect, is second to something else. A thing which in any way brings one thing into relation with another is a third or medium between two. (Peirce 1992, 280-284).

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[13] BT, 229/210.

[14] The analysis of worldhood is laid out in the third chapter of *Being and Time* and introduces an existential of space and time. Peter E. Jordan in *Continental Divide* explains that world is not analyzed as having an objective "nature" ontologically independent of Dasein. Worldhood is rather the "constitutive part of Dasein's own intentional structure and as such must be thought of in terms of Kant's categories because even though they are not mental representations as with Kant, they are nonetheless the a priori constitutive conditions for possible experience.

[15] Interestingly, it is an engagement with the New York playwright and theater manager Steele MacKaye. It is the art of making three-fold divisions and is based on his conception of First, Second, and Thirdness. For a detailed architecture of his theories see *A Riddle at the Guess, ibid*, pp. 245-280.

Although Heidegger does not seem to have been much interested in Peirce and Peirce's threefold understanding is different than Heidegger's, by looking at the two together highlights important similarities in their attempt to overcome Modern subject-object dualism by thinking in terms of mediation as its own fundamental reality. The turn for Peirce and Heidegger is to a turn to a pragmatic involvement in the world, where time is the experience of acting.

The second category of technology that we will investigate in this work is the category of time (Chapter 3). Historically time can be thought of in terms of spontaneity, succession, and simultaneity, which correlate to chance, progress, and consciousness. In accordance with Heidegger, and contrary to Kant, this thesis will argue that time is a derivative of being, rather than the primary *a priori* structure of experience. In *Kant and the Problem of Metaphysics* (1929) Heidegger deconstructs Kant's *transcendental schematism* and finds that within the structure of consciousness Kant fails to fully work out the significance and role of the imagination, which is for Kant spontaneous.[16] Spontaneity is the first-hand experience of the world.[17] But because Kant does not explicate the subjectivity of the subject, Heidegger argues that time remains as a series of successive intuitions that never encounters the thing itself. Instead, Heidegger puts forward his thesis on world. World for Heidegger is an "existential matrix for the generation of things; of individuals and their predicates".[18] "World" names the essential mystery of existence, the transcendence that makes Dasein different from all other intermundane entities. It is a complex of involvements of present-at-hand entities and ready-at-hand entities. Present at hand is an attitude to the world, a scientific or theoretical attitude. To be present means that the object already exists in a meaningful context within the world.

Thus, crucial to this thesis is the notion that time is temporal; moreover, it is not an arrow leading to some determined future. Rather time exists as an event:

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[16] GA 3: *Kant und das Problem der Metaphysik*. Edited by Friedrich-Wilhelm von Herrmann, 1991; first edition 1929. *Kant and the Problem of Metaphysics*, 5th, enlarged ed. Translated by Richard Taft. Bloomington: Indiana University Press, 1997. Here after KPM.

[17] OWA, 144.

[18] GA 26: *Metaphysiche Anfangsgründe der Logik im Ausgang von Leibniz*. Edited by Klaus Held, 1978; lecture course, Summer 1928. *The Metaphysical Foundations of Logic*. Translated by Michael Heim. Bloomington: Indiana University Press, 1984, viii-ix. Hence forth MFL.

a stretch between some prior time and some future time to come. Time is a constant stable occurrence that persists between two boundary conditions. Between these two conditions of possibility (past and future) Dasein stretches itself along in such a way that its own being is constituted beforehand as this stretching along. In an analogous way we can think of Dasein as *hyperbolic space* that projects out into the future from its ontic situatedness, at this moment in time, from a past that is absolutely determined to a future of possibility. The significance of time in relation to technology cannot be underestimated. This thesis will argue that antithetical to its promise of improving life and reducing work, the nature of modern technology is to absorb or conceal a thing coming to presence. It does this by using an algorithm of "nows" that recur continuously, concealing itself behind a veil of appearances. Modern technology absorbs us in the direct presence of mechanical (digital) time while denying any possibility for presence as perdurance. Direct presence here can be understood as an instantaneous encounter with the world, whereas presence as enduring is meant in the Heideggerian sense of perdurance or dwelling contemporaneously.

For Heidegger, an openness of the world to experience is not timeless possibility, but is structured by a historical temporality. In many ways it is the artist who is especially attuned to this historical possibility, which leads us to the third category of technology that will be examined in this work (Chapter 5). Artists counteract the modern mechanical view of nature. Artists such as Frederic Hölderlin and Paul Klee rescue nature from the laws that demand verification and exactness, which we get with modern information technology. Significantly, Klee uses techniques arising from a kind of *enframing*, for Klee is a graphic artist, a technique that might suggest "fixing" things in place. Yet Heidegger sees Klee's work as "setting forth" the truth of a work. As we will see both poetry and art in general, have this character of placing [*Stellen*], but not in a reductive sense.

Heidegger plays with the concept of *Stellen* in his essay "The Age of the World Picture". To 'set up' means to represent or conceive [*Vorstellen*] the condition under which a specific series of motion can be made or controlled in

advance by calculation.[19] Nature is calculated in advance and "history is historiographically verified as past".[20] They (nature and history) become "set-in-place" [*Gestellen*] such that they become the object of a representing that explains. An object is represented through calculative examining as truth. For the first time in history human beings set themselves into a picture, a "system". The essence of picture is a "standing together" in which the unity is developed out of the projection of the objectivity of whatever is. This was impossible in the Middle Ages because order is created by God. But this is not the case in the modern world.

The essence of modernity as a "godless world" is exemplified in Hölderlin's poetry. In "Hölderlin and the Essence of Poetry", Heidegger's interpretation shows us that we stand between the time the gods have fled and of the god who is coming.[21] In this time of need and expectation Hölderlin, Heidegger tells us, is one of "the rare" few able to think forward to a time when we can once again encounter the truth of being. In contrast to the "great art" of antiquity and of Van Gogh, modern art was in decline; merely a manifestation of instrumental thinking and thus not an expression of truth. It remained with the poets to reveal the world through words. The word [*logos*] in this sense is art or some variant of art. The work of poetry is a work of art. Here poetry and art are part of the hermeneutic project of interpretation that grows out of the recognition of the being of things as covered over by the inauthenticity of *Dasein* in Heidegger's earlier work. For what we soon see in "On the Origin of the Work of Art: First Version" is that art is truth [*alētheia*]. More precisely, art is the "becoming" of truth, the setting to work of the truth of beings, i.e., not a stable idea of perfection. We are, as José Ortega y Gasset maintains, beings that are compelled to make art. Art is a *vital necessity*.[22] This has always been true, but the poetic life is particularly important as a response to instrumental modernity.

[19] AWP, 121.

[20] *Ibid*, 127.

[21] GA 52: *Hölderlins Hymne "Andenken."* Edited by Walter Biemel, 1982; lecture course, 1941–42.*Hölderlin's Hymn "Andenken."* Translated by William McNeill and Julia Ireland, (Bloomington: Indiana University Press, 2014), 128.

[22] Josē Ortega y Gasset, *History as a System* (New York: W.W. Norton & Company, 1941), p. 99.

While Heidegger thinks the poets are especially attuned to revealing truth, he does not limit this possibility to the poets. His sweeping condemnation of modern art was reversed in 1956 when Heidegger was introduced Klee's work. According to Heidegger, Klee is an artist who can reveal a world into which the gods can return, where we are called by the gathering *logos* of being. Just as with his encounter with the poet/philosopher Hölderlin, Heidegger found in the artist/philosopher, Klee, the experience of the work of art itself, challenging the subjectivization of Kantian aesthetics. Heidegger saw in Klee and Hölderlin a renewal of thinking, guided by the elemental tasks of philosophy: a concern with truth, nature, being and becoming, time, language, and image.[23] Klee works in the abstract; his work is bound by the invisible, the negative, or the non-being of the object. This allows his art to simultaneously depict the emergence of the material and the meaningful. Using the medium of graphic art, Klee blurs the distinction between word and image.

This challenges long-standing assumptions about the privilege of the word for thinking. Thus, Heidegger appeals to this artist to rethink traditional metaphysics. Here Heidegger brings technology and the art work face to face, but not in a confrontational way. Rather technology and art drift into a unity. The unity of technology and art is one of gathering [*legein*]. In "*Logos* and Language" Heidegger uses the German word *lesen* (to read) to describe the more original understanding of nature as the "gathering" or "collecting" of beings and how they appear. Instead of setting the word and image apart, artists recognize the complexity of their relation. Schmidt writes "Today it is the crossing of word and image into one another that is coming to be recognized […] Writing is word become image".[24]

Thus, I contend that graphic art is representative of the oscillation between epistemic and poetic thinking and thus an important field of study. Perhaps even more importantly for this thesis, the collapse of the word into image is intimately interwoven with the rise of computer information technologies. Thus, graphic

[23] cf. Schmidt, 2.

[24]It is worth noting that the interest in Klee's work was shared by Adorno, Benjamin, Deleuze, Foucault, Gadamer, Lyotard, Merleau-Ponty and Sartre. As Heidegger explains "Reflection upon art is solely decided out of the question of being". *Ibid,* 4.

design is the paradigmatically modern art. Further, because graphic art defines so much of our public space today in the form of advertisements, social media, video games, and the Internet in general, a rethinking of our relation to graphic design is critical. This thesis closes by beginning this task of investigating the "crossing over" or transcending of the word and image by examining the work of Colm Lally (2012), where the very structure of the word in its empirical aspect becomes a work of art (Chapter 5).

So inspired by Heidegger, the attempt in this present work is to re-traverse the history of our thinking in the West, to de-sediment the false clarity of our hyper-rationalism and to recover possibilities for a richer, more authentic encounter with being that will allow our technologies to open a space for us in the world as a home and not as a cold heap of resources. Heidegger's corpus does not have all the resources that are needed for a full philosophy of technology. In particular he could not have anticipated the powerful allure of easy access to presence offered by information technologies, and this will have to be thought in the light of a critique of the metaphysics of presence. And although Heidegger does offer a general alternative to *enframing* with his turn to a poetry, we will show how computer technologies arising from the logicians of the mid-nineteenth century can produce great works of graphic art that express a return to an *alētheic* notion truth.

Heidegger's turn to poetry, or "poetic metaphysics" in Michael Zimmerman terms, along with the centrality of the history of ideas, justifiably generates strong opposition from philosophers of technology and critical theorists. Chapter 4 offers a more complete account of what I find compelling in a philosophy of technology inspired by Heidegger, but by way of introduction let me offer at least an outline of a response to some major objections to make the project of a "return to Heidegger" seem plausible as something on which to embark.

Objection 1

The first objection comes from the philosophers of technology, specifically Andrew Feenberg who argues that Heidegger *reifies* technology which leads to "essentialism" (Feenberg 1991). On most accounts this objection is rooted in

worries that the attribution of an essential nature to something will determine the possibilities it has at its disposal and thus limit its freedom. Thus a full refutation of this charge will have to address a full theory of causation that can explain the inter-relations of determinism and freedom. This will be more fully explicated in the Chapters 1-4 below. But in brief, we argue here that contrary to the charges of essentialism, Heidegger provides us with a cogent alternative to Cartesian transcendentalism by extending Kant's critique of pure reason into a historic-cultural ontology of being. He does this by re-interpreting Aristotle's causes as *inter*dependent modes of being. By embedding Dasein within a cultural environment and assigning time as the basic structure of being, Heidegger avoids the Aristotelian problematic of defining limits which ultimately end in non-being (Chapter 3). This differs to teleology in the strict sense, which is more broadly associated with determinism. While the core idea of determinism is closely related to the idea of causality, we can have causality without determinism, in particular "soft causality" that follows an uncaused event that is not predictable from prior events. Aristotle called such events [*archē*] - starting points or "fresh starts" – which initiate new causal chains, and thus breaks with the theory of determinism. However, as we will see only a being with an essence, or a "formal cause" can be self-moving, can initiate these causal chains. Thus far from limiting a being, an essence opens up its possibilities. More accurately, it is the limit which sets the thing free. As Heidegger writes, "what comes to a stand and endures in itself thereby emerges forth freely of itself into the necessity of its limit, *peras*. Further, this limit is not something which comes to the being from outside". [25] For Heidegger this freedom is not limited to self-moving animals, but extends to all beings.

Objection 2

Implicit in the objection of determinism is the corresponding political system, National Socialism, which many argue influenced Heidegger's philosophy.[26] The

[25] GA 40: *Einführung in die Metaphysik*. Edited by Petra Jaeger, 1983; lecture course, Summer, 1935; first edition 1953. Heidegger, *An Introduction to Metaphysics,* translated by Ralph Manheim, (New York: Doubleday, 1961), 60. Hereafter IM.

[26] Heidegger has been accused of Nazism which emerged in the "French debate" (2005), which raises two basic questions concerning Heidegger's philosophy and his Nazism: as either contingent, a mere passing moment without particular significance in the evolution of an important

objection arises as to what is operative in Heidegger's analysis of the public sphere, considering the political situation in Germany at that time. This forces us to ask, does Heidegger's involvement with the National Socialist, and the terrible atrocities committed by this party color his entire philosophical system? These questions are being hotly debated since the publication of the *Überlegungen* ("Black Note Books", Spring 2014). The context of his historical situation is clear; Heidegger's philosophical coming of age was impaled between the two World Wars. This debate requires a complete study in itself. As such I will not attempt to enter into the debate here. However, as I understand it, Heidegger's turn to Hölderlin before and during the war was an attempt to break with the predominantly rationalist approach to philosophy. For Hölderlin, unity must be sought within community, spirit, and security (Holderlin 2008, 52). Heidegger later reinscribed this as unity between language, art, and politics. For Heidegger, perhaps this desire led him to the promise of cogency offered by National Socialism.

However, the true horrors of National Socialism lie in another direction. As Karl Jaspers' explains,

> [t]he emergence of European totalitarianism—exemplified by both National Socialism and Communism—was the result of a decline in political humanity and of an increasing primacy of modes of technical or instrumental rationality, which erode the authentic resources of human life. It is the exaltation and supremacy of the human individual and reason over against God or nature.[27]

Heidegger's work shares in Jaspers critique of "technical or instrumental rationality", as seen in *Being and Time* and *Kant and the Problem of Metaphysics*

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thinker, or on the contrary, in a sense necessary, since it provides an interpretive framework for all further debate. Karl Löwith and J.P. Faye, on the one hand, understand Heidegger's encounter with National Socialism as a philosophical framework; Towarnicki and Holger Zaborowsk the editor of Faye's book, on the other hand, see it merely as a fleeting regrettable involvement with no bearing on his philosophy. See Richard Wolin, "The French Debate." *New German Critique*. Pp 135 – 161 http://www.jstor.org/stable/488100. Date accessed, 6/20/201and Karl Löwith, "Les implications politique de la philosophie de l'existence chez Heidegger." *Les Temps Modernes*, November 1946. Reprinted in the *New German Critique.*

[27] Thornhill, Chris, "Karl Jaspers", *The Stanford Encyclopedia of Philosophy* (Spring 2011 Edition), Edward N. Zalta (ed.), URL
= <http://plato.stanford.edu/archives/spr2011/entries/jaspers/>.

and throughout his entire corpus. Heidegger also shares Jaspers belief that it is the very nature of instrumentalism that threatens the dignity of the human person. In the "Question Concerning Technology", Heidegger writes,

> The coming to presence of technology threatens revealing, threatens it with the possibility that all revealing will be consumed in ordering and that everything will present itself only in unconcealedness of standing-reserve. Human activity can never directly counter this danger. Human achievements alone can never banish it. But human reflection can ponder the fact that all saving power must be of a higher essence than what is endangered, thought at the same time kindred to it.

A more complete analysis of the relation between Heidegger's work and his affiliation with the Nazi party lies beyond the scope of this paper, but it is important to note that the aspects of Heidegger that I am interested here are precisely the ways he contributes to a rejection of theories of causal determinism that can lead to totalitarianism, technocratic rationality that can lead to bureaucratic systems in which our tendency to the "banality of evil" [28] goes unchecked by humane questioning, and instrumentalism in which things have value only to the extent that they serve the interests of those with whom we identify. Thus, without minimizing the significance of continuing to think through why Heidegger was drawn to National Socialism, it is the aspects of his thought that are most in opposition to totalitarianism that we are investigating here.

Objection 3

If we assume that every event has a cause, we are bound by the claim that every event can be rationally explained. The theories of thermodynamics, relativity, optics, and evolution are all grounded the explanatory power of such causal determinations. The problem is that if our notion of the rationality of causal accounts becomes reduced to a system of measurements: time gets subsumed into

[28] Hannah Arendt, *Eichmann in Jerusalem: A Report on the Banality of Evil* (London: Penguin Classics, 2006), 252.

the theoretical process. Our understanding of reality then becomes a structure grounded on geometrical space and mathematical formulas where being and time enter into a closed system. This is highly instructive in a systems model such as computer software, but denies any possibility for 'novelty' in the world (Ó Murchadha). [29] Hope becomes an intellectual endeavor, or what Kant calls a regulative principle, but it does not tell us anything about the "world".[30] If we accept such a view, then the turn to Heidegger is pointless.

So, on what grounds should we reject the modern notion of causal determinism in the world as we can now experience it? In a sense that is the project of this entire thesis, and a full account will require following Heidegger in his re-reading of the entire history of philosophical thinking about the possibility of knowledge (categories) and the possibility of change (causality) and the connection between the two, with particular attention to the work of Aristotle. However, as an appeal to the plausibility of the project perhaps it will be enough, here, to appeal to the work of Peirce, a thinker from a different tradition, namely American Pragmatism, who independently argues that overcoming determinism is possible by thinking the principle of spontaneity as grounded in the Aristotelian notion of chance (Peirce 1992 (1878)). This idea was later developed by Peirce as *synechism*, a theory that continuity is of prime importance in philosophy. His efforts to show that continuity fundamentally has no gaps while at the same time is open to spontaneous emergent developments, marks Peirce's ground breaking work in Process Philosophy (Peirce 1992 (1892)). This appeal to Peirce gives some independent plausibility for at least taking Heidegger's project seriously, but it is also of more than merely introductory value. Peirce and Heidegger share important

[29] Novelty is borrowed from Ó Murchadha as not something entirely new but as a reference to a specific relation to the past, a "renewal." We think of evolution as a renewal, rather than something radically different, or novel. He writes "While the 'rupture' of birth establishes a continuity through the renewal of humanity in its dis-continuity, understood as metamorphic transformation confronts the present with the alienation of the past, which resists all attempts at integration." Dasein must engage in the past from which it was born from. It is like the process of metamorphosis: what arrives is from the present is other than the past but the past lingers in the present. It is in a word, "dis-continued." Felix Ó Murchadha *The Time of Revolution Kairos and Chronos in Heidegger* (London: Bloomsbury, 2013), p. 123. See also Gadamer's *Truth and Method*. Novelty is an "abstract difference" between concept and object but is nothing new.

[30] See CPR, 964 2§. A distinction between 'regulative" and "constitutive" principles, the principles underlying all analogies of experience. Regulative principles are relational and hence indeterminate, constitutive principles are axiomatic and anticipatory and are concerned with constructing a reality.

commonalities, and we will continue to appeal to Peirce throughout the thesis to clarify and support Heidegger's claims. Both thinkers reject atomistic conceptions of reality and epistemological foundations by engaging in Aristotelian/Kantian temporality. Furthermore, Peirce's idea that reality is a kind of *tendency* exhibits a fundamental affinity with Heidegger's *potentiality* thesis. However, while both break with the teleology of perfected ends as laid out by Aristotle, Peirce synechism accepts the fundamental principles of Aristotelian succession and chance events, whereas Heidegger's *ecstases* rejects the Aristotelian/Kantian thesis of succession entirely. Our reading of Heidegger and Peirce together also further supports the importance of a history of ideas for understanding technology, for both see instrumentalist views emerging from the interrelation of scientific progress, mathematics, and logic.

So an important turning point in our story will be when Galileo introduced the laws of dynamics that led, necessarily to the concepts of Force and Law, giving rise to the doctrine that all phenomena of the physical universe are to be explained upon mechanical principles and are related to calculus and (eventually) probability. Heidegger's objection to such a formalization is that our understanding of the world becomes reductive and disconnected from questions of meaning. To overcome the subjectivizing of time Heidegger, following William Dilthey, develops a "life philosophy" and in *Being and Time* (1927) fully works out his own version of what we can call "pragmatism", to highlight the affinities with Peirce. Heidegger's view is grounded in analysis of our existential relations in an attempt to overcome our historical tendency to abstract ourselves from reality using reason and to return our philosophical thinking to our pre-reflective engagement in the environment.

This does not mean a desire for pure unmediated contact with reality, a condition that would preclude any truth or meaning whatsoever. Our primordial understanding of reality however is mediated not by abstract concepts, but by tools. Using tools, what I call *tinkering* (Chapter 4), is a primordial mode of being-in-the-world. Likewise for Heidegger production of works is a basic mode of being. As tinkers we are always already involved in the world prior to knowing: We are fundamentally technological beings, or as Don Ihde argues we are *embodied* beings (Ihde 2002). As tinkers human beings are already predisposed to a hyper existence

where, to use Ihde's term, *technofantasies* are a condition of experience. The difference for Ihde is that these forms of experience function like fiction, and thus can never be understood independent of reality. This leads to a sub-thesis outlined in Chapter 4 where we argue that as technological beings we have the power to predict, with some degree of accuracy, the consequences of particular technologies. As such the context of the social and political are already inscribed into technologies prior to their production. This is not denying the multistability inherent in technologies (Ihde) but rather is it to affirm the major thesis of this work, that technology is not instrumental but rather an orientation to the world. As such, and in accordance with Feenberg, technical design ought not be an exclusively a technical project but one that includes a broad range of disciplines, in particular the artist who, as Heidegger so eloquently spoke of, have the eye to see truth.

Methodology and Literature Review

Hermeneutic Phenomenology

If the subject matter in this thesis is our relation to technology as that relation has been shaped by the history of metaphysics, the method is phenomenological, or more accurately a hermeneutic or existential phenomenology. Our potential to deal *simultaneously* with the specific and the mutable, on one hand, and the ideal and the universal, on the other, has been described by phenomenology as the most significant characteristic of human perception, as the very condition of meaning revealed in the immediacy of the world-as-lived. We do not invent categories and deduce meanings through some kind of a *priori* intellect or operation. Primarily we are capable of perceiving the ideal in the specific. This ability to constitute an object is called "categorical intuition" [31] and is the single most significant breakthrough of Husserl's, according to Heidegger. Robert Sokolowski explains this as the "kind of intending that articulates states of affairs and proposition, the kind that functions when we predicate, relate, collect, and introduce logical operations into what we experience" (Sokolowski 2000, 88). These are *signitive*

[31] HCT, §6, pp 47-72. GA: 63-98.

intentions, and are associated with the syntax of words and how they are operative within language. It is only through our use of language that the act of identification is fulfilled. [32] It could be said, therefore, that the world is given with meaning and that the meanings discovered in other universes of discourse, i.e. science, art, philosophy, or technology, must be regarded as rooted in the primary realm of experience, in our irreducible encounter with the real. The world, according to Husserl, is given to human beings as a collection of "intentional objects", meaning that these are permanently open to both their individual specificity and their ideal essence.

Husserl's phenomenology is the study of what appears to us, to our consciousness. He sees this method as an antidote to the widespread 'psychologism' of the time, specifically in philosophy, logic, and mathematics, which he condemned in *Logical Investigations* (1901).[33] His method is rooted in the fact that consciousness is generally intentional. Consciousness is consciousness *of* something; mind is directed towards objects under some aspect. Like Descartes, Husserl urges us to suspend the "natural attitude", belief in the external world of the sciences, mathematics, even logic, and focus on one's own ego. This suspension of belief, the *epochè,* results in transcendental reduction. In his later work, in particular *Crises of the European Sciences*, Husserl turns to the notion of life-world or *Lebenswelt.* He claims that scientific and mathematical abstraction has roots in the prescientific world, the world in which we live. This world has its own structures of appearance, identification, evidence and truth, and the scientific world is established on this basis. The sense of the scientific world and its entities should not be placed in opposition to the life-world but should be shown, by phenomenological analysis, to be a development of appearances found in it.

Heidegger gives an account of the two constituents of phenomenology in *Being and Time*: *Phainomenonia* and *Logos*.[34] *Phainomenonia* is "what shows

[32] *Ibid*, 50.

[33] "[T]he task of phenomenology would be to describe the activity of intending consciousness [*noesis*], as well as the "intentional correlate or thing intended [*noema*] found in consciousness." Edmund Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy*, (The Hague, Doston, Lancaster, 1983), p. 4.

[34] BT, 28ff; cf.xx, 110ff cited by Michael Inwood A Heidegger Dictionary (Massachusetts: Blackwell Publishers Ltd., 1999), p.159.

itself in itself". It is distinct from "semblance [*Schein*]" and "appearance (*Erscheinung*, literally 'shining forth')". Something may show itself without being the appearance of anything that does not show itself. The Greek *logos* primarily mean "making manifest" and the root-verb, *legein*, to lay, arrange, gather, talk, etc., is primarily to make manifest, reveal. Hence, *logos* means "talk, discourse [*Rede*]", since talk reveals what is talked about. It is also *logos* that reveals something *as* something; it has the structure of "synthesis". Saying that A is B, that is, can be true or false by presenting something as it is or as what it is not. In this convergence, phenomenology means to let what shows itself [the *phainomenon*] be seen [-*phainestha*i].[35]

While Husserl's notion of intentionality was extremely influential on Heidegger, he maintained that only *mind* is intentional, and this claim is importantly qualified by Heidegger in *Being and Time* (1927). In this work, Heidegger breaks with the concept of intentionality and in 1928 speaks instead of 'transcendence'[36] developing an account of transcendence in terms of skillful coping that is social, norm-bound, engaged, and contextualised in an embodied being. At work here is a generational turn to questions of existential philosophy that marked many of Husserl's students. But also at work is the important influence of Franz Brentano's book *On the Manifold Meaning of Being in Aristotle* that Heidegger read at an early age and that marked him with an interest in Aristotle and questions of being for the rest of his life. In Heidegger's *hermeneutical or existential phenomenology* in *Being and Time* he claims to be doing ontology by rooting the question of what we can *know* in the prior question of what we *are*. However, the question of what we are is phenomenological not metaphysical for it remains rooted in a careful analysis of the structures immanent to experience (BT, §7). According to Heidegger, an ontological approach to phenomenology is

[35] *BT*, 29/25. See also, Palmer, 127-130.

[36] Transcendence means "surpassing". "Formally speaking, surpassing may be grasped as a "relation" that passes "from" something "to" something. To surpassing there belongs that *towards which* such surpassing occurs, that which is usually, thought inaccurately, called the "transcendent." And finally, there is in each case *something* that is surpassed in this surpassing. These moments are taken from a "spatial" occurrence to which the expression "transcendence" initially refers." For Heidegger, transcendence constitutes selfhood, that is, what Dasein is and is not. It means for Heidegger being-in-th-world. GA 9: 123–175, "Vom Wesen des Grundes (1929)" = "On the Essence of Ground (1929)," translated by William McNeill, 97–135, p.107-8.

necessary because the philosophical tradition since Plato has concerned itself with epistemological issues, that is, with explaining *how* the world is, and in so doing, has overlooked the most fundamental fact regarding the world, *viz*. that it *is*. In *Basic Problems of Phenomenology*, Heidegger outlines the difference between his phenomenology and that of Husserl's with respect to their differing interpretations of the phenomenological reduction. Heidegger's project is an attempt at redressing the balance; more precisely, he argues for the priority of ontology over epistemology and thus existential phenomenology over both Husserlian phenomenology and traditional metaphysics.

Thus the turn to hermeneutics is intimately interwoven with the question of being. In *Hermeneutics* Palmer argues that ontology, as the phenomenology of being, must become a "hermeneutic of existence" (R. E. Palmer 1969). Etymologically "hermeneutics" is derived from the Greek verb *hermēneuein*, generally translated as "to interpret", and the noun *hērmēneia,* "interpretation". Palmer tells us that *hermeios* refers to the priest at the Delphic oracle, the messenger of the Greek gods. Hermes is associated with the function or process of transmitting the unintelligible into a form that human understanding can grasp. The threefold significance of meaning associated with hermeneutics are: "to say", "to explain", and "to translate". As originally defined by Schleiermacher, the Protestant theologian and Plato scholar, hermeneutics referred to that discipline concerned with the systematic interpretation of speech and (sacred) text.[37] However, the meaning of the term was extended by Dilthey to refer to the interpretation of all human behavior and products, in his categories of life. Heidegger extends this notion of hermeneutics to refer to the interpretation of "facticity" of our own Dasein.[38] In a decisive move away from phenomenology, Heidegger carves out a new approach to thinking of the nature of being; being as it discloses itself in lived experience escapes the conceptualizing, spatializing, and atemporal categories of idea-centered thinking. In opposition to the transcendental subjectivity of Husserl's phenomenology and the neo-Kantian Marburg school, Heidegger proposes a hermeneutical ontology. It is the philosophical task of each

[37] Richard E. Palmer, *Hermeneutics Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer* (Indiana: Northwestern University Press 1969), 12.

[38] BT, §7, c.

Dasein to interpret itself *as* itself. Because we are thrown into the world, we must interpret ourselves accordingly.

It is in light of this that Heidegger revisits Aristotle's metaphysics in his 1921/22 lectures courses on Aristotle.[39] In "The Environmental Experience", and "Indication of the Hermeneutical Situation", we see that Heidegger's early philosophy is grounded in an interweaving of phenomenology and an existential hermeneutics. While it is the philosophical task of each Dasein to interpret itself as itself, Dasein does not always interpret itself authentically. Dasein speaks of itself, but this self is often only a mask derived from the 'they' that it holds before itself as a cover and protection from authentic engagement. Thus, experience is distorted and covered over by one's own inauthentic existence. For Heidegger, this means interpretation must *over-illuminate* its thematic object: "An object that is only ever viewed in half-darkness becomes graspable precisely in its half-dark givenness only by passing through an over-illumination".[40] However, this does not mean that interpretation is an opening onto the purely "in-itself". To objectify being leads to relativism, a problem Heidegger identifies as marring the two great successors to Aristotelian philosophy: Kant's transcendental idealism on the one hand and neo-Scholastic theology on the other. Hence, we need to return to the primordial sources according to a "*radical phenomenological anthropology*" that is a return to the doctrine of being first formulated by Parmenides.[41]

This basic motif of phenomenology's revelation of the unity of being will develop into Heidegger's conception of world-projection, seen clearly in *Being and Time* and "The Projection of Being in Science and Art". The essence of Dasein is

[39] GA 61: *Phänomenologische Interpretationen zu Aristoteles. Einführung in die phänomenologische Forschung*. Edited by Walter Bröcker and Käte Bröcker-Oltmanns, 1985; lecture course, Winter, 1921–22.*Phenomenological Interpretations of Aristotle: Initiation into Phenomenological Research*. Translated by Richard Rojcewicz. Bloomington: Indiana University Press, 2001. Hereafter PIA.

[40] GA 62: 345–375, "Phänomenologische Interpretationen zu Aristoteles (Anzeige der hermeneutischen Situation). Ausarbeitung für die Marburger und die Göttinger Philosophische Fakultät (Herbst 1922)" or "Indication of the Hermeneutical Situation," translated by Michael Baur, revised Jerome Veith. In *The Heidegger Reader*, edited by Günter Figal, 38–61. Bloomington: Indiana University Press, 2009. P. 58/59. See also, "Phenomenological Interpretations with Respect to Aristotle: Indication of the Hermeneutical Situation," edited and translated by Theodore Kisiel, *Becoming Heidegger*, edited by Theodore Kisiel and Thomas Sheehan. Evanston, IL: Northwestern University Press, 2007, 155–174.

[41] Figal, 58.

to make possible.[42] Only that being that "understands," can make a thing possible, because understanding is a projection into the future (Ó Murchadaha 2013, 25). Dasein *perdures* between its birth and its death as a being-toward-the-end".[43] Within the range between life and death there are infinite potentialities, including "the possibility of being free for [my] ownmost potentiality of being".[44]

An objection might arise with the physicists whose distinction between endurant and perdurant time is one between three-dimensional and four-dimensional Newtonian space and time. Physicist's[45] notion of perdurant time admits of various different temporal parts of the body, enduring *in* time. This absolute frame of reference must exist for Newton, because his theory of motion depends on it. His first law of motion states that an object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force (Newton 1864, 6). As John Taylor explains, "Inertial motion is motion at a constant velocity in a straight line…Motion is always motion *with respect to something else*" (Taylor 2001, 208). For Newton, this "something" is absolute space and time. According to Newton, "Absolute time of itself, and from its own nature, flow equably without relation to anything external, and by another name is called duration" (Newton 1864). Time is external and independent of any causal force. But this concept of time was sharply opposed by Gottfreid Leibniz. Leibniz's *relationalist* concept of time and space states that "Time does only co-exist with creatures, and is only conceived by the order and quantity of their changes" (L.V. 55). The Leibnizian universe is governed by two philosophical laws: The Principle of Sufficient Reason, and the Identity of Indiscernibles, which is a derivative of the first. In *Being and Event* Badiou offers a simple definition of the principle of indiscernibles: there cannot exist two things whose difference cannot be marked. Language assumes the role of

[42] BT, 135/144.
[43] BT, 373/342.
[44] *Ibid*.
[45] According to Heidegger the ssciences are just founded on the prevailing currents of traditions. See GA 20: *Prolegomena zur Geschichte des Zeitbegriffs*. Edited by Petra Jaeger, 1979; lecture course, Summer 1925. *History of the Concept of Time: Prolegomena*. Translated by Theodore Kisiel. Bloomington, Indiana: Indiana University Press, 1985 pp. 3-4. For example the theory of relativity was first developed not by Einstein by H.A. Lorentz and others only later in 1905 reinterpreted by Einstein and again in 1908 by Hermann Minkowski with his theory of 4-dimensional space, see in particular Eger, 'Hermeneutics and Science Education: An Introduction', 1992b.

a law of being insofar as it will hold as identical whatever it cannot distinguish (Badiou 2005, 282-283). In other words, not only is time relational, it is tied to a formal understanding of the ideality of being.

So, we see how debates about the nature of time align perfectly, and perhaps in important ways inform, early modern metaphysics and epistemology. And in the philosophy of time, like so much else, it remains to Kant to find a way to bridge the gap between the rationalists and absolutist/empiricists. Against the rationalist and absolutist conceptions of time and space represented by Leibniz and Newton, Kant argued that space and time are neither simply *real* nor simply *ideal*. But a third alternative: the forms imposed on experience by the human mind. This is Kant's Transcendental Aesthetic in the *Critique of Pure Reason*, which argues that space and time are conditions of our sensibility – the pure forms of intuition – and at the same time necessary conditions of the possibility of experience. "We can extract clear concepts of them", he says, "only because we have put them into experience, and because experience is thus itself brought about only by this means".[46] Time is a way of bringing nature into our own cognitive grasp. We tie it to efficient causality then deduce scientific laws by means of which we understand and interpret the processes of change that seem to describe the natural world so that we can conform to its requirements as we function within it. While we can only vaguely perceive our future, it is necessary to use our knowledge of past and future causal processes of the physical world around us to anticipate future outcomes, allowing us to inculcate our decision making capacity and our ability to project our own willful decisions onto a future, beyond which all human knowledge is impossible.

Contemporary Philosophy of Technology and the Social Sciences

Human beings develop technologies arising from this ability to project onto a future a creative and rational imagination. This ability is constitutive of our humanity; however, it enters in a new level of efficacy with the rise of computer

[46] Immanuel Kant, *Critique of Pure Reason*, trans., Norman Kemp Smith (London: Macmillan, 1990), A196/B241.

technologies, which are made possible by the formal mathematics of the nineteenth century, which in turn are rooted in Kantian epistemology. What we take from Heidegger is a return to the question of being to remind us of what is lost in this transition, a worldview that does not treat nature as a standing reserve. However, we must turn to the more contemporary thinkers in order to draw this general orientation into the orbit of economics, sociology, and politics (Feenberg, 1999, Baudrillard, 1994, Borgmann, 1999, Ihde, 2002, Zimmerman, 1990). Andrew Feenberg in his work *Democratizing Technology* (2006), calls for a political review of technology.[47] His critical theory of technology extends Marx's critical theory of economics to include technology.[48] On this view, it is the job of a philosophy of technology to prevent the design of new technologies from being left to technicians and instead to open the design process to the proletariat, including workers, users, philosophers, sociologists, and psychologists. Feenberg argues this in light of his carefully crafted quadrilateral theory of technology advanced in *Questioning Technology* (1999), a work directly confronting "The Question Concerning Technology" in which he criticises Heidgger's essentialism.

This theory is fundamental to determinism and substantivism. These are two of the four broad theories in the philosophy of technology that Feenberg outlines in this work. The other two include instrumentalism and critical theory. [49] Taken in the broadest sense, substantivism rests within the modernist tradition, most notably associated with Heidegger and Jacques Ellul.[50] The substantivist posits an autonomous force underlying technology that embodies specific values, such that the tools we use determine our way of life. Technological development, therefore, transforms what it means to be a human. Feenberg identifies this with essentialism because it interprets a historically specific phenomenon in terms of a "transhistorical conceptual construction" (Feenberg 1999, 15). Technical action is an abstract concept that is autonomous and unilateral: means and ends are linked in a system which unifies the movement from premodern technology to modern

[47] Cf. Andrew Feenberg ed., *Technological Democracy* (New York: Sony Press, 2006).

[48]See Feenberg, *Critical Theory of Technology* (New York; Oxford: Oxford University Press, 1991) and also *Questioning Technology* (London, New York: Routledge, 1999).

[49] See Andrew Feenberg, *Questioning Technology*, for a detailed description of his four theories of technology including critical theory and determinism. In 2012 Don Ihde included instrumentaliszation as a variant of instrumentalism to extend the theory to include a political dimension to technology.

[50] Ellul is also sometimes categorized with Ihde as an instrumentalist.

technology. This unilineal character of technology has its origin in a capitulation to determinism.

Determinism emerges out of the idea of progress and evolution in the social and biological science of Marx and Darwin, stimulated by the publication of Darwin's *Origin of the Species* (1859). In this work, Darwin challenges the traditional essentialist explanation of diversity with a scientific, existentialist one. The new theory claims that diversification of life at any given moment, and the emergence of novel living forms throughout time, is the result of an evolutionary process. This has been developed by ecophilosopher Bernard Stiegler in *Technics And Time, 1 The Fault of Epimetheus* where he suggests we can account for the diversity of life by means of "reproductive variability and natural selection,"[51] "organic evolution,"[52] and "adaptation".[53]There are three stages in the evolutionary theory roughly outlined here (i) the environment selects random changes that are preserved though fitness, adaptation, and efficiency; (ii) human beings change the environment in increasingly dramatic ways, beginning 150,000 years ago when humanity emerged in its fully modern form with art and ritual, and in increasingly dramatic ways with the rise of agrarian society (circa 13,000-10,000 years ago), industrial society (300 – 100 years ago), and scientific society (1900 – 1930s); and finally (iii) with evolution by design or "intentional design", we consciously choose the ways to change our own DNA.[54]

The first two stages, pre-human evolution and changes in humanity up to the present time, are considered evidence of hard determinism, where material

[51] George C. Williams, *Adaptation and Natural Selection: A Critique of Some Current Evolutionary Thought,* Princeton University Press, 1966; Richard Dawkins, Dawkins R. (1989). The *Selfish Gene.* Oxford University Press: New York (1976).

[52] Basalla, 1988.

[53] Bernard Stiegler, *Technics And Time, 1 The Fault of Epimetheus*, eds., Werner Hamacher and David E. Wellbery. Trans. Richard Beardsworth and George Collins (California: Stanford University Press, 1998). Originally published in France in 1994.

[54] Lawrence Wood, *Evolution and the Future of Mankind*, , pp 208-215. There is no conclusive evidence to suggest that tinkering was a survival mechanism. Indeed, it is most likely that curiosity is the inspiration for most inventions. For example, the taxonomy of Homo sapien sapiens relies on basic criteria such as language, dexterity, and bipeidalism. According to Bernard Wood, all of these criteria had to be misplaced in order to classify *Homo habilis* amongst the *Homo* taxonomy. Further, *Homo antecessor* or *heidelbergensis*, which are generally accepted as our ancestors, cannot be easily classified as *Homo* because as Collard and Wood argue "some of the criteria are difficult, if not impossible to determine from fossil record." Much of the evidence of "early man" is based on cranium size and at best has questionable biological significance. (Wood and Collard, p.145.

changes brought changes in a completely independent way. The latter, changes brought about by genetic engineering, are explained by advocates of the instrumentalist principle, or soft determinism, a theory which agrees with some degree of material autonomy but also makes some room for human choice to effect the outcome. This type of technocratic determinism (in either its hard or soft form) has begun to shape our new political and social landscape, a landscape that nurtures control, efficiency, and domination based on a liberal faith in progress. Feenberg believes that Heidegger's essentialism, against his own intent, contributes to this troubling contemporary trend, for essentialism levels all technology to abstraction, and Heidegger's "reification" or "thingifying" of technology leads to essentialism. Reification is the sedimentation of an object that denies the dynamic process of that object. Originally Georg Lukács referred to it as "the structural process whereby the commodity form permeates life in capitalist society". Lukács was especially concerned with how reification makes human beings "seem like mere things obeying the inexorable laws of the marketplace" (Zuidervaart 1991, 76).[55] Feenberg sees Heidegger's search for essences in old and new technologies as reifying, the earlier form as *poiēsi*s, and the latter *enframing*.

I argue that Heidegger is neither and essentialist in the strong sense nor deterministic. This thesis will argued, on the contrary, that for inherent in Heidegger's analysis of technology is an immanent movement or process that transcends the self in technology, in other words in the working out of a culture. There are, for Heidegger, two ways that truth has presented itself historically: through logic or through poetry. This becomes manifest in our technologies as either technology grounded in *alētheia* or the rationalists approach to truth as verification. For Heidegger, in either case there is a multistability in technologies that is not determined. So even its stable element i.e., its essence is both natural and artificial, might very well change, the more autonomous technologies become.

This argument is taken up by Ihde who argues that because modern technologies are radically different to traditional technologies, they require a different philosophical methodology to understand them. He is also critical of the

[55] The theory of reification was proposed by the Hungarian socialist Georg Lukács in the 1920s and from interdisciplinary projects and debates conducted by members of the Institute of Social Research in the 1930s and 1940s. See Feenberg (1999), 162.

work of phenomenology on these grounds, in particular Heidegger who, he argues, falls back into the illusion of the old metaphysics of presence. He argues that the modernist project adheres to the illusion of an ultimate truth and an absolute language, which ultimately leads to the illusion of an essential reality. Thus, Ihde agrees with Feenberg's general charges of essentialism but for different reasons, and his solution points us in a different direction. As instrumentally embodied beings we can no longer think of humanity as pre-reflective without technology; the natural attitude is already predisposed through technology. For Ihde, our existential being in the world is embodied, not just as instruments standing out there as part of the lived experience, but as fully immersed in the technical body. Thus, by naming postphenomenology, he constitutes it as a new cultural paradigm by differentiating itself from phenomenology; it is the difference between stability and multistability that is overlooked by both Husserl and Heidegger. The structure of technologies is, as Ihde states, "multistable",[56] within which lie "determined trajectories".[57] It is the task of the philosopher to understand these trajectories and to adapt technical design to ethical norms. Thus the primary job of the philosophy of technology, according to Ihde, is neither ontology (Heidegger) nor critical philosophy (Feenberg and Winner), but a careful analysis of particular technologies.

An implication of the claim of this thesis is that Heidegger is already deeply attuned to the notion of multistability. He clearly recognizes the contingency of beings and the excess of possibility over actuality in the indeterminacy of things. Further, I believe a Heideggerian analysis of technology must supplement a post-phenomenological one for in its attempt to overcome the subject-object divide, the latter sometimes fails to recognize the important distinction between human beings and machines. Maintaining this distinction, not as a subject-object relation but as a form of mediation, Heidegger alerts us to the hidden rationality inherent in the machine, and even its possibility as a distorting medium's potential to be unfaithful to things.[58] Distortion is the most dangerous of the tripartite structure of

[56] Don Ihde, *Bodies in Technology (*Minneapolis: University of Minnesota Press, 2002), p. 106.

[57] Andrew Feenberg, 'Active and Passive Bodies: Comments on Don Ihde's *Bodies in Technology' in* Techné*: Research in Philosophy and Technology* 2003.

[58] *BT*. Section 7C

concealedness. Thus our analysis of technology must include asking the question of truth or faithfulness as we attempt to engage in less distorting relations to reality. This is one of the most important things that a Heideggerian analysis brings to a contemporary discourse so ill prepared to talk about truth. As we see below this applies to notions of the hyper-real that recognize distortion but lack the grounds to evaluatively compare it.

Ontology of Technology

Paradoxically democratization, postphenomenology, and hyperreality, in their endeavor to protect the dignity of human beings by collapsing gender and cultural distinctions, end up collapsing *all* distinctions including time, space, technology, science, art and politics, leaving a one-dimensional structure to reality and by so doing undermine their own project. Heidegger offers us a way out of this conundrum. He firstly gives an account of the two constituents of phenomenology: *Phainomenonia* and *logos*,[59] and then gives us an extended doxography of time as an "event", particularly in *Time and Being*, where event (appropriation) is the event of being. This understanding of reason as *logos* allows us to overcome the reification of the subject as well as the abstraction of truth from lived experience to the transcendental realm, *without* collapsing the distinction between being and beings, thus leaving open a tension for thinking the emergence of truth as *alētheia* worked out in his essay 'On the Origin of a Work of Art' where he sets apart his ontology over against modern subjectivism and roots it in *poiēsis.* Here Heidegger gives us two ways of thinking about the work of art; one a complex social structure that cultivates the most ideal image of humanity, the other a subjective value-laden cognitive process. Public art or "magnificent art" refers to the shared values and convictions of a culture. By contrast, fine art focuses exclusively on subjective experiences where art is understood as an act of individual and autonomous expression. History is built on pictures [*Bild*].[60] Pictures function to form a culture

[59] Martin Heidegger, *Being and Time* (28ff; cf.xx, 110ff.) cited by Michael Inwood *A Heidegger Dictionary* (Massachusetts: Blackwell Publishers Ltd., 1999), p.159.

[60] In German, the word for "form", *Bild*, is associated more with a picture, according to Gadamer in *Truth and Method.* Thus when Gadamer is speaking of "culture" [*Bildung*] he is not merely talking about universal structures but the formation of persons. As Joel Weinsheimer writes in the Introduction: "Cultivation is a process of "forming" the self in accordance with an ideal "image" of the human. Art [has] a general capacity to form "images" of representation of experience [*erlebnis*]" (*Truth and Method*, xii). Similarly, when Jacques Ellul writes in *The Technological*

[*Bildung*]. Culture, therefore, is dependent on art to reveal the rich tapestry of a society. In the age of Antiquity the most ideal image of humanity presents its form in the image of Athena. By way of contrast modern art, arguably beginning with Plato, becomes a subjective experience.[61] In Plato, behind the temporal embodiment of a work of art there is an absolute form of beauty that can only be known, if at all, by subjective intelligibility. Art no longer functions in society as a shining forth of a people but rather as a private act of contemplation. This does not get completely worked out until Kant, for even in Western Europe prior to the Baroque period public art shares the exuberance of a common spirit seen during the Middle Ages and later by Renaissance frescos. Beyond the Enlightenment, however, public art recedes into the private sphere.

In a unique way this thesis will show how graphic design straddles these two worlds creating a tension between art's practical function and its aesthetic character, embodying an ontological conception of technology. Graphic art has an ambiguous nature. On the one hand it can be thought of as technical skill along with technical drawing, mechanical drawing, and computer programming, functioning as an interface for information technologies. Under this view, graphic art with its claim to rationality, yields to utility and occupies the realm of *petty art*. For example, Walter Benjamin distinguishes between painting and graphic art as one of vertical and horizontal metaphysics. Painting is vertical with an elevated sense of truth, while graphic art as hieroglyphics, writing, and graphics are largely viewed horizontally (Benjamin, 1917).[62]

This distinction of fine art and graphic art and the elevation of the former over the latter has certainly been operative in recent times. However, graphic art has an ancient history, and it has not always held such a subordinate position. Since

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Society, that *Homo sapiens* developed techniques as both the *Homo faber* – man the maker- and that of a spiritual or magic maker, [60] he evokes a sense of the fixing in place of a certain way of being with technology. Heidegger later develops the notion that technology, with its essence *technē*, is a "site" in which the world, including the earth and skies, the divinities and the mortals, can dwell.

[61] NI, 80.

[62] Walter Benjamin, *The Work of Art in the Age of its Technological Reproducibility.* Edited by Michael W Jennings, Brigid Doherty and Thomas Y Levin. Translated by Edmund Jephcott, Rodney Livingstone, Howard Eiland and Others. (Cambridge, London: The Belknap Press of Harvard University Press 2008), 219.

its discovery in 1940, the simple and yet undeniably artistically stunning Lascaux drawings have been used to persuasively critique both graphic art and fine art, calling us to reconsider the distinction between the two. Clearly, they exhibit personal artistic creativity and provoke an aesthetic feeling in the viewer, yet the images also use a minimum of strokes to point the viewer to important truths about the common world of the people who created it.

By late modernity, this ability to convey information and the occasioning of aesthetic experience had become unzipped. This becomes particularly pernicious in an age when new technologies are changing our experience of public space. Today we might think of the public space as dominated by parks and sculptures, but increasingly it is embodied by Internet technologies. I argue that today the Internet is the dominant public space. That means that we cannot leave the Internet to be molded by markets and corporations. This space must be informed by philosophical thinking. Thus in my view the most important contemporary art is graphic design, which fuses both poetic and representational thinking, producing a space that merges both modern and premodern art.

Fortunately, there are pioneering artists who have begun this project. As we saw above, Heidegger found in the work of Paul Klee one such pioneer in the reintegration of word and image. Klee exemplifies the technology that this thesis has been concerned with, i.e., art that is specifically designed for computer generated images.

Drawing out the ambiguity of graphic art as both public meaning and aesthetic contemplation, and the ability of this tension to collapse, might help to explain why a magnificent work of art like the Athena in the Acropolis is altogether different to more recent animated designs of Greek gods and goddesses that are found in video games today. In the video game, *The King of Fighters*, Athena who was once the perfect embodiment of truth, is devolved into the idealized sexual embodiment of a preadolescent child. The shift of thinking about Athena from a goddess of truth to an erotic child exemplifies the current consciousness of humanity set-in-place by thinking of graphic design as merely instrumental.

But this does not have to be the case. “Fine artists” such as Klee and Franz Marc from the late 19th and early 20th century have been drawn to the possibilities of artistic expression in the simple lines of graphic art, and graphic designers have recently become interested in the possibilities for artistic expression opened by computer technologies. In this thesis we will look at Colm Lally as an example of a graphic designer who is able to open a realm where beings perdure but in such a way that it is not merely through the use of technical skill, tools, and materials. His piece, *Conquest of the World as Image*, shares with Klee and Marc the power to collapse the distinction between word and image, showing how, contrary to its instrumental recent history, graphic design can be a disclosure of *alētheia*. The merging, or *bleeding*, of utility and aesthetics, word and image, petty *technē* and great *technē*, object and subject, culminates in this work. Accordingly, as *technē*, graphic design raises above its technical character. In so doing it can be thought of as at least speculatively, with a view to changing world views. In this way graphic art is public art. By way of its very methodology, which once denigrated it, graphic design/art can become, in dialogue with philosophical thinking, a culturally and historically privileged medium for exemplifying the inner movement of reason and *poiēsis*. Thus, this thesis concludes that the ontological character of technology is the gathering which brings together the potentiality of being and non-being in the *alētheic* character of art as perduring within the technological consciousness of humanity as exemplified in great works of graphic art, as can be exemplified in graphic art.

Outline of Chapters

This thesis begins with an investigation of Aristotle’s ontology, reinterpreted by Heidegger as a hermeneutic phenomenology. This explication uncovers the three-fold *alētheic* structure of the presencing of beings as a unity (Category of Substance/ Chapter 1), as the movement from potentiality to actuality (Causality/Chapter 2), and as a process of becoming (Time/Chapter 3). This provides the ground for understanding the strengths but also limitations in

contemporary philosophy of technology (Chapter 4) and prepares the way for a more fruitful understanding of technology as a form of art (Chapter 5).

Chapter 1 investigates beings through the traditional philosophical language of the categories, in particular the Aristotelian notion of substance as the unifying category of being. However, in returning to Aristotle it follows Heidegger in attempting to overcome the metaphysical interpretation of substance that dominates the metaphysical tradition. This means first of all following the historical trajectory by which Albert the Great and his followers recovered an authentic Aristotelian notion of the immanence of form and thus the basis for an understanding of knowledge as rooted in empirical experience against the Platonic notion of a transcendent *eidos* and an understanding of knowledge as rooted in *a priori* truths. Second this means re-interpreting the *logos* that uncovers *ousia,* not as universal and formal reasoning, but as a *poiēsis* rooted in lived experience, or as *legein,* a "gathering" in which things emerge out of our rich lived encounter with them. This finally means that we ought to think of truth as *epistemē* but as a hermeneutic phenomenology in which the interpretations which are made possible by their being embedded in a particular lived situation play a crucial role in the emergence of beings.

Along with understanding a thing's unity, understanding its origin is the other central task for understanding its being. Furthermore, our instrumental understanding of technology has arisen from a metaphysical understanding of the world, which began with Aristotle's production metaphysics. Thus, Chapter 2 follows Heidegger's re-interpretation of Aristotle's theory of causation to discover a more authentic interpretation that underscores the complex interconnectedness of the causes and avoids the tendency of medieval philosophy to a metaphysical reduction to the unmoved mover or a modern scientific reduction of causality to efficient cause. As with the categories, I argue that *gathering or occasioning* is the essence of causality. In this case the gathering is oriented around the relation of potentiality and actuality. As such, following Heidegger, technology is not instrumental but the relatedness between beings and things. Thus our ontology is grounded in *legein* as the ground for the unity of immanent form and the relation between potentiality and actuality.

Thus, in Chapters 1 and 2 we see that an authentic recovery of Aristotle's category of form and his theory of causality, one that is attentive to the poetic nature of *logos* as *legein,* goes a long way in preparing an ontology as the basis for an investigation into technology. However, while existence requires both potency and action, it nonetheless cannot be reduced to these modalities. To differentiate between one being and another requires a boundary condition. Traditionally we think of this in terms of finitude and eternity or being and non-being. Further, it was not an accident of history that the question of causality and the question of the categories come unzipped, the first dominating Medieval philosophy and modern science, the emphasis on causation leading to a forgetting of the relation between truth and human persons, and the second dominating modern transcendental philosophy, the emphasis on the categories of the understanding leading to a failure of thought to reach the things themselves in their real causal interrelations. In Aristotle himself the relation between the conditions for the causality of beings and the conditions or categories of the understanding are not explained. To solve this problem we must integrate an ontologized understanding with a notion of being as *legein* in a hermeneutic ontology. An understanding of the temporality of being is the site of this integration. Thus, Chapter 3 compares the notion of time as outlined by Kant's *transcendental aesthetic* in *The Critique of Pure Reason* and Heidegger's concept of *perdurance,* in *Identity and Difference*. The task arises for both thinkers from the difficulty of accounting for unity in the manifoldness of beings. The emphasis on perdurance, I argue, is a synthesis of Aristotle's Continuity and Kant's Simultaneity already at play in Peirce's notion of *synechism*. This allows Heidegger to unify a theory of the categories of the understanding and a theory of causality in a temporal notion of truth as that which comes to presence and endures for a time in a human community's receptivity to being.

Having grounded the first part of this thesis on an ontology of being, the way has been prepared to turn directly to the question of technology. Chapter 4 begins by drawing out Heidegger's distinction between ancient and modern technology, which we can now accept as a fully worked out theory concerning being and time. However, this chapter shows that if a fruitful philosophy of technology may be inspired by Heidegger, it will also have to expand the resources at its disposal beyond the work Heidegger did to include much more work in the

phenomenological analysis of actual contemporary technologies. In the first place this is because some of Heidegger's critics are right that Heidegger over-looked the significance of the Marburg School, its power and influence. Modern technology generally, and information technology in particular, is shaped by the tendency of positivism to reduce reality to objects present-at-hand. This means that more work needs to be done in linking the mathematical roots of positivism, including Boolean logic, set theory, and probability, to contemporary technologies. If this is not done, Heidegger's endeavor to collapse the distinctions between the subject and object remain disconnected from our actual technologies. Indeed, we need to show how in the new paradigm, perdurance is lost altogether, and in our fascination with presence as that which is present, the act of presencing is forgotten. In the second place, Heidegger's critics are right that a true philosophy of technology must be able to speak to our actual policy decisions and design discussions as outlined by postphenomenology. That this can only be done by without bridging the gap between an ontology of technology and a careful analysis of all the actual technologies that we use or it is proposed that we adopt, seems impossible. We need to take seriously the question of both politics and ethics. Indeed the social implications of technology are already implicit in technologies.

The thesis culminates in an attempt to do this, to use an ontology of technology to engage a contemporary technology, namely graphic art, and to situate this discussion in the light of the advent of information technologies, a development that comes after Heidegger's death. If modern technology is an entry into the human condition's desire for presence, the current chapter explores the possibility for thinking presence in other ways. Crucially, it is the distinction between great works of art and "petty technē" that guard our notions of the "truth" of the work of art from falling back into subjectivism and idealism. Truly great works of art are capable of opening stable, intersubjective, and intergenerational ways of being open to the world that reveal reality in rich and meaningful ways and our responsibility in that process of revelation as the "shepherds of being". Graphic art is a way of re-integrating our contemporary technologies into thoughtful and respectful ways of engaging reality that mark both the goodness of being and the dignity of humanity.

Technology therefore can be understood as a movement of consciousness. Our present orientation towards totalizing technology has been set in place with instrumentalist interpretations of Aristotle that stem from the rupture of the theory of causality and categories. This might seem to suggest a historical determinism to which we are condemned by our cultural history. However, this state of consciousness is, in Heidegger's words, "epochal"; it oscillates not merely between Being and beings, but between a past time and a time to come. Heidegger sees the possibility for a cultural revolution arising from "great art". As a mode of technē, I argue, graphic art can mobilize a new frontier.

1. Chapter One: Ontology

Technology can only be understood ontologically. Conversely our ontologies are molded by our technology. The interrelatedness of ontology and technology can only be understood historically. Brought to prominence in the seventeenth century by Christian Wolff, the term was defined by Wolff's student, Alexander Baumgarten, in his book *Metaphysika,* as the science of the "predicates of being", i.e., of the general predicates for describing what did or does exist or what might have been or might be.[63] At the heart of this question lies the nature of a things "whatness" or essence, and the two towering figures in orienting our thinking about essence are Plato and Aristotle. Aristotle's ontological metaphysics, most notably in his *Physics* and *Metaphysics*, arises in response to problems with the supraintelligibility of Platonic forms.

In accordance with Aristotle, Heidegger claims that ontology, while it is a branch of metaphysics, is not transcendent, nor does it describe a supreme, ontic genus.[64] The difference between this contemporary approach and the classical one derived from Plato, though subtle, has been transformative in philosophy. Epistemologically, both Aristotle and Plato and their respective traditions, begin with reason.[65] The significance of their differences can be summarized, using later

[63] Alexander Gottlieb Baumgarten, *Metaphysica*, 7th ed. (Halle, 1779), Section 1. Cf. *Critiques of Pure Reason*. Examples of such predicates might include, "possible" and "true", "substance" and "accident", and "cause" and "effect." See also Heidegger, IM p. 41. Strictly speaking the term preceded Wolff by about 100 years. See Marion, *On Descartes' Metaphysical Prism*, pp. 27-8. While the etymology is Greek, the oldest extant record of the word itself is the Latin form *ontologia*, which appeared in 1661, in the work *Ogdoas Scholastica* by Jacob Lorhard and again in 1631 in the *Lexicon philosophicum* by Rudolf Goclenius. Goclenuis used ontology in the limited sense as an abstract study of physical entities, rather than the Heideggerian sense of the general study of being which is closer to the Aristotelian sense of the word. "Ontology" as recorded in the Oxford English Dictionary from a 1721 source (OED) claims it is "an Account of being in the Abstract." Nevertheless, it is with Wolff that we now understand ontology as the study of being in general.

[64] Heidegger, KPM, §23, p 115. Rather ontology is the interconnection between categories: being-in, being-with, and Dasein (BT, 3). It describes *how* a thing is the thing it is. (BT, 27, 24). This involves coming to understand a thing's existence as an "essential unfolding", as something that endures. Endurant, here, is other than Platonic notions of permanence. Rather, what endures or persists is constant throughout the coming to presence of a thing (QCT, 335). It is how a thing comes to presence and endures as itself, in its own life-time.

[65] Alfarabi goes so far as to say that Plato and Aristotle "intend to offer one and the same philosophy." *Alfarabi's Philosophy of Plato and Aristotle*, trans. Muhsin Mahdi (Ithica: Cornell University Press, 1962) 49-50. While this thesis will stress the differences between the two, it is clear that Plato and Aristotle have significant similarities, rooted in their common conviction that reason can discover the essence of a thing.

philosophical language to isolate the inherent tendencies in their thinking, as the movement toward transcendental idealism in Plato and the movement toward the immanence of substance in Aristotle.

The neo-Platonic interpretations of Aristotle in late Classical and early medieval Muslim and Christian commentators obscured Aristotle's revolutionary potential. However, during the high Middle Ages, Aristotelian philosophy began to emerge from the shadow of its Platonic origins and to prepare the ground for scientific thinking. This epochal shift is given great impetus by the 13th century thinker Albertus Magnus (known generally as Albert the Great, hereafter Albert). Relatively scant attention has been paid to Albert in modern philosophy; thus, only a few of his works have been translated from Latin, and those translations are generally confined to his spiritual writings and biblical commentaries. Albert's work that interest us here, namely his writings specifically relating to Aristotle's thinking about the relation between natural science and metaphysics, have not yet been translated into modern European languages. With recent interest in the sources of the scientific revolution in medieval universities, this is beginning to change. However, at present we must rely on the few Latin scholars interested in Albert's Aristotelian philosophy of science. In particular we will look closely at Michael Tkacz's reading of Albert's Latin texts.

Clearly more work needs to be done in tracing these historical lines of influence by which a more authentic interpretation of Aristotle was transmitted, via Albert, to later scholasticism and thus, eventually, to Heidegger. However for our purposes it is sufficient to have a basic grasp of the new possibilities for thinking metaphysics that Albert opens with his recovery of Aristotle. In this vein, for Heidegger, thinking and understanding are not a theorizing in the Platonic sense. Rather they are acts of interpretation or deliberation, i.e., acts of praxis. Heidegger, therefore, reads Aristotle as an existential phenomenologist and in *Being and Time* derives his own ontology from this dialectical encounter with Aristotle. While Heidegger quite rightly distances himself from the 'naturalist' attempt to reduce truth to contemporary scientific practice, he, nonetheless, cannot be understood apart from the Scholastic retrieval of Aristotelian thought that makes both modern science and a Heideggerian ontology possible.

Thus, Section I presents Heidegger's notion of ontology and its historical relation to the Greeks *via* the Aristotelianism of Albertus Magnus. Over and against the Platonic notion of forms, being for Aristotle is co-constituted by what Heidegger would come to name the concealment and unconcealment [*alētheia*] of being. This dialogical approach to being is a challenge to Plato's empirical/intuitionist knowledge of the world, rooted as it is in his notion of *eidos*. Section II offers a retrieval of Aristotle's categories that emphasizes their intimate tie to both *logos* and *bios*, a possibility that was prepared for by the Albertine/scholastic recovery of a more authentic notion of Aristotelian form, but that was then immediately obscured by their metaphysical interpretation of the nature of these ontological realities as subordinated to the immaterial and atemporal unmoved mover. Having discovered that ontology is grounded on *logos* as an understanding of the categories, *viz*. being, Section III shows how Heidegger roots this tie between the categories and the concrete speaking of historical human communities in an existential or hermeneutic phenomenology, one that shows the interpretive moment of historical and communal interpretation at work in all acts of experience. This will reveal the ways that Heidegger is able to avoid the a-temporalism of medieval metaphysics but also the a-temporalism of an *a priori* transcendental idealism.

This interweaving of ontology, phenomenology, and hermeneutics accomplished by Heidegger will be the groundwork for our understanding of a more positive relation to technology in the later chapters of the thesis. In particular, it is Heidegger's recovery of *ontology*, or the question of being, that allows for an alternative to the current reign of instrumentalism, for it shows that reality transcends consciousness and is something which reveals itself to us. On the other hand, a *phenomenological* ontology keeps our metaphysics firmly rooted in the immanence of the temporal world and avoids metaphysical flights of fancy into the alienating and speculative realms of the Platonic supra-sensible. Finally, Heidegger's *hermeneutics* keeps our reflections attuned to the contingency of the temporal. Thus, our reading of Heidegger will prepare the way for thinking about technology in the light of a general orientation towards reality marked by a poetic sensibility of respect.

1.1. Section I: Retrieval of the Categories as the Ground for Understanding

For both Aristotle and Heidegger we see a definitive turn away from the supra-intelligibility of Platonic forms and a turn towards a hermeneutical ontology, where being becomes the primary mode of the question of philosophy. To question is to ask what a thing is. Thus, the pursuit of truth is, at its most fundamental, ontological. Heidegger's methodological approach of hermeneutical ontology,[66] which he employs to uncover the ground of understanding, is an attempt to overcome transcendental idealism. He does this in a twofold way: firstly by asserting Aristotle's categories as a meaningful relation found in language, rather than the accustomed categorical *a priori* assertion of truth that we get with Kant, and secondly by appropriating Aristotle's theory of causality (Chapter 4). Aristotle's logic shows the impossibility of transcendental logic to be exhaustive of ontology, because if the delimitation of a concept (genus and differentia) is called a definition, then all definitional determinations of being must, on principle, fail. Therefore, being needs to be determined in a different way, i.e., through potentiality and actuality.

1.1.1. The "Great" Battle between Ontologies[67]

It can be argued that Albert was the first commentator to clearly separate Aristotle's conception of form from the neo-Platonic tradition.[68] The scientific curiosity of Aristotle and Albert called both thinkers to reassess Platonic forms. Aristotle's quest for the investigation into the matter of things was incompatible with Plato's conception of form as immaterial. For Albert, as a scientist, the prevailing concept of immaterial forms would fail when confronted with science

[66] In the next section, I will show how Heidegger's "descriptive phenomenology" is indebted to a re-appropriation of Aristotle's categories as well as to Husserl, and thus how descriptive phenomenology need not be interpreted in the terms of transcendental idealism

[67] Plato "attained the insight that non-being, the false, the evil, the transitory – hence unbeing – also is." (p.22) (Heidegger, *Aristotle's Metaphysics* 1-3 1995, 22) see *Metaphysics* Book IV, 1003b10-15.
Hence, the "notness had to be included in the essence of being. Both these enfold out towards each other – belonging together. Being as one, is itself many. It was Aristotle that discerned the manifoldness of being as multistructural" *ibid.*

[68] See in particular Tkacz, 2011, p. 2011.

understood as an accumulation of new evidence. Consequently, Albert returned to Aristotle's understanding of form as a foundation for his ontology in order to continue research programs into the natural sciences. This means an explicit turn from geometry as the best model for the fundamental nature of things to an investigation into truth rooted in empirical observations about the natures of organic beings and organs. Medieval scholar and Albert specialist, Michael Tkacz argues that it was Albert who showed us that while mathematics explains some natural occurrences, "the world of physical bodies can only be intelligible in terms of its own physical principles" (Tkacz 2011, 760). This realization requires an inquiry into ontic being, that of immanent intelligibility rather than one of Platonic supra-intelligibility and eternal forms.

1.1.2. Aristotle's Priority of Function over Form

For the Medievalists prior to Albert,[69] Aristotle and Plato were believed to hold the same ontology based on a conception of intelligible form existing as eternal and separate from sensible substances and their sensible accidents. Albert himself calls this view, the *error Platonism*. Essentially this error is the claim that the principles of natural substances and their observable accidents are the eternal, separated forms espoused by Plato. Albert rejected such a claim as both an interpretation of Aristotle's thought and as a foundational account that could serve as an ontology grounding empirical science, especially in the earth and the life sciences. As Tkacz writes, "future scientific research was destined to move beyond these [Classical and early Medieval] limited modes of explanation to empirical investigations disclosing the specifically physical causes of bodily subjects. This demanded an ontological foundation for such subjects in a non-reductive notion of immanent form" (Tkacz 2011, 761).

[69] For example about 530 A.D. the neo-Platonist Simplicius wrote an extensive commentary on Aristotle's *Physics*. This is used by Heidegger as a springboard to Aristotle. See Martin Heidegger, "The Anaximander Fragment" in *Early Greek Thinking: The Dawn of Western Philosophy*, trans., David Farrell Krell and Frank A. Capuzzi (New York: Harper & Row, 1975), pp. 13-58. Also for an analysis of why this is important to Heidegger in *Basic Concepts*, trans., Gary E. Aylesworth, (Bloomington: Indiana University Press, 1998 (1993). First published in German in 1981 as Grundbegiffe vol. 51., xiv. Albert's interpretation derives similar conclusions to Heidegger, less so with Simplicius.

The generation of explanation in the natural sciences is a complex process involving the accumulation of much observational data organized by methods of logic and culminating in factual definitions. These facts are then theoretically explained in terms of the scientific principles that are themselves established by an analysis of the most universal facts of experience. Unlike the Platonists who deduce the observed fact from theoretical explanation and verify it by observation, Aristotelians explain the observed fact in terms of specific empirical principles shown to be intelligible in light of more generic empirical principles.[70] This is the immanent form of the subjects themselves. For the Platonists, while verification may be empirical in so far as sensible appearances are tested by an observational comparison to what is deduced from separate formal principles, explanation is through the eternal principles alone. Alternatively, Albert argued that form, for Aristotle, is grounded in ontic being. By way of example, Tkacz tells us that the reason birds of prey, such as eagles, have strongly curved, hook-shaped beaks is because they are carnivorous. In this example, form follows function. The principle, "raptorial birds are carnivores", cannot be deduced from the observation of such bird's form, for the hooked beak could have functioned for an entirely different purpose, such as attracting a mate. Rather, the form of the hooked beak can only be understood as a result of the bird's feeding behavior. Thus, the principle of the carnivorous activity is ontologically prior to form of the beak. Form and function are united in the concrete, lived nature of the embodied bird. As Tkacz writes, understanding is possible "because bird morphology is a form existing in sensible material, and the observed carnivorous behavior of raptorial birds is a function of the sensibly material beings".[71] In his defense of dividing the form and function, Albert means to divide the subject as scientifically defined from the method of organizing. Phenomenologically, birds of prey become a theoretical description, "raptorial birds", and an explanation is generated as to what a raptorial bird is—namely, a carnivorous, winged, curved beaked mammal.

[70] See Tkacz, "Albert the Great and the Revival of Aristotle's Zoological Research Program," 50-66; Tkacz, "Albertus Magnus and Aristotelian Form" pp. 754-5; and also Ashley, "St. Albert and the Nature of Natural Science," 79-80.

[71] cf. Tkacz, 755, *De Animalibus* 123, tr. 3, c. 6 in ed. Stadler, 15:883-6 where Albert discusses Aristotle's examples of teethe and analogous forms in animals.

This dialectical approach is a two-stage process of theoretical description and of causal explanation; for the Scholastics this approach to making sense of empirical research is critical for science. The Platonists, on the other hand, do not make any clear distinction between essential natures and adventitious attributes; there is no ontological difference between the genus and its species, and there is no distinction between form and function. Rather, as Tkacz points out, it is a "presentation of the ontological *participation* of lower forms in more generic forms that, when taken as a hierarchical whole, define the subject" (Tkacz 2011, 757, my italics). For example, according to the Platonists, the genus animal can be dichotomously divided into blooded and bloodless, but the resulting form, blooded animal, can itself be divided by further differentiae. With respect to the form animal, being blooded participates in its genus – that is, being blooded is defined as a way of *be-ing* an animal. Because being blooded is itself a form, it is, therefore, a universal, and can combine with any quantity of other forms, such as being terrestrial or quadruped, in the being that participates in it (*ibid*, 757). But this gives us a purely formal account that does not give us any understanding about what being "blooded" or "quadruped" means for *this* animal.

As Tkacz observes, for Albert, a definition must include all divisions and not just the final form, for the latter does not necessarily imply the former. Returning to our example of the eagle, we may describe it as a raptorial bird, but "bird" may be further categorized into winged or a wingless. Thus the definition for "this" bird (the eagle) becomes a winged, raptorial animal. But of course, there are birds that are neither winged nor carnivorous. The method of collection and division tells us what general forms in which a thing participates, but it does not give an account of why these particular characteristics make it this kind of thing. Because the definition is not rooted in empirical evidence concerning the observed behavior of the subject, Platonic division fails to provide an adequate explanation of why the form exists as it does; thus, it subsequently fails as a method of research. The attempt to define a bird as "a winged raptorial animal" fails to indicate completely and essentially what a bird is, because bird is certainly more than just winged and carnivorous. The failure of Plato, as Tkacz sees it, is his failure to "distinguish between *categories* of form, instead of simply marking out and identifying participating forms" (Tkacz 2011, 758, my italics). In this way the

researcher can learn what is essential to the subject and not just what is accidental, and knows this in terms of categories.

What Albert calls for is the rejection of Platonic dichotomy (of form and matter) and the ontology upon which it is based, if the sciences are ever to be intelligible. Instead he recommended turning to the Aristotelian horizon of genus with *continuous* and non-accidental differentiae, which can be laterally organized, thereby providing a definitive definition of the subject. On this account, form and the particular do not relate hierarchically but exist in the material subject *together*. Tkacz writes, "…the form being defined is intelligible in terms of its being a form of an empirically-discovered kind. This, in turn, is possible because the natural form exists in the bodily subject being observed as its immanent intelligibility" (*ibid*).

In a 1921/22 lecture course prior to *Being and Time* Heidegger had already identified being not as a reflection on the "I" in an egoic, egological sense, but through its factical existence.[72] He sees the former as ending in transcendental idealism and identifies it as an orientation towards a formal analysis of language. What Heidegger calls for is a return to the Aristotelian question concerning the proper facticity of one's own concrete life. Aristotle explains the importance of rooting understanding in a turn to the embodied being in terms of the ambiguous nature of health. "Healthy" designates a condition of health. To attribute a healthy heart to someone implies that that person is healthy. However, the health of the person with a healthy heart is equivocal, for things can be healthy in different ways. For example herbs are healthy – but herbs themselves are not health. Likewise, we might say someone has a healthy complexion, but this does not imply that the complexion is a condition of health. Rather, the complexion of a patient might indicate if the patient is healthy or sick. Conversely, it is not the nature of illness itself that appears, but rather symptoms of the illness, a rash or a temperature etc. However in the self-showing of the symptoms the body "indicates" a semblance of the disease itself; it points to something that is not visible, what Heidegger refers to as the "objective presence-at-hand" [*Vorhandensein*] (BT, i.ii.7.29, Stambaugh). To become well one might suggest exercise, for example, walking. This is not to

[72] GA 61, PIA, 127.

suggest walking is the opposite of sickness, nor even that it's a sign of health. But it is conducive to the recovery of the sick body.

Thus "healthy" is said of the heart, the herbs, of complexion, and of walking; *the four ways of being* healthy are separate, but are spoken in the same way—namely, as healthy.[73] While the subject is predicated by manifold things, it is not the genus for the many. In other words, for Heidegger, the meanings of the predicates "necessarily co-signify the first sense". The signification "healthy" contains within itself a manifold way of being, and "being healthy" takes on the *function* of unifying the other meanings. Thus the ambiguity in our use of the word healthy is not merely "homonymous" but is a *pros hen* ambiguity united by the fact that *being healthy* lets the other meanings be *related* to itself (*Aristotle's Metaphysics* 0-3, 33). As with Albert the Great, form follows function; the form healthy only exists as constitutive of many modes of being: properly functioning heart, good complexion, exercise, and medicine. This is a *description* of how the healthy person is codependent on many categories outside itself. The healthy person discloses herself in a manifold way, through discourse or language. *Logos*, as language, asserts the existence of *being* healthy.

Thus, contrary to Plato's idea of health, Heidegger affirms Aristotle's thesis that health cannot be intuited or perceived through a glance [*eidos*], but rather must be understood through a deliberative process with reference to the being's functioning. Aristotle argues that we cannot perceive health any more than we can perceive geometry. The *idea*, "medicine-itself" or "geometry-itself", is absurd. Health, which is the subject of science, cannot exist as a separate entity in some other realm than healthy people; otherwise "heathy" exists beside "the" healthy, and exists in the same place at the same time. Thus, being is *said* in many ways; the saying of being is the assertion [*logos*] of beings, but not as pure reason. Rather as with Aristotle, Heidegger sees *logos* as that which discloses what is present in its presencing. The concept 'health' only emerges through a dialectical process of engagement with lived experience, by doing existential phenomenology, over and against transcendentalism. In Section II below, we will see how Heidegger's

[73] Heidegger is alerted to this Aristotelian notion of the plurality of being, and the ways this plurality comes to language, through Brentano's *On the Several Senses of Being in Aristotle*, a book which deeply marked the philosophical formation of the young Heidegger.

appropriation of Aristotle's thought avoids the collapse of Aristotle's categories into the structures of consciousness characteristic of much modern transcendental philosophy in the wake of Kant. But first we must briefly see how, although Heidegger takes the turn characteristic of Aristotle and Albert toward the concrete and an immanent understanding of form that makes possible the scientific revolution, he does not accept the reductive program that is characteristic of some contemporary "naturalists" in the philosophy of science.[74]

1.1.3. The Distinction between Genus and Being

In *Aristotle's Metaphysics 0-3*[75] Heidegger elucidates Aristotle's distinction between being and genus. Being, Heidegger reminds us, is not a genus. Genus is

[74] The literature is vast, but see, for example:
Willifed Sellars, "science is the measure of all things, of what is that it is, and of what is not that it is not," *Science, Perception, and Reality*, pg. 173.
De Caro and Macarthur who categorize strong naturalists as follows: "(i) the *ontological scientific naturalist* holds that the entities posited by acceptable scientific explanations are the *only* genuine entities that there are… (ii) the *methodological (or epistemological) scientific naturalist* holds that it is *only* by following the methods of the natural sciences—or, at a minimum, the empirical methods of a posteriori inquiry—that one arrives at genuine knowledge… (iii) the *semantic scientific naturalist* holds that the concepts employed by the natural sciences are the *only* genuine concepts that we have and that other concepts can only be retained if we can find an interpretation of them in terms of scientifically respectable concepts." *Naturalism in Question*, p. 7.
De Caro and Macarthur admit in a revealing footnote that "of course, besides the scientific naturalism discussed here, there have been many other forms of naturalism in the history of philosophy, of which Aristotelean, Spinozistic, and Scottish are some of the best known examples." (pg. 281).
For Heidegger's most famous attempt to circumvent scientific reductionism see his lecture "What is Metaphysics?"

[75] At the very beginning of his intellectual career, in 1907, Heidegger read Brentano's *On the Several Senses of Being in Aristotle.* There Brentano's describes matter as "potentiality" [*dynamis*] in contrast to form [*eidos*] as actuality. See Brentano, *On the Several Senses of Being in Aristotle*, trans., by Rolf George (Berkeley: University Press, 1975), p. 27. By distinguishing between possibility and actuality in Aristotle, Brentano provided Heidegger a framework for his own distinction between das Sein-des-Seienden ("possibility") and das Seiende ("actuality") later in *Being and Time*. See Heidegger, *Being and Time*, trans., by John Macquarrie and Edward Robinson (New York: Harper & Row, 1962), 143 – 144 /182 - 183: "Dasein is not something present-at-hand which possesses its competence for something by way of an extra; it is primarily Being-possible. Dasein is in every case what it can be, and in the way in which it is its possibility. The Being-possible … pertains to the ways of its solicitude for Others and of its concern with the 'world'…in all these ways … it pertains to Dasein's potentiality-for –Being towards itself, for the sake of itself. The Being-possible … is to be sharply distinguished both from empty logical possibility and from the contingency of something present-at-hand, so far as with the present-at-hand this or that can 'come to pass'. As a modal category of presence-at-hand, possibility signifies what is *not yet* actual and what is *not at any time* necessary. It characterizes the merely possible. Ontologically it is on a lower level than actuality and necessity. On the other hand, possibility as an existentiale is the most primordial and ultimate positive way in which Dasein is characterized ontologically." See also Section 75, 387/439 "Understanding signifies one's projecting oneself

related to species, and as such to species constituting differentiation. There is no genus in itself, independent of species. Heidegger writes, "[being] cannot have the character of unity for the many in the manner of a genus; and the various ways of being cannot be understood as species" (Heidegger 1995, 30). Whereas genus refers to living beings, for example plants, animals, and humans, genus does not define *a* human being, or *a* plant being, or *an* animal being. In such a case it would not be a genus, only a species. It follows that rationality cannot be the species-forming differentia for human beings as living beings, for not all living beings are rational. On the other hand, the characteristics such as metabolism and reproduction that define living beings do not give us knowledge of human beings as *human* beings. The point being that the content of the genus is uninvolved with the content of species-forming differentia. But crucially, genus cannot be said to contain attributes such as the *true* and the *possible* and so cannot constitute explanation or even viable description of natural subjects.

For Plato, all determinations of being, and being itself, are genera. However, for both Aristotle and Heidegger, being is what is attributable to anything that "is", but genus cannot contain anything of the species; otherwise there would be no difference between species. Scientifically, we understand beings in terms of genus and specific difference. Because being is not a genus or a characteristic differentiation, it doesn't fall into scientific content. How then do we understand the notion of being? Aristotle does not characterize being as a category. Rather, for Aristotle, being is a "particular kind of *meaning* in language which expresses an oneness of the many without being genus for this unified many" (Heidegger, 1995, p.31, my italics.). Heidegger uses a broad example describing living beings in general as saying something both equivocal and unequivocal at the same time. It is true both that "the ox is a living being" and that "the farmer is a living being". One, however, is a "rational living being" while the other is a "non-rational living being". The "being" in both cases is not its genus (*Met* Book III, 3).

Articulation of the genus and its parts is attempt to talk about appearance. For Husserl this is achieved through categorical intuition: Syntax that defines language is grounded on the articulation of wholes and parts that takes place in

upon one's current possibility of Being-in-the-world; that is to say, it signifies existing as this possibility."

categorical intending. The reason we can communicate is because we have the power to go from perception to categorical thinking. It is not the case that we have language; rather, we have language because we can think.[76] Heidegger, in his analysis of Aristotle, means to extend this notion of phenomenology. While he concurs with the basic tenants of Husserl's phenomenology, Heidegger argues that the presentation of identity can only be constituted through a complex horizon of being. To establish the sense in which Dasein is being-in-the-world he traces the notion of truth back to Aristotle's theory of the categories, and finds what is essential to all categories is *logos*, not as a theory of correspondence but rather as a gathering or emergence of meaning. The idea of health is constituted within a horizon of meaning, and must be interpreted as such. Because Aristotle's categories have been interpreted as a prescriptive way of knowing, his categories gives rise to instrumentalism. The consequence of instrumentalism is a technocratic world. To counter this move, Heidegger develops a hermeneutical phenomenology. It is the theory and practice of interpreting the structures of everyday, pre-reflective being-in the-world with a focus on the pre-reflective dimension of feeling as immediate self-consciousness, experienced as "moods". Thus, the next section will briefly explain how the categories have been historically interpreted and show how Heidegger reappropriates them into a hermeneutical phenomenology.

1.2. Section II: The Categories and *Logos*

The categories are a powerful tool devised for answering ontological questions left behind from Plato. They are an attempt to enumerate the most general kinds of being into which all other entities can be divided.[77] As such they can be interpreted as either metaphysical or ontological, but as 20th Century Aristotle scholar GM Gillespie concludes, whether they are speculative or scientific they nevertheless ask the same fundamental questions asked by both Classical thinkers and

[76] Sokolowski 92000, 91.

[77] In his treaties on *Categories*, Aristotle outlines ten of the highest categories or predicament: 1 Substance or being, 2 Quantity, 3 Quality, 4 Relation, 5 Place, 6 Time, 7 Posture, 8 Having or possession, 9 Action, 10 Passion.

contemporary ontologists; the question of being.[78] When Aristotle's categorical structure of beings gets taken up by the Scholastics,[79] for example, the categories are interpreted as the science of all that cannot be known by the natural sciences: "metaphysics". More contemporaneously, in *Aristotle's Metaphysics 0-3*, Heidegger argues that the categories are better understood as ways of talking about things, and he is critical of the move by the Scholastics. He writes that their prescriptive understanding of the categories has:

> forced the interpretation of these treatises [*Categories*] in a particular direction and thereby has determined that what Aristotle discusses therein is to be understood as "metaphysics" (KPM 1962, 11).

For Heidegger, metaphysics became the science of all that lies beyond empirical evidence, an appeal to the supernatural, rather than the highest study of *phusis* (nature) as Aristotle intended. The Scholastics appropriate the sphere of metaphysics to define being in general under the rubrics, God, nature, and man, and their corresponding disciplines theology, cosmology, and psychology. The move to theoretical evaluation of the existence of being arose from the ambiguity inherited from this interpretation of the categories. Because the object of metaphysics is both being in general and being as the highest being, the study of the latter is to be taken as the "queen of the sciences" (cf., *ibid*) and it must conform to the highest cognitive ideal, i.e., "mathematical" knowledge. Ontology, thus, becomes the science of the highest being, and its epistemological model becomes that of mathematical certitude. But, for Heidegger, this was an unintended consequence of Aristotle's categories, which are simple ways of talking about beings.

While Gillespie agrees that Aristotle's categories are an attempt to distinguish a basic entity (substance) from all other kinds of entities, he nonetheless recognizes the commonsensical explanation of Aristotle's specific list and his need

[78]C. M. Gillespie, 'The Aristotelian Categories' in Articles on Aristotle, ed. by Jonathan Barnes et. al. (New York; St. Martin's Press, 1960), pp. 1- 13.

[79] The work of the scholastic school masters such as William of Ockham restructured the categories to bring them in line with a "true" or "external" reality. Ockham maintained that only the categories of substance and quality are real. Others such as Peter Olivi's included action. See *Ockham and Ockhamism: Studies in the Dissemination and Impact of His Thought* by William J. Courtenay, 330.

to make distinctions between different things. This dialectical debate highlights the ambiguity of the notion of being between thinking about being and the problem associated with the philosophy of language, according to Gillespie. In this sense both Gillespie and Heidegger are sensitive to the questions arising from the Categories, but whereas for Gillespie Aristotle's substance is the highest being (God), for Heidegger in his early work in particular, being is existence. In *Aristotle's Metaphysics 0- 3*, Heidegger elaborates on Aristotle's idea of categories as a meaningful and stable relation, rather than as an assertion of logical truth as it is in the neo-Platonic interpretation or later with Kant who understands categories as "forms of thought".[80]

According to Heidegger, categories of understanding are historical, based on a world-view made possible by works and sedimented in cultures. In contradistinction to Kant, therefore, they cannot be thought of as transcendental structures alone. Thus the ambiguity of Aristotle's categories is not due merely to their misinterpretation by the Scholastics. It is inherent in the project itself, for the categories are both beings themselves and descriptions about beings.[81] As beings they are subject to explanation and causation, but they are also assertions *about* beings and thus intimately involved with the way the beings making those assertions are able to think.

To understand why Aristotle's categories became a prescriptive philosophical judgment concerning all that is, we will need to understand (i) the distinction between the categories as they are in-themselves and (ii) their relation to all that is. As beings themselves they have both potentiality and actuality. Thus to shed light on the categories we will turn to Aristotle's conception of potentiality and actuality in his work, *De Anima*.

1.2.1. Actuality and Potentiality

At the beginning of *De Anima* II.1 Aristotle argues for an understanding of the soul as the principle of life *(De Anima,* 412a140). Life is what we identify with the

[80] For the strongest version of this characterization see Kant's famous analogy of the "Copernican revolution" in the *Preface* to the B version of the *Critique of Pure Reason*.

[81] Heidegger, *On the Essence and Actuality of Force*, (1995, 10).

presence of life, whereas soul is that which explains the presence of those features. Since form [*entelecheia*] is what makes matter a "this," the soul is substance in the sense of the form (*De Anima*, 412a20) or essence (412b12) of a living thing. Thus, Aristotle's first answer to the question of what the soul is (412a20): "The soul, then, must be substance as the form of a natural body that is potentially alive". Form, for Aristotle, is *entelecheia* or actuality, not shape (412a21). The teleology of an individual human being is what gives them actuality, but this actuality is not material. Rather "substance is actuality; hence the soul will be the actuality of this specific sort of body" (*De Anima*, 412a21).

To say the soul is an actuality means either a first actuality, as being, or a second actuality, as the exercise of a function [*ergon*]. For Aristotle it is primarily the former; "the soul is the first actuality of a natural body that is potentially alive" (*De Anima*, 412a27). However, as a first actuality (being), it is also a kind of potentiality (becoming); thus, the soul has a capacity to engage in the activity corresponding to a second actuality. This means that being is the capacity or disposition to exercise a function. For example, a living thing's soul is its capacity to engage in the activities that are characteristic of "living" things of its natural kind and conducive to their well-being and survival. In sum, the capacity of a thing to exercise its function constitutes its soul; thus the soul is what is causally responsible for the animate behavior (the life activities) of a living thing.

The nutritive aspects of the soul of all living beings allow for growth and nutrition. The sensitive aspects of the soul of animals allow for locomotion and perception. The rational aspects of the human soul allow for intellect (thought). What is real or actual is the soul, but the soul is not static or passive; rather it actively participates in the animate body that is potentially living. Potentiality and actuality are thus both central to what constitutes living. They are not categories, but neither are they separate from categories. In *Metaphysics* (1, 1045b32-35) Aristotle points out that knowledge of potentiality and actuality involve a *questioning* in terms of beings. All living beings actualize potentiality. For example, the plant turns the sun's rays and carbon dioxide into complex carbon chains. But only a being that can question can choose to direct this process of actualization. Thus for Aristotle while all organic beings live and thus actualize their own being, only those that can question are fully alive by rationally self-

directing this process of actualization. What is of significance here is that Aristotle posits the cosmos as nature, and only a being that is fully alive i.e., only a being with *logos*, can reach fulfillment. In both cases, what is living and what is living with *logos* are said to be, for Aristotle, but only humans and other higher conscious beings that can question can live in the fullest possible sense.

In his 1922 course, *Phenomenological Interpretations of Aristotle*, Heidegger means to compare the notion of a living being with *logos* to a life philosophy. Here the influence of Dilthey's concept *Erlebnis*, life that is immediately lived by the whole person, is clearly evident. In Dilthey's view, an immanent reflexivity characterizes *Erlebnis*, or "life".[82] According to David Klemm, "life in this sense is not a biological phenomenon but a phenomenon of

[82]Heidegger, in *Concept of the History of Time*, records a letter from Dilthey to Husserl comparing their work as "boring into a mountain from opposite sides" p. 24. Dilthey's life long quest for a logic, that is, an epistemological foundation of the historical and human sciences, eventually leads him to seek an articulation of the "categories of life," the basic structures of historical life. See Jos de Mul, *The Tragedy of Finitude. Dilthey's Hermeneutics of Life*, (New Haven/London: Yale University Press, Spring 2000.) These categories find their roots in life itself and are *a priori* to any articulation or judgment. The task is to let experience come to a natural conceptual blossoming. The analytical presupposition is that Dilthey's ontology is a continuation and radicalization of Kant's transcendental enterprise. He initially regarded his project, for which he had chosen the Kantian title *Kritik der historischen Vernunft* as a complement of Kant's transcendental critique of pure reason. He proposed that the validity of Kant's critique of theoretical reason - i.e. analysis, justification and determination of its limits - is restricted to the natural sciences [*Naturwissenschaften*], while his own critique of historical reason aims at a transcendental investigation concerning the conditions of the possibility of historical knowledge in the human sciences [*Geisteswissenschaften*]. Gradually, however, Dilthey's project turns out to be a fundamental transformation of two ontological presuppositions of Kant's transcendental investigation. In the first place, he understands categories to be categories of life [*Lebenskategorien*] rather than formal categories: his transcendental self-reflection aims at an explication of the fundamental structures of the primordial nexus of life in which man is always already situated and which precedes the theoretical distinction between subject and object. In this context, Dilthey also criticizes the intellectualism of Kant's critique: the life-world is not an object of sheer intellectual representation, but, rather, a reality which is immediately given [to us] in the interplay of thinking, willing, and feeling. In the second place, Dilthey rejects the Kantian presupposition that the *a priori* structures of experience are universal and timeless, claiming instead that they are characterized by historical development. With this emphasis on the historicity of the categories of life, Dilthey radicalizes two themes which already play an important role in Kant's transcendental enterprise, namely, the finiteness and contingency of human life.
The profound topicality of Dilthey's transcendental-historical philosophy is given by the fact that these two themes belong to the central preoccupations of contemporary philosophical concern. According to Theodore Kisiel in *Heidegger's Way of Thought*, it is this category that motivates Heidegger's reorientation of the classical question of being. In his study, Kisiel traces the development of what he calls Heidegger-Zero, by way of Dilthey's categories of life and Husserl's doctrine of intentionality and categorical intuition to Heidegger I in *Being and Time* where Heidegger begins to investigate the transition from language to that which comes to language, to the process of disclosure which precedes and supports speech, to dimensions of experience which are the 'underside' of language, which in its own way itself 'speaks' of itself. Theodore Kisiel in *Heidegger's Way of Thought*, p.3, 85. On the relation between Dilthey, Husserl, and Heidegger see also, Gadamer, *Truth and Method*, Section II, 3 "Historical Preparation."

human inwardness" which anticipates Heidegger's notion of existence. (Dilthey 1986, 27). Heidegger elaborates on the notion of lived-experience [*erleben*], accompanied by understanding. He does this by drawing out the particular ambiguity of the word "life" by first sketching out the verb "to live" and then the noun "life" (63, 64). [83] The former, as a directedness towards the world, is understood as a type of intentionality. On this basis, the noun, "life", is understood in terms of a relational ontology. To understand the concept "world" Heidegger tells us, requires a phenomenological interpretation of the phenomenon "life" together with the intransitive and transitive senses of being, "out of", "for", "with", and "against a world". Against the Ancient doctrine of an accepted reality, Heidegger writes

> [W]e are determining the concept of world precisely by beginning with the phenomenon indicated in the verb, "to live", a phenomenon we can determinately intuit as our life, the living of our own life. The phenomenological category, "world," immediately names – and this is crucial – *what* is lived, the content aimed at in living, that which life holds to. Accordingly, if the noun, "life," is understood in its relational sense, which is in itself rich and of a manifold referentiality, then the corresponding content can be characterized as "world"[84]

This analysis becomes the basis for a creative retrieval by Heidegger of Aristotle's distinction between the sensitive soul and the rational soul. However, here Heidegger drops the word "reason", replacing it with the human capacity to live which he claims is a self-directed existence and oriented towards a "world". In other words, human life and world are interchangeable, they are not two separate self-subsistent objects which stand in a spatial relation. Rather world is the "basic

[83] The verb, to live, has a transitive-intransitive ambiguity. To live in the intransitive sense is "to be alive", "to live intensely", "to live recklessly", etc. To live in this sense is to live with feeling. Contrary, the transitive verb includes a compound of elements, "to live through [*durchleben*] something", "to live out [*verleben*] one's years idly", and in particular "to have a lived experience [*erleben*] of something." Rather than collapse the difference, Heidegger means to retain the ambiguity of life as a transitive-intransitive verb. See Phenomenological Interpretations with Respect to Aristotle: Indication of the Hermeneutical Situation," edited and trans., by Theodore Kisiel, *Becoming Heidegger*, edited by Theodore Kisiel and Thomas Sheehan. Evanston, IL: Northwestern University Press, 2007, 155–174. GA 62, 63.

[84] PIA, 65.

category of the content-sense in the phenomenon, life".[85] Thus, what is alive is not the soul as the stable condition of the possibility of being human. In this case animals and humans would occupy the same realm of experience. But neither is reason the sole constituent of human nature. Rather life-world is an interpretative process that integrates the temporal flux of immediate experience which for Heidegger takes on an interpretative quality which does not relate to Aristotle's actuality.

The category "world" is specifically related to Dasein's factical life, and only insofar as factical life is compelled to interpretation. Categories are not the conditions of possibility of intelligibility or of a logical schemata. Rather categories are "*alive in life* itself in an original way: alive in order to "form" life on themselves". They are the "preeminent way in which *life comes to itself*" (*ibid*). This level of interpretation does not seek out causal regularities but rather looks for interconnections of meaning. Thus Dilthey is a critical forerunner to Heidegger's "hermeneutics of facticity". For Heidegger, a hermeneutics of existence is the theory and practice of interpreting the structures of everyday, pre-reflective being-in the-world with a focus on the pre-reflective dimension of feeling as immediate self-consciousness, experienced as "moods".

1.2.2. *Logos*

For Heidegger theory must be understood as *bios*, a way of life or participation, not in the Platonic sense but as a *poiēsis* irreducible to truth understood as formal and universal [*epistemē*]. Heidegger uses the term *Hermeneutik* to refer to the interpretation of "facticity'" or our own Da-sein. [86] Thus Heidegger's reappropriation of *theoria* as ontological is substantive: he intends to remove the more theological notion of presence which accounts for only one mode of time. Rather, the eternity of the prime mover is but a concept derived from everydayness, in which it is merely a way of escaping our own finite being. This transformation

[85] *Ibid*.

[86] Martin Heidegger, *Ontology: The Hermeneutics of Facticity*, tr. J. van Buren. Bloomington: Indiana University Press, 1995.

from *logos* as theoretical science [*epistemē*] to *logos* as *bios* (a way of living) can be traced back to *Being and Time* and Heidegger's analysis of objective presence.

At issue is the distinction between prescriptive and descriptive ontology.[87] Heidegger holds that Aristotle fits into the latter, but his categories have been interpreted, specifically with the Scholastics and later with Kant,[88] as a prescriptive metaphysics, one that is defined by the theory of truth. Under this theory, truth is conceived as the mind's conformity with the principles of a reality that is lying there before us, already constituted in itself where the self passively receives the given object. The tension arising from this theory of truth is by no means exhausted in the purely epistemological problem of the gap between the *ob-jectum* "out-there" and the *sub-jectum* "in here".[89] Rather, it is one of the driving forces guiding the history of metaphysics, culminating in the complete domination of objects by the subject, what Heidegger later called *enframing*. Alternatively, truth, for the Greeks, is other than scientific (in this sense of objectification); it is a manifold way of being. The difference between these two ways of orienting the knower toward the world and their historical trajectories can be indicated by a series of distinctions Heidegger uses, including the difference between the words "reason" [*nous*] and "thinking" [*legein*] and between *epistemē* and *technē*.

Epistemē is concerned with unchangeable entities, like mathematics, often designating disciplines into specialized categories, for example, geology, histology, or sociology. But while *epistemē* is a particular way of understanding and seeing the world, it is only one of the many possible ways of interpretation. *Technē*, on the other hand, is a way of "being *in*" the world; it is a bringing into appearance by way of producing. In a lecture course he delivered during the Winter and Summer semesters of 1951 and 1952 entitled *What is Called Thinking?*, Heidegger highlights the difference between these two modes of understanding as

[87] See Gadamer's *Truth and Method*, in particular 'Elements of a Theory of Hermeneutic Experience' p. 269.

[88] In *Kant and the Problem of Metaphysics*, Heidegger claims Kant never overcame his Scholastic education. Indeed the Greek notion of time is embedded in transcendental idealism, as we will see below.

[89] For clarity, when talking about object/subject, I will try to avoid the division by employing the technique of Heidegger translator James S. Churchill. See in particular the translation of Heidegger's lecture notes on *Kant and the Problem of Metaphysics*, note 71 in which Churchill explains that he uses the hyphen in "ob-ject" to convey the sense of activity implicit in the world "object" and its German equivalent *Gegenstand*, which, in fact, is prior to the act of objectification in Heidegger's theory of knowledge p.74.

that between *logos* and *legein* (reason and thinking) and shows how these two concepts are coextensive with being: what is present and presencing, in other words, what is with us and what is enduring. [90]

The essence of thinking is not an opinion or a notion. It is not representing or having an idea [*Vorstellen*] about something or a state of affairs. It is not rationalization (logical argument)[91], developing a chain of premises which lead to a valid conclusion. Finally, it is not conceptual or systematic in the sense favored by the German idealistic tradition and encapsulated in the concept of *Begriff*, believed by Hegel to be thinking par excellence. Thinking, rather, is a craft or a handicraft.[92] Handicraft is not merely manipulating tools; it is how we relate to the world. It is a lying down beforehand what is closest to us, but in entirely new ways.[93] What lies beforehand is what appears. "The essential nature of language is illumined by the relatedness of what lies there before us to this letting-lie-before-us".[94] What is intelligible is not an intersubjective reflection on an *ob-ject*. It is not the skill in thinking logically.[95] In laying something before someone Heidegger means to illustrate thought as that which "speaks without a sound: there is".[96] In this way thinking does not know more than the sciences. In fact, "thinking always knows essentially less than the sciences precisely because it operates where it could think the essence of history, art, nature, language – and yet is still not capable of it".[97] But science only shows us an object as it is present to us, thought reveals its coming to presence.

Heidegger juxtaposes theory with *bios* by offering an example of the complex matrix of different views or opinions that arise from science. "I think it will snow tonight" is merely a view and not reason.[98] But to interpret the sentence presupposes some empirical knowledge of the world. To say "I think" at all, means to gather together reports of what is already within grasp. The Cartesian problem of the external world is, thus, non-problematic here, as it is already implied in the

[90] WCT? 235.
[91] *Ibid*, 28
[92] *Ibid*, 16.
[93] *Ibid*, 201.
[94] *Ibid*, 202.
[95] *Ibid*, 207.
[96] *Ibid*, 33.
[97] *Ibid*.
[98] *Ibid*, 32.

"I think". Indeed all thinking is a gathering of thought.[99] Saying, therefore, is prior to thought. Heidegger, here, takes the confirmed notion of Descartes's cogito as the only confirmation of existence and transmogrifies it into the language of poetry. In other words *legein* is prior to *nous,* and not the other way around. Heidegger had already established the importance of *legein* and its relation to time in *Being and Time* where he writes:

> *Legein* itself, [is] – the simple apprehension of something objectively present in its pure objective presence [*Vorhandenheit*], which Parmenides already used as a guide for interpreting being – has the temporal structure of a pure "making present" of something. … they [things] are conceived as presence (*ousia*).[100]

But *legein* involves a much richer account of time than that of objective presence. For example, what was once said has passed but does not necessarily perish; it can be available at-hand in the form of doctrines that are handed down. On the other hand, human beings have been delineated as beings with language, thus present speech anticipates the existence of the new beings who will be born into this community of speakers. [101] In Section 7 of *Being and Time* Heidegger tells us *legein* is the way in which the structure of the essence of being as reason has been defined, but Heidegger wants to rediscover in this concept new ways of thinking that have been obscured by the reduction of *logos* to a narrow notion of rationality.

Ordinarily we think of *logos* as logic or reason or discourse. However, as we have shown, *logos* is simply an assertion *about* being; it is not the beings themselves. Having already identified the categories as having their home in *logos*, how does Heidegger reconcile this? Heidegger deems *logos* to be a derivative of the Greek word for laying [*logos*]. To lay is to gather [*lesen*]. This is not meant in the literary sense, but in the gathering of a harvest. In "*Logos* and Language"[102] Heidegger uses the German word "*lesen*" (to read) to describe the more original

[99] *Ibid*. 31.
[100] BT, 26/23.
[101] BT, 25, 22.
[102]Ed., Günter Figal. *A Heidegger Reader*, Trans. Jerome Veith (Bloomington: Indiana Press, 2007). See also as in 'Logos' (Heraclitus, Fragment B 50).

understanding of nature as the "gathering" or "collecting" of beings in the open: "In gathering, this originary collected gatheredness [*Versammlung*] reigns over what is to be preserved" (Heidegger 2007, 251). In thinking about gathering, as in harvesting, Heidegger invites us to think of *logos* in terms of a "gathering that gathers" and not as logic or rationality.[103] Figal writes, "Language, understood as gathering, holds everything together that is and that is not. It is, as Heidegger says with Heraclitus, 'the unity of all; all is one in it.'" (*ibid*. 27). Diel literally translates Heraclitus as "When you have listened, not to me but to the Law [*logos*], it is wise to agree that all things are one".[104] But Heidegger, using Snell's translation writes, "When you have listened not to me but to the *Meaning*, it is wise within the same Meaning to say: O*ne* is All".[105] (My italics). The "meaning" is a manifold understanding of gathering, collecting, and sheltering, which brings everything into a "site" or locale[106] (*Early Greek Thinking*, 62).

What lays before us "is nothing more and nothing less than the *presencing* of that which lies before us into unconcealment".[107] The *logos*, for Heidegger, becomes the being of beings the presencing of what is present.[108] As a saying, *logos* gathers everything forward and backwards to itself in the "selfsameness" as "One as the Same".[109]"Such laying together is a laying open [*Dar-legen*] and laying forth [*Vor-legen*] […] "*a making something accessible in a gathering and unified way".* Because such gathering occurs in speech, l*ogos* means discourse or conversance, something that brings things together, and explains the combining. In this way *logos*, as a laying open, is also evidence or empirical [*Be-legen*]. Categories, therefore, are not *a priori* constructs of the mind. On the contrary, categories are what *follow* from empirical science, and thus involve interpretation [*Aus-legen*]. The relation back and forth of the other categories occurs as *legein* (gathering) in the *logos*. Aristotle calls the categories simply "being", that which

[103] LL, 252.

[104] This is a translation by Kathleen Freeman which comes directly from the Fragments in Diels, Fragmente der Vorsokratiker, in *Ancilla to The Pre-Socratic Philosophers*, (Harvard University Press, Cambridge, Massachusetts, 1962), p 28.

[105] Martin Heidegger, *Early Greek Thinking*, '*Logos*' (Heraclitus, Fragment B 50), p. 59.

[106] Although David Krell uses the word position [*Lage*] we choose "site" for the purpose of continuity.

[107] EGT, 63.

[108] *Ibid*, 64.

[109] *Ibid*, 66.

absolutely beings are. For Heidegger, "to the extent that the categories are beings, they are co-being with being. This is already said beforehand and being beforehand. It is the first category, and that also means the first being" (p.5).[110] This means that, because being is self-contained and is not dependent on a metaphysical construct, potentiality and actuality do not belong to the categories of understanding. For Kant they do, indeed potentiality and actuality are grouped together as modalities, which include necessity. But for Aristotle modality is not a categorical question. Aristotle says potentiality and actuality are *one* of the ways of questioning *about* beings.

1.3. Section III: The Temporal Grounding of the Categories

In this final section we turn to see how a concrete existential analysis of Dasein (hermeneutic phenomenology) shows how a re-interpretation of the categories as *legein* must remain rooted in the lived historical practice of a community, thus maintaining the historical element in our understanding of the categories and avoiding an atemporal transcendental idealism that is the great temptation of modern philosophy. Understanding for Kant is made possible by the universal and necessary validity of pure concepts of understanding (categories, or theory), but for Heidegger understanding is rooted in a practical engagement with the world and how we interpret that practice (*BT,* Section 18). Thus an understanding of knowledge, must begin with lived experience or *being-in-the-world*. This means the structure of Dasein must be understood temporally. The things of the world are "revealed" to Dasein as they are encountered in use and so Heidegger calls them "equipment" (*Zeug*). The process of revealing involves the assignment of purpose and meaning to things in relation to Dasein's self-understanding. Thus the person is not to be understood as a stable and definite being with a universal and atemporal

[110] Plato in the end of *Sophist* also submits to this idea that the inner province of *logos* is making manifest. "*Logos* as discourse is the combing and making manifest in the saying, the unveiling assertion of something about something." P.3 Thus, *logos* is the relation back and forth of the other categories to the first category, and this is for Aristotle as interpreted by Heidegger, to be found in *logos*.

"human nature" but as a Da-sein that opens a space for meaning to emerge in its engagement with things and other people.

Phenomenology offers a first person account of how Dasein encounters the world in everyday experience. This account establishes the temporal priority of "worldhood" over objectivity, based on the fact that we use things before we contemplate them in knowledge (Chapter 3). We have a primordial relation with things, out of which the objective conception of objects arises through a subsequent process of abstraction. Heidegger argues that the products of that process cannot turn around and explain their origin; for example, reducing the world revealed to Dasein to a combination of sense data and feelings by arguing that the soft, red chair is constituted by the discrete sense data, softness and redness, etc. No objectivistic explanation from the third person standpoint of a scientific observer can get behind what phenomenology uncovers to offer a more fundamental account of being. The explanation of being in terms of being-in-the-world is thus ontologically fundamental, and so technical activity, very broadly construed as the fundamental relation of worldhood, is ontologically significant.

While for Kant, understanding the universal and necessary validity of pure concepts reaches a correspondence between a statement and a state of affairs,[111] for Heidegger, understanding is the process of interpretation [*Auslegung*].[112] Interpretation is a structure of understanding derived from Dasein, but not as simply defining a theory and then applying a practice. Rather interpretation is a "refining" of understanding itself. Heidegger illustrates the notion of interpretation at the level of the engaged "having-to-do-with" the "ready-to-hand". In preparing, putting to rights, repairing, improving, the ready-to-hand entity is explicitly understood with respect to its "in-order-to" (or for-what structure).[113] Thus, the most basic structure of the being of Dasein is being-in-the-world. This engagement with the world roots knowledge in a primordial "beholding" of things rather than starting with a subject over against the world cognized as object. To be beholden

[111] Kant, "The nominal definition of truth, that it is the agreement of [a cognition] with its object, is assumed as granted" (CPR, B82).

[112] BT, 148/144.

[113] *Ibid*, 148 f.

to something means we are already engaged with the thing prior to our explicit thematising of it in an objective way.

Following Heidegger, nature, we can say, is the environment [*Umwelt*]. All animals (all beings with a sensitive soul, to use Aristotle's terminology) have an environment, and if this environment is conducive to their way of life, they are able to thrive. But only beings with language and technology have a "surrounding" world. The English language prefix "sur" suggests that human beings are able to experience a world because of their ability to hover "above" the immediacy of their immersion in nature in order to observe and assign names to things.

Heidegger begins with the basic analysis that "things" in our environment have a "pragmatic" character because they concern us in some way. [114] Such things, Heidegger calls "equipment" [*Zeug*]: [115] things are ready-to-hand, or available [*zuhanden*] and their mode of being is "readiness-to-hand" or availableness [*Zuhandenheit, Zuhandensein*]. This is contrasted with the being of things and their properties which simply occur, present-at-hand [*Vorhandenheit, Vorhandensein*]. What concerns us is the emergence of the ready-to-hand as a meaningful and definite relation such that it can be understood as present-at-hand. For what is explicitly understood, even before its emergence as a propositional statement, has the structure of something *as* something [*Etwas als Etwas*]. This involves a *moment* of interpretation by which something is "seen" *as* a table, *as* a door, *as* a cart, *as* a bridge etc.

This "as free-apprehension" of something *as something* is at the same time a privation of seeing. For the piece of wood seen *as* a door is explicitly seen *not as* a table. Crucially however, this "seeing-as" cannot be thought of as something subjective. It is not as though we first experience something purely present-at-hand, a "mere thing", which we then construe as a door or as a table. Interpretation is not a matter of throwing a "meaning" [*Bedeutung*] over the naked object or attaching a "value" to it. It is the making explicit of what is already there in the entity as something within-the-world. This means that understanding something requires a process of deliberation and thus is nestled in what Aristotle refers to as

[114] *Ibid*, 68/63.
[115] *Ibid*.

the deliberative soul. This cannot be thought of in terms of an analytical projection of truth or falsity as assertion but rather as the three-fold structure of "engaged circumspection".

In clarifying the full structure of assertion, Heidegger attributes three significations to assertion: representation, characterization, and communication. Firstly, the preliminary signification of assertion, what we normally think of as representation, is "pointing out" [*Aufzeigen*] in the sense of 'holding up for view', 'drawing attention to', or 'exhibiting'. In this sense Heidegger is referring to the original meaning of the Greek term "*logos*" as "*apophansis*" *viz*., letting an entity be seen from itself. It is the Aristotelian term for a categorical statement. These may be divided into two kinds, a *kataphasis* or positive proposition or an *apophasis* or negative proposition. The Greek word for things was "*pragmata*". Latent in this expression is a combination of *eidos, morphē* and *hylē*. But the Greek term, *pragmata,* gives us a clue that any characterization of the *eidos* is rooted in our primordial engagement with the thing, a *praxis* or a meaningful doing. In the assertion 'the hammer is too heavy', what is discovered primordially is not the meaning of a proposition, but rather an entity ready-to-hand [*Zuhanden*], to be used or not to be used. Thus, assertion 'points out to' and 'represents' the reality of the entity, and we must remember that the more complete characterizations of the thing in predication and assertion must remain rooted in this primordial "letting be seen" of the thing. For example the predicate (too heavy) uncovers something more about the subject (hammer). This is also true of assertion, communication [*Mitteilung*] or speaking forth [*Heraussage*], which points out to others what is exhibited as thus determined. The communication is aimed at inducing the other to adopt the same concernful relationship towards that entity. It is a vocal utterance, or as Brogan translates a "conversance", which belongs to a statement. Bringing together these three significations of assertion, we can define assertion as "a pointing-out which gives something a definite character and which communicates" (Brogan 2005, xii). Heidegger considers assertion as a derivative form of interpretation, which in the final analysis is grounded in understanding.

This intimate tie between understanding and interpretation means that truth is never completely separable from our presuppositions. In Heidegger's language, interpretation *of* something *as* something always essentially involves a fore-

structure of understanding including fore-having (*Vorhabe*), fore-sight (*Vorsicht*) and fore-conception (*Vorgriff*). This has great importance for philosophy, for these fore-structures are clearly not at the subject's complete and immediate disposal but are temporally transcendent to consciousness, and thus point toward an overcoming of solipsism and subjectivism. There are important similarities between this existential phenomenology and Patrick Heelan's "horizontal realism" or Charles Sanders Peirce's "ideal realism", which is also an attempt to overcome the subjectivism of modern philosophy. In both Heelan and Peirce, time is not simply a construct of the mind but is continuous or enduring force that both bequeaths the possibilities for the meanings we encounter and also opens the duration necessary for taking up and concretising these possibilities.

Heelan, in *Space and Perspective,* analyses the fore-structures of understanding as being comprised of three constitutive parts (1) *Vorsicht*, or the resources of a common descriptive language; (2) *Vorgriff*, or a hypothesis about the sense of the materials being investigated; and (3) *Vorhabe*, or the culturally acquired skills and practices we need to understand, recognize, and name the objects in our world (Heelan 1983, 220). In everyday life, priority is given to ontic being as an existentiell structure of existence, *Vorgriff*. But in philosophical reflection Dasein awakens to awareness of its ontological, self-understanding or "circumspection:" Dasein understands itself as "this being [that] is concerned *about* itself" *Vorhande*.[116] And finally, Dasein is ontic-ontological as the being that knows its thatness and whatness, and can come together, with other beings of the same kind.[117]

Heelan's analysis clearly shows the communal nature of the fore-structures of understanding, which is crucially important in widening the locus of understanding from an individual consciousness to communal structures and culturally embedded practices, but what we want to focus on here is their temporally extended nature. Firstly, in every case interpretation is based on something we have in advance, i.e. a fore-having (past). It consists in Dasein's comprehension of his world, in its totality, purpose, and involvements. In other words, what Dasein has, in advance, is the total range of ways in which Dasein

[116] BT, 12/10.
[117] *Ibid*, 14/12.

sees as possible to relate to an entity, which is interpreted in terms of its 'in-order-to' or 'what-it-is-for'. Secondly, interpretation is characterized by a fore-sight (prudence/future), which is an interpretative assimilation that takes place under the guidance of some consideration in respect to what is understood or explicated. Fore-sight, therefore, brings limits on fore-having by seeing something from a certain point of view, namely the possible consequences of certain uses. Thirdly, there is the fore-conception (present) in which the interpretation occurs in terms of a conceptual scheme, whereby an entity is interpreted as itself. Thus, in every interpretation there is present a fore-structure and an as-structure. The clarification of the as-structure by the fore-structure is called interpretation. In other words, whenever something is interpreted *as* something it is based on fore-having, fore-sight and fore-conception.

Interpretation requiring these prior conditions of understanding may appear to have a certain problematic circularity. In terms of a text, this is a familiar leitmotif of hermeneutical dialectics. But Heidegger says this fore-structure is the existential fore-structure of Dasein itself. This means that the question of truth is forever bound to the question of the way our interpretive strategies emerge over time and how faithfully they allow the things themselves to appear.

> It [this hermeneutical circle] is not to be reduced to the level of a vicious circle, or even of a circle which is merely tolerated. In the circle is hidden a positive possibility of the most primordial kind of knowing, and we genuinely grasp this possibility only when we have understood that our first, last and constant task in interpreting is never to allow our fore-having, fore-sight, and fore-conception to be presented to us by fancies and popular conceptions, but rather to make the scientific theme secure *by working out these fore-structure in terms of the things themselves (BT,* 153).[118]

As such, the ontological tradition requires an interpretative process, which Heidegger calls a "hermeneutical situation"[119] understood as both a dismantling

[118] This passage is discussed at length by Gadamer, in *Truth and Method,* pp. 269ff.

[119] The hermetical situation is attempt to explicate the facticity of understanding from an horizon from which it operates from his 1922 lecture *Phänomenologissche Interpretationen zu Aristotles: Ontolgie und Logik.*

and retrieval of the prejudices of past exegesis and traditions. The hermeneutical situation is founded on history, which Heidegger concludes is philosophy. To retrieve history requires an overcoming of historical biases and prejudices. The situation of understanding is, therefore, hermeneutical, that is always already found in a culturally embedded interpretation. Any systematic articulation of the categories of being must, therefore, remain historical. And yet we do not immediately perceive the meanings we encounter as historical; they are merely present to us.

Thus, in order to come to see the real nature of truth in its fullness as a coming to presence, our familiar horizons must be destroyed, to retrieve the truth of the text and of a tradition prior to its sedimentation into a presentation of truth as merely present-to-hand, objective reality. So, overcoming tradition is not meant in the negative sense of annihilation. Rather it is a de-structuring of history. Destruction[120] or more formally, dismantling, must be understood, here, in the positive sense of setting free the history of being to make room for a more originary encounter with thinking. As Walter Brogan writes in *Heidegger and Aristotle* "the overcoming of tradition is not an abandonment or surpassing of what has come before. It is rather something like a thinking that delivers over the past to its possibility" (Brogan 2005, 9). In particular, Heidegger has in mind the "overcoming" of Scholasticism.[121]

Conclusion

As we have seen Heidegger offers us an extended notion of phenomenology that accounts for an embodied experience of the world through tools and moods. This

[120] In German the word for destruction as we understand it is in English would be *Zerstörung*. *Destruktion* is a technical term going back to Luther who meant by it the uncovering of Christian experience beneath Greek philosophy (Scholasticism). Luther's influence on Heidegger here is immense. Among a growing body of literature, see in particular Kisiel, *The Genesis of Being and Time*, p. 270; Crowe, *Heidegger's Religious Origins: Destruction and Authenticity;* and Armitage, *Heidegger's Pauline and Lutheran Roots* (Forthcoming)

[121] Heidegger defines his own standpoint as stemming from Lutheran theology and the late scholastics such as Duns Scotus. He found, in Scotus, Aristotle's philosophy as the ultimate horizon and primary source of the philosophical and theological position that dominated the later historical period including the works of Kant, Hegel, Fichte, and Schelling that has uncritically appropriated Lutheran theological presuppositions. GA 62, 246.

chapter has identified three categories of being that Heidegger re-appropriates from Aristotle: being and non-being, potentiality and actuality, and *logos* as structures of being that are grounded in human life. Crucially, what is at stake here is an ontology which can be applied to technology. He sets up the methodological ground of ontology using phenomenology. But because phenomenology, in its inaugural form in Husserl, has a tendency towards transcendental idealism, it can fail to encounter time as transcendent to the act of constitution, and thus become blinded to the experience of the being of beings for which the experience of the contingency of time is crucial. This orientation towards the idealization of being has an ancient lineage that far predates phenomenology and comes down from Parmenides and Plato and lands firmly in German idealism, specifically with Kant. To journey back, Heidegger shows how Aristotle's categories have been interpreted as forms of the mind under the influence of neo-Platonic interpretations and as subordinate to metaphysics in Scholastic interpretations.

As we have seen this turn toward the rooting of intelligibility in the immanent was made possible by the later medieval rehabilitation of Aristotle's scientific project inaugurated by Albert the Great who argued that description proceeds (causal) explanation. For example, a description of animal behavior precedes the explanation of what the animal is, its essence. The function of talons is to catch prey. The subject (talon) is followed by the predicate (to catch prey), but we only understand the talon, by first observing the catching. In another example, we could say the function of a doctor is to cure the patient. In the manifold way illness manifests itself, the unity of *a* particular disease becomes evident. That is to say, within the manifold way of being, through careful deliberation, the unity of being becomes intelligible in the attempt to restore health to the patient.

Heidegger is deeply influenced by this turn toward an understanding of being as inseparable from its actual manifestations in lived relations. However, on the Albertine understanding, the purpose of a categorical understanding of reality is merely to establish and articulate the morphological and functional types and properties of animals, its goal concerns definition. For Heidegger this cannot be complete, for alone it gives rise to the destiny of metaphysics as instrumentalism. Heidegger is part of the Albertine/Scholastic attempt to free Aristotelian thinking from its sub-ordinance to Neo-Platonism, but he argues that Aristotle should have

been properly interpreted as a hermeneutical ontologist where categories exist as both in-themselves and as a descriptive way of understanding being (and that of other beings).

This ability to see beyond the truth as it is presented to the truth of what brings it to presentation, through a process of overcoming the sedimentation of meaning that has occurred through a historical process, will be crucial in helping us understand technology in much richer ways than attempts that merely try to think about the advantages and disadvantages of current and proposed technologies. In short, an ontological analysis of technology will help us to see the technologies that drive totalitarian or capitalist societies in the late modern period as merely symptoms of a deeper condition of humanity marked by the desire to dominate and control. Further, an ontology of technology will help us to see that this is not merely the result of some recent historical rupture. Rather, this will to power begins with the rational thinking inaugurated by the first Greek philosophers. We have shown this by uncovering *logos*, historically understood as *ratio*, as *legein*, a collecting and gathering of meanings, not done for the sake of establishing a usable terminology but rather to make visible at once the manifoldness of the essence of being and its possible modifications.

Thus modernity, and with it our current orientation to technology, is not an arbitrary outcome but deeply insinuated into our very essence. It is, we can say, a state of being. When we think of it in its own terms, the technological consciousness can shed light on our contemporary situation, where a full diagnosis of modernity begins at its inception, and not with the particular instruments we use today. This re-interpretation of the categories as an ontology of being is only a start, however, for it is of central importance to re-integrate the question of the categories with the question of causality. Again this will draw our understanding of Heidegger back into the orbit of Aristotle and his medieval commentators for whom the question of causation was very much to the center. Thus it is to the question of causality that we turn in Chapter 2.

2. Chapter Two: Aristotle's Production Metaphysics

> "Where causality is understood as it is in the theory of the four causes, there ancient technology reigns" (Rojcewicz 2006, 15).

The theory of causality was developed by Aristotle to explain the origin and generation of the universe. Unraveling the causes of things, Aristotle uncovers a world of essences. His opening line in the *Metaphysics* is a definition of the essence of the human being as that being who "by nature desire to know" distinguishing human beings from animals in their cognitive capacity (Aristotle, 1996, A.I.980a). The presupposition of an investigation into causality is the possibility of something coming into being at all. The genesis of being is a becoming, a movement that affects material things.[122] There are three ways something comes into being: through human action [*technē*], self-generation [*poiēsis*], and through chance [*efkairía*], a subject we will briefly return to later. Furthermore, under the theory of causality, beings are subject to change, i.e., they undergo a prior and a posterior time (Chapter 3), and because time is the universal form of change, time (or some derivative of time) must exist in the things themselves and cannot be reduced to an epistemological category. This is not apparent to us, because the complex interrelatedness of Aristotle's four causes has been systematically overlooked since the late-Scholastic turn to efficient cause as the only ground for any experience or intelligibility whatsoever.[123] Western philosophy, in particular our orientation towards technology as instrumental, has been framed by such an interpretation. To disentangle Aristotle's causes and causality, Heidegger proses an analyses of the origin [*archē*] of the causes.

As an explanation of all events, for Heidegger, the essence of the truth of being lies within the complex unity of the experience of nature within this fourfold structure of existence. If this is correct, truth (or being) is prior to the propositional

[122] In *Heidegger on Being and Acting*, Schürmann refers to this as the "kinetic paradigm of origin" which constitutes both an inception and domination. (p. 99). He argues that "Once it is understood that phenomena as a whole are knowable from the viewpoint of causality, then it can be said that a true cause is only that which begins its action "and never ceases to being it", that is, a cause that also commands." (p. 99).

[123] Indeed scholar's debate about whether the four causes are really causes at all. For a useful overview of some of the various contemporary approaches see Beebee et als. (2007). On contemporary approaches to the relation between causation and explanation see Psillos (2002), And for a discussion on the four causes see Moravscik (1974), Freeland (1991), Lewis (1991).

truth that lies within the Platonic interpretation of being as *eidos* or subjectivity. Heidegger's work is not merely a neo-Aristotelian project, however, for unlike Aristotle, where the internal tendency of produced things terminates as a finished product, Heidegger on the contrary argues that the end product is a propaedeutic to what Michael Zimmerman calls a "poetic metaphysics". Thus beyond Aristotelian causality, it is necessary to turn to Heidegger's unique reinterpretation of this ancient doctrine. In this way, we can begin to see technology as no longer imprisoned within the walls of either materiality or rationality, but as a potential for being.

This chapter is broken into two section. Section I will be confined to a close reading of Aristotle's theory of causality. [124] It will look specifically at two works, *Physics* I, II and *Metaphysics* V, II to identify the causes and to show how they were originally understood *inter*dependently as: Material cause, formal cause, efficient cause, and final cause .[125] Section II will show how his theory of causality has been interpreted historically and illustrate the original way that Heidegger re-appropriates the concept of "*aitia*" or indebtedness. In doing so Heidegger means to overthrow the current practice of reducing all events to the effects.

2.1. Section I: Aristotle's Theory of Causality

Contrary to the descriptive character of the categories, the answer to a thing's *whatness* - causality - seeks to grasp the cause of something coming into being - the *howness* - of its coming to presence. (*Physics*, 194b17-20 and *Posterior Analytic*, Book 2 Section 3). Jeff Miller explains the law of science known as the law of causality, or the law of cause and effect as that which every material effect

[124] It is of course well known that Aristotle's theory of causality was rejected with the rise of modern mathematical sciences in the time of Galileo. Most contemporary philosophers of science accept only material and efficient causes (although there has been a recent resurgence of interest in the question of teleology in nature; e.g. Maturana and Varela, *Autopoeisis and Cognition*, Henning and Scarfe (ed.), *Beyond Mechanism: Putting Life back in Biology*; Lynn Margulis, *Symbiotic Planet*; James Lovelock *Gaia: A New Look at Life on Earth*). This thesis remains agnostic about the place of teleology in nature "itself," for Heidegger is always interested in nature as it is open to human understanding. Further, what is most important about this account is a way to interpret Heidegger's account of technology, and only a few extreme thinkers, such as the Churchlands and other "eliminativists", would deny teleological accounts of human artifacts.

[125] See Michael Tkacz's essay, 'Albert the Great and the Revival of Aristotle's Zoological Research Program,' *Vivarium* (2007) Vol 45, Issue 1, pp. 30-68.

must have an adequate antecedent or simultaneous cause, and because the law of science is determined by observation then the first cause is not "supernature".[126] Causes explain the subject of experience as opposed to categories of knowing. They disclose how things in general show up and what defines their limit. That Heidegger seeks the answer to a technologically dominated society *via* the ancient theory of causality gives us the impetus to examine the causes and their interrelationships within the sphere of the Scholastics. Heidegger's "getting over" of metaphysics is as Walter Biemel says in 'Heidegger and Metaphysics', "[Heidegger] did not jettison the tradition like excess ballast but rooted himself in the tradition and conceived of it as what has to be mastered".

The theory of causality, thus, is ambiguous. On the one hand it is associated with metaphysics and on the other it is a mediation on "real human life" (Ortega y Gassett, 1961). Heidegger was interested in a life philosophy, one that was not tied to a metaphysical hierarchy but which sought truth in human action and production [*Herstellen*]. As we will see through the course of this thesis, Heidegger is correct in identifying technology as metaphysics, it is an attitude towards the world, towards nature, and towards humanity. For Aristotle, nature exists without conferring structures on them; it simply appears to sensible beings, including human beings. Given the current trend to possess and dispose of material goods, we will begin with the most immediate cause, the material cause.

2.1.1. Material Cause

The Greek word for nature is *phusis. Phusis* or nature is defined by Aristotle in *Physics* as a source of movement and rest that belongs to a thing in virtue of itself and is identified by him primarily with form.[127] *Phusis* is also used to refer to the natural world as a whole. By nature, according to Aristotle, beings have in themselves the origin and ordering of their own motion, and, thus, a being is responsible for becoming what it is.[128] Natural things are subject to change based

[126] Miller, Jeff (2011), "God and the Laws of Science: The Law of Causality," *Apologetics Press*, http://www.apologeticspress.org/article/3716.

[127] Aristotle, *Physics*, II.I.A.193b3-6.

[128]Nature is matter and form (B2. 199^{a}26 -33), form is a cause, purpose (B2.199^{b}32), ergo nature is in a constant state of motion see: Aristotle, *Physics*, trans., Robin Waterfield (Oxford:

on their internal nature. By way of contrast, artifacts that are made by people are at rest having been produced.

> Some things exist by nature, others are due to other causes…The obvious difference between all these things and things which are not natural is that each of the natural ones contains within itself a source of change and of stability, in respect of either movement or increase and decrease or alteration. On the other hand, something like a bed or a cloak has no intrinsic impulse for change – at least, they do not under that particular description and to the extent that they are a result of human skill, but they do in so far as and to the extent that they are coincidentally made out of stone or earth or some combination of the two (*Physics*, II.I A. 192b8).[129]

There are at least three distinct ways in which something comes to be, in the above example: by nature [*poiēsis*], by artificial means [*technē*], and by chance, but in each case the coming to be of the thing is effected by the inter-relation of the four causes.

Today we are obsessed with artificial objects, in particular things that in some way are representative of a rational world. This is reflective not just in the sciences but also in contemporary pop culture. When Madonna sang "we are living in a material world"[130] she was not thinking of the underlying nature of material stuff. Her lyrics are a reference to instrumental objects such as cars, phones, and designer clothes that have come to saturate our markets and that she suggests demarcate our particular time in history. This historical moment is grounded in the metaphysics of the Enlightenment and the work of the Positivists in procuring facts as a general theory of knowledge and culture (Heidegger 1992, 15-16). Facts become the measure of truth, and by which reality is measured. And so the obsession with the "material world" is not arbitrary or unique to our own time;

New York, 1996), pp 9 – 55, p.p. 52, 53 hereafter *Physics*. See also 'On the Essence and Concept of Being,' in *Pathmarks*, ed., William McNeill (Cambridge: Cambridge University Press, 1998), p. 189.

[129]Aristotle, *Physics*, tr., Robin Waterfield (Oxford, New York: Oxford University Press, 1999). All references to the *Physics* is from Robin Waterfield's translation unless otherwise specified

[130] Songwriters, Rans, Robert; Brown, Peter, "Material Girl", Sony ATV Music Publishing LLC, 1996.

rather, it has a long history beginning with a human desire to know what a thing is, what it is made of, what its function is, and what it could be used for. In other words, the search for a thing's materiality is deeply inter-related with the search for the essence or nature of a thing.

In all cases of change something *persists* throughout the modification. Furthermore, in all cases of change something is gained or lost. In the case of generating a bed, the wood remains unchanged when it acquires a new form. But the wood also remains the same when the change does not affect the form, for example when the bed is moved from one place to another. The wood also persists through the more drastic change of painting the bed – the wood remains wood although the bed is now a different color. Similarly, the wood remains the material composition of the desk when the form of the desk is changed, when its legs are shortened or its drawers removed or rebuilt in some way. Thus, even after acquiring a new form, the wood persists.

It seems easy to identify the material cause in each of these cases with the underlying material stuff that can be observed, continuing to exist through these changes, whether the changes affect the essential form or merely the accidently form of the thing that is modified. But these examples have been strictly derived from the sphere of craftsmanship. Whereas the tree exists *as* a tree "for itself", the bed exists only *for* something else, namely the person who uses it *as* a bed. In other words, these objects are not the source of their own production. (*Physics,* II.I. 192b27). However, as Waterfield in his "Introduction" to *Physics* remarks, this sharp line of demarcation between self-moving living beings and externally moved artifacts is not clear with regard to automatic machines that contain within themselves a program that guides their changes. (Aristotle, 1999, p. xxi). This is particularly true of cars and computers that incorporate a moral indicator into the structure of their operation. For example, "smart cars" have an internal source of change that orients them toward causing the least possible harm in the case of an unavoidable accident, while computers are self-generating programs.[131] We will return to this in Chapter 4.

[131] See Ihde (2006), Heelan (2014).

Nonetheless, despite the blurring of these categories in contemporary cybernetic and IT systems, there seems to be a major difference between a simple object of handicraft technology, such as a table or a bed, and an object produced by "nature", such as an element or a plant or an animal, and identifying the material stuff of which the natural thing is made is clearly more complex. Of nature, Aristotle writes "it is the immediate material substratum of things which have in themselves a principle of motion or change" *(Physics*, II.I.193a27). Clearly, natural subjects are made of something, but just *what it is* and *how it is* to be described requires more than simple sensory inspection. For the most part, when we consider the elemental constitution of a thing, we might say it is made of "matter" or elements. But what does that mean? Perhaps we might say elements are composed of atoms and atoms of subatomic particles. But this is not very helpful, for modern physics does not yet know if fundamental particles even exist, and if they do it is not at all clear that what a thing is would be clarified or distinguished from other things by knowing that it is composed of some ratio of these fundamental particles. Yet this is a common way in which the material components of natural subjects are understood today.

The relation between an Aristotelian notion of material cause and the new field of quantum mechanics is still being worked out[132] and will require a further detailed engagement between Aristotelian philosophy and the results of contemporary physics, yet Aristotle had already realized that one cannot rest content by simply pointing to some material stuff, such as wood or bronze, as the most basic material explanation of natural things. Therefore, material cause must be some sort of *principle of conservation* that persists or endures through all the natural changes in things. He called this principle "protomatter" and thought of it as a kind of basic potentiality for existing in various ways.[133] This is a deconstruction of the *entelechy* of perfect causality and is similar to modern

[132] See Peter Hoenen, *Cosmologia*, 5th ed. (1956); Hoenen, *De Noetica Geometriae* (1954), Hoenen, *The Philosophy of Inorganic Compounds*, (Indiana: West Baden College, 1960); Philip Soccorsi, S.J., *De Physica Quantica* (1956), William A. *Modelling Nature: The Philosophy of Science and the Philosophy of Nature in Synthesis*, Catholic University of America Press, 1996.

[133] Aristotle, in Chapters 7-9 of the 1st Book of *Physics* refers to matter as "underlying nature" (191a8) and form as "the natural form" (192b1).

science.[134] Matter, for Aristotle, is not some specific material stuff, such as water or air, nor is it empty space. Rather it is an *indefinite* material substratum that embodies the possibility of actualization in some form or other. What is the substratum of a "living being"? Tkacz interprets this as something like the modern concept of energy that is a kind of power the universe has to realize the various states, properties, and activities of physical reality.[135] Consequently matter need not, indeed, should not, be limited to tangible material stuffs. Thus, while the relation between these questions and contemporary science is extremely important, "matter" remains a philosophical concept.

A better way to characterize matter is as the potentiality for being this way or that way, the potentiality for being actualized as one of a certain range of forms. For Heidegger the very meaning of "matter" springs up within an understanding of being oriented toward producing. Matter is that from which things are made and that which offers resistance to the production (GP 163-64/116). As with Aristotle, Heidegger believes that in making we presuppose a material which, as the raw material of the making, is itself not made. To say, for example, that wood is the material cause of the bed is to say that wood has the potential to exist as bed, to be formed and structured *as* a bed. For Aristotle, simultaneous with the general way of characterizing matter as potentiality for form also includes those cases where the material cause is not so much as stuff potentially shaped this way or that, but a potentiality of a more perfect sort. Aristotle's way of talking about organic life is "vegetative" (*Nichomachean Ethics*, Book 1). Furthermore, plants are not composed of elements in the simple sense that various elements are mixed together and shaped into this or that species of plant life. Rather, elements are potentially compoundable in various ways such that, under the right circumstances their potentiality for acting and reacting in the metabolic and homeostatic process of plant life is actualized in a plant of a certain species. Matter, then, is not inert. Far from being a passive receptacle or some moldable stuff, it is a power of natural things. Matter is a cause and is productive of the being and becoming of natural

[134] As modern chemistry improved on the ancient Greek theory of the four elements by developing the periodic table of the basic building-blocks of the universe, modern physicists continued to investigate the notion of conservation as an even more basic characteristic of nature.

[135] Albert Magnus, *Opera Omnia*, E. Borgnet (ed.), 38 volumes, Paris: Vives, 1890–9. Volume 6: Metaphysicorum Libri XIII.

subjects and processes. To identify the material cause of something is to articulate the power nature has to make that something actual.

If material cause is a potentiality, then it is a potentiality *for* something. Wood as wood has the potentiality of being formed into a writing desk and is, in this sense, the material cause of the desk. Wood always has some actual form: as living tree, as rough cut timber, as finished lumber, as writing desk. Yet, regardless of the form, it remains wood with the potentialities of wood, one of which is actualized here and now as, say, bed. The wooden desk is easy to identify as something composed of wood. What makes a desk intelligible as desk, however, is not the fact that it is made of wood, but the fact that the potentiality of the wood is actualized here and now as desk. In other words, it is the form of the desk that determines the artifact as desk and not, say, chair. Aristotle writes,

> we speak of skill where things happen by skill and are designed. We could not say that skill has played the slightest part, or talk of skill, when a thing is only potentially a bed and does not yet have the form of a bed, and the same goes for things which are constituted by nature. That which is potentially flesh or bone has not yet gained its own nature, and is not a natural object, until it has acquired the form which enable us to define what the thing is and to define it as flesh or bone *(Physics* 193a30-193b3).

Form, then, provides the intelligibility of the subject, and reference to the subject's form provides the subject's definition. Much the same is true of natural subjects, but in a more subtle way. Thus in a sense, the formal cause has priority over the material cause in the order of being, and we will turn to an analysis of this cause shortly. Nonetheless, this does not mean that materiality plays no role in shaping the nature of the in-formed thing. Albert explains this using the example of a curlew living in a marshy area (Magnus, Book II Interpretation of Aristotle's Interpretation 1999, 857-892). The beak of this bird is composed of bony matter (material cause) that is ridged and hard enough to hold the distinctively long, pointed shape (formal cause) brought into existence in the bird through an agent cause (which we now know to be a series of complex genetically-controlled chemical reactions) allowing the bird to efficiently feed on insects living in the dense ground vegetation of its

environment (final cause).[136] Matter, then, is not an object that stands over against us as something purely neutral or inert or in some other way fundamentally abstracted from intelligibility. Rather, the nature of matter is intimately interwoven with a things coming to be what it is.

2.1.2. Formal Cause

Just as matter in natural subjects is not simply identifiable as the material stuff of which they are composed, so natural form is not simply the shape or configuration of this material. In this way form and nature are ambiguous, because form too is nature (*Physics*, 193b10). For the natural subjects that are familiar to us from our sense perception, one can, to some extent, identify the material as a sort of stuff and the form as the shape or configuration of this material. Waterfield explains this using the example of a tree. If a tree floats on water it is because the constitution of the wood is such that wood floats on water. On the other hand that a tree has roots is because of the form of the tree and two requirements that are imposed on the shape of the thing by this form: i) trees are tall, they are vertical, and need to be rooted so they do not blow over, ii) trees are living things that require water and nourishment which cannot be easily obtained in air, but can be in soil (Waterfield, xxii).

This, however, only takes one so far, and certainly not as far as scientific knowledge. Albert offers the example of a hippopotamus.[137] The general shape or outline of a hippopotamus is certainly part of its intelligible form and, in this respect, natural form resembles the form of artifacts. Yet, the shape of an animal varies widely: from individual to individual (for example in the case of "jack" salmon which can be only 1/3 the size of other male salmon), over time (for example the seasonal 40% drop in body weight experienced by nursing black bears), and even circumstantially (for example in the case of a lizard that loses its tail to escape a predator). Nonetheless, despite these quite dramatic changes or

[136] See Albert Magnus, *On Animals a Medieval Summa Zoologica*, trans. Kenneth F. Kitchell Jr. &Irven Michael Resnick (London: The John Hopkins University Press, 1999), Vol II for an elaboration of his examples on animals.

[137] *Ibid*.

differences in “shape”, the basic nature of the animal remains the same. Thus, if natural form is the defining aspect of natural subjects, if it constitutes their intelligibility as the sort of subjects they are, then there must be more to natural form than simply the shape of the natural subject. Furthermore, form must also be what is causally *responsible* for the natural subject’s species. While the hippopotamus certainly has a generally identifiable shape, it is not simply this shape that makes it a hippopotamus, for a hippopotamus is a unified organism of a certain species, distinct from and analogous to other species in specifiable ways.

This is the subject’s substantial form, for it causes the subject to be the kind of substance it is**.** As “substance” is the scientific word for thing, and one can think of formal cause as the reason for the thingness and *whatness* of the natural substance. In a note on substance, Waterfield points out that that the substance of a thing is what is given in its definition.[138] Forms like this can be distinguished from those accidental forms that are true of the natural subject, but are incidental to its being what it essentially is. That the hippopotamus is a quadruped and a mammal are essential to its being a hippopotamus, for an animal cannot be a hippopotamus without being the sort of animal that normally develops four feet and nurses its young. That the hippopotamus is in the water or stained with river mud is accidental to its being a hippopotamus, for it remains a hippopotamus whether in or out of water and whether stained or unstained. Accidental forms vary in presence, absence, or degree without changing the essential character of the substantial subject. They are either attributes or modifications of the substance but do not determine its species, even if they are always or normally found in that species.

When human beings intellectually apprehend and define a natural subject, it is the substantial [*hypokeimenon*] form that is apprehended. Heidegger defines hypokeimenon as “what always already lies present at the basis of all relevant speech and discussion" (*Being and Time* 35/ 30). Thus such apprehension is not the same as sensory apprehension, because substantial form [*hypokeimenon*] is not necessarily immediately revealed in sense perception in the experience. Substantial form, of course, is derived from sense experience; one must have some experience

[138] See, *Physics*, p. 239.

of the natural subject to begin the process of learning what it is. Yet, substantial form is more universal and determinative than what is available in sense perception. But have we not already concluded that universals are a discursive way of understanding the relations between theory and fact? The defining characteristics of an element or a plant or an animal do not just apply to this perceivable piece of each hippopotamus, for these are what makes them be what they are as a unified whole. Indeed, it is the very fact that substantial form is a reality, that Dasein through conversance, can disclose the *hypokeimenon* of the substantial form.[139] Aristotle understood all too well the importance of identifying and differentiating the individual things we encounter as individuals of a kind, a process which if left to the senses would not render scientific knowledge. In other words, the fact that simply experiencing a natural subject by means of our senses does not exhaust our knowledge of the subject, shows that substantial form is a real cause of the nature and intelligibility of the natural subject.

While substantial form accounts for the unity of the natural subject as a subject of a certain species, it also is the source for the subject's various attributes and *functions*. To say of a hippopotamus, for example, that it is a mammal, is not simply to say that it is an animal with a certain morphology or physiological structure. It is also to say that it is an animal that lives in a certain way, an animal with certain characteristic activities, such as nursing its young with mammary secretions. Identifying a plant as a maple tree is not only to identify a tree of a certain shape or size, but to indicate a tree that manifests certain distinguishing operations such as reproducing and growing in a certain way, changing the color of its leaves and losing them in a certain season, the seasonal flow of a sugary sap from its roots to its branches, and so on. Even non-living natural subjects exhibit certain activities according to their substantial nature, in the sense that they have certain characteristic ways of changing. A gaseous element, such as hydrogen, tends to expand to fill the container in which it is placed, whereas a metallic element, such as copper, tends to keep a more stable shape. Liquids tend to lose or retain heat at certain characteristic rates, depending on the kind of liquid they are.

[139] In more Husserlian language, this is why adumbrations that are not immediately present to consciousness are nonetheless co-present in the unity of intentional object.

Along with the underlying material, then, the unifying form of a natural subject is the cause of the various functions and changes peculiar to the subject.

Thus, while part of the causal explanation of the natural subject is identifying its material component, it is also necessary to articulate its formal cause. Indeed, it is the substantial form of the subject that provides its intelligibility, accounting for its species and characteristic operation. Pointing to the material cause alone will not adequately account for all that is true of the natural subject. Moreover, one cannot reduce formal cause to material cause. One cannot explain things by simply indicating what they are made of, and treating their form as mere shape, configuration or structure of the matter. This would fail to provide and account of the subject as substance, for it would treat form as simply an accident. For any natural subject to be what it is, it must have both a material cause and a formal cause: the material components with their properties must be brought together in a certain structure in such a way that a substantial unity of a specific kind functioning in specific ways results. This requires both matter and form: a potentiality for being this kind of thing actualized as being this kind of thing. They are co-responsible for a being what it is.

2.1.3. Efficient Cause

If natural subjects require a formal cause in addition to material cause on account of their reality, there must also be some sort of agency that accounts for the presence of the form in the matter. Matter, after all, is simply the potentiality for certain determinations and matter remains potentially this or that form until something acts on it. If this were not the case, then there would be no potentiality, for the potentiality for being a certain thing cannot, at the same time and in the same respect, be actually that thing, thus, an agent cause is required to actualize a potentiality in matter such that this or that substantial form comes to exist. As for the other types or aspects of cause, in artifacts the agent cause is fairly easy to understand. If wood has somehow come to exist as a writing desk, then some agent has made it so. Wood need not be a desk – indeed, without the human agent, wood is not a desk. The recipe for writing desk is potentially formable matter such as

wood, a plan for forming the wood, and a carpenter to execute the forming. Without the carpenter, of course, the potentiality of the wood to become the desk would never be realized.

The necessity of the agent cause in artifacts provides the analogy for nature. Natural subjects come into existence, change in various ways, and go out of existence all on account of some agency operating in some way. Even in the creation of the artifact, one can see natural agency at work: the carpenter, possessing a certain ability to operate in certain way, acts on the wood in its current form to change it through the activity of carpentry into a different form, making a useful artifact. In a similar manner other animals act upon the natural subjects of their environment changing them for their own advantage: they feed, they build nests for their young and traps for their prey, they hide or store food, and they move subjects about, and so on. Living things in general are agents for perpetuating their species by exchanging genetic material with others of their kind and giving birth, laying eggs and fertilizing them, bearing and disbursing seeds, etc. Agency is involved in even the most basic processes of life, for all living organisms, in one way or another, convert chemical substances and direct solar energies to provide nutriment for themselves and other species. Agency is also found at the chemical level among the elements and their compounds. Under the right conditions, they can act upon, react to, or combine with other substances to bring about a wide range of changes. In general, all natural substances or subjects can be agents,[140] acting upon the potentialities latent in the materials in their environment to actualize certain formal realities.[141]

Forces are the physical agencies that cause natural subjects to be in motion, to come to rest, or to change their state. Generally, forces are understood to act on a natural substance from the outside as the carpenter with his tools externally acts on the wood in the process of making it a desk. Yet, the operation of a force in changing a subject in some way requires more than just the agency of the force. The subject itself must have some intrinsic nature. The actions of the carpenter and

[140] Hence the ambiguity in the word "subject", from L *subiectum* as the translation of *hypokeimenon* (and originally *subjicio*, throw under, bring near) to talk about any being whatsoever and yet "subject" or "subjectivity" understood in post-Cartesian philosophy as applying only to consciousness.

[141] See *Final Causality in Nature and Human Affairs* edited by Richard F. Hassing, 59.

his tools are effective in forming the wood into a desk because the wood has the potentiality to be so formed. In fact, even the completed artifact is changed by some agent on account of the way it is in itself: the desk can be moved out of the room because it is made of some relatively stable and moveable material, such as wood, and it is structured in such a way that it more or less retains its shape throughout the move. What is true of artifacts in this respect is also true of natural substances. The wind, for example, can disperse maple seeds because of the aerodynamic form the seeds themselves possess.

The intrinsic nature necessary for receiving the agency of the force is present in the subject on account of its matter and form. Natural subjects, then, cannot be explained in terms of agent cause alone, but require both material and formal causes as well. This is true even given the fact that matter and form themselves represent a source of agency in the subject in that the subject exerts a resistive force. Wood, for example, offers enough resistance to the carpenter's tool that it can be shaped by it. Yet, such resistive force arises from the internal principles of the wood only when acted upon by the external agent. If the maple seed did not offer some resistance to being blown about on account of its material and structure, then it could not be dispersed by riding the wind. At the same time, maple seeds offer no resistance in the absence of wind or some other force. The many and varied changes taking place throughout nature require both an external agent cause as well as internal principles of matter and form.

2.1.4. Final Cause

Up to the 13th century, or prior to Albert Magnus, Aristotle's notion of causality remained tied to Plato's understanding of *telos*. This telos suggested that there was a final cosmic *telos*; a perfect end to which all things strive. Many contemporary understanding of *telos* remain deeply influenced by this Platonic idea. However, Aristotle has no such equivalent. As a first approximation of a non-Platonic interpretation, we can think of Aristotle's *telos* in terms of process. A process is a change or series of changes oriented toward some end. Most dramatically this may result in the coming into being of a new being. The craftsman, for example, who

shapes clay into an urn, does so in a way that changes the potentiality of the clay into the state of being an actual urn. While the potter may not be competent and never reach her goal, the directionality of the process is uncontroversial.

Artificial change is other than natural change, because artificial change is understood in terms of an intentional being such as a carpenter. This confusion might indicate that all natural agents are conscious of their end. This of course is untrue. To overcome this possible error, Aristotle identifies three types of ends: terminal ends, perfected ends, and intentional ends.

Terminal Ends

The simplest and most basic way to understand an end is as the terminus of a process or change, or "that for the sake of which" change occurs. When something undergoes continuous change until it comes to an end or a stop, the end is that at which the process terminates (194a25-30). If one boards the train at Galway and alights at Huston Station in Dublin, it is easy to identify Huston Station, Dublin, as the end or terminus of the train journey, for it is the place at which the train traveler comes to a stop. This sense of end applies to any natural change as well. The free-fall of some massive subject toward a center of gravity terminates when the subject reaches an object that is stable and impervious enough to bring a stop to its motion. A maple seed that is implanted will continue to grow until it reaches maturity or until something causes it to cease growing. The state of maturity is its natural end, for that is the point at which growth naturally stops. Just as maturity is the terminus of development, death is the terminus of the life of the poet, an end [death] for the sake of which he was born (194a-35). The externally imposed stopping point of growth is also a terminus, as for example, in the Japanese art of *bonsai* or of a Scots Pine barely surviving in a bog, although it is not natural to the plant itself because of its external imposition.

This last point indicates an important distinction among termini of processes or changes: some are natural and others are imposed. Natural subjects are relatively stable kinds of beings that can be identified among the various changes found within the natural world. While they are not absolutely stable – after

all, they do change – their changeability is limited by the kind of being they are. Take Albert's example of a hippopotamus; it grows, but not indefinitely. The mature hippopotamus reaches a certain range of size and its growth naturally comes to an end. No matter how much variation there is in the size of these animals from individual to individual, they never reach the size of a mature whale. The hippopotamus also moves about the earth, but only within a certain range – such animals are not found in the Arctic, but only in certain regions. The natural terminus of such changes are determined by the nature of the animal as it is in itself, rather than being imposed by some external force. Nonetheless, natural beings are also subject to external forces that result in changes that have termini determined by both the nature of the being as well as other external factors.

While both sorts of termini of change are important for understanding natural beings, the natural terminus is fundamental. This is because ends in this sense are indicative of what the natural being is. A process that results in salt from sodium and chlorine is one in which the reagents of sodium and chlorine lose their own characteristic properties and identity in the production of the new substance, salt. Certain factors are necessary for starting the reactions that bring about the process, but these reactions cannot be understood as a process except in reference to the terminal state: salt, with its proper characteristics. Heavy elements and their isotopes radioactively decay, but not in an unending and indeterminate manner. When a certain state of decay is reached, radioactive breakdown stops and a stable nature is reached. In animals that usually reproduce, sperm and ovum unite to form a zygote that undergoes repeated division forming a stable multicellular organism of a given species. Natural change, then, is directed toward an end in the sense that such changes have natural termini that are characteristic of the natural subject. These termini will be states of relative stability in terms of which the natural process is identified and understood as the process it is.

Perfected Ends

Another way to understand ends or goals is as the state of completion relative to other possible ends. End in this sense is a terminus, but it is also a perfection that

is attained through the process that reaches the terminus. Natural perfective ends are most clearly seen in the characteristic processes of living things. The growth of an animal or a plant is not simply a process that is aiming at a certain terminus, but it is also a process that, having reached the terminus of maturity, is perfected. A perfected state is one that represents a higher level of being than a less perfected state. The mature horse, for example, exists at a higher level of equine being than the colt, because the physiological and behavioral characteristics of being a horse are completely existent in the mature horses, while still developing in the colt. Among inorganic beings, perfection may be more difficult to identify, because it may be present in more than one way. Some inorganic beings reach a kind of perfection when they attain a state that conserves its nature as the kind of thing it is. Salt undergoes a process of crystallization and, as a result, preserves its being and identity. Other inorganic beings tend toward perfection, not so much in their own being, but as part of the system of nature. An element possesses a kind of perfection simply by being the element it is, but it may attain further perfection as part of a natural system when it undergoes a process that compounds it with another element such that new natural subjects come to exist. Hydrogen and oxygen possess an elemental perfection in themselves, but by compounding to form water they produce a new kind of being, and thus hydrogen and oxygen achieve a perfection through creation in the process of forming water with properties that exist in neither alone.

Intentional Ends

Finally, certain ends that are both termini and perfections are also intended. This specialized sort of end is found in those natural processes that are the result of conscious agency. Animals and humans are natural agents of this sort because they are able, through their cognitive faculties, to form an intention that can be realized through their actions. Many species of animals go through the process of gathering materials and piecing and cementing them together in various ways in a specific kind of place, as a way of realizing their intended end of nesting. This, of course,

is the sort of acting for an end that is also characteristic of human artifice, for human beings intend the end of their creative activities.

The difference between an intended end and one that is simply the terminus or even the perfection of a process is that the intended end already exists in some way prior to the process aimed at the end. Now, of course, the end does not pre-exist in the same way that it will come to exist as a result of the agent's activities. Rather, it pre-exists as a plan, an image, or a natural urge in the agents' cognitive faculty. The agents' activity that results in the production of the intended end, therefore, realizes the being of the end in accordance with and because of the intention. If the agent did not have advance awareness of the end in some way, then such an existence of the intended end can take various forms depending on the nature of the agent. The non-human animal agent intends its end by being aware of a natural urge, and acts from it in ways that are predetermined by its species. The intentional ends of animals, therefore, tend to be of a relatively limited variation within a species – all sparrows build their nests in more or less the same way and in the same sort of place. Human agents, acting from intentions that pre-exist as rationally understood plans, produce their ends in a variety of ways that represent a wide range of flexible responses to both needs and circumstances.

End in this intentional sense is not found in the activities of all natural subjects, but only those capable of consciousness, namely, in sensory beings. It is, nonetheless, natural, because the agency that brings about an intended end arises from the nature of the animal or human agent. Such intended ends are final causes of the artifacts intended by the agent. They are part of the natural order in the sense that they proceed from the nature of the agent naturally capable of intention.

Yet, terminal and perfective ends are also final causes and part of the natural order. This is because any natural process, or natural subject that comes to exist or change as a result of a process, cannot be completely understood in terms of its material, formal, and agent causes. **S**uch causes always imply a final end as the terminus and perfection of the process. Moreover, some such processes proceeding from the natures of conscious agents also require explanation in terms of final cause in the sense of an intention. Aristotle does not say that every part of reality must have in its nature all four of these *aitia* in order to be intelligible.

Numbers do not have motion-initiating factors or goals, for example. But to the extent that things are intelligible, the condition of such intelligibility will involve some of the four factors.

2.2. Section II: Development of Causality after Aristotle

Aristotle was working from within the Platonic tradition where in the *Phaedo* we learn that the "inquiry into nature" consists in a search for "the causes of each thing; why each thing comes into existence, why it goes out of existence, why it exists".[142] At the beginning of the *Metaphysics* Aristotle affirms the nature of metaphysics as an inquiry into the kinds of causes and the principles they follow (*Metaphysics*, 982a5). Albert Magnus, writing in the light of Aristotle says "The aim of natural sciences is not simply to accept the statements of others but to investigate the causes that are at work in nature" (*De. Miner*, lib. II tr. Ii, i). He claimed that in studying nature "we have … to inquire what Nature with its immanent causes can naturally bring to pass" (*De Ceolo et Mundo*, I, tr., iv, x).[143]

Although Albert's work covers the entire Aristotelian corpus his contemporary, Roger Bacon, was the first to try to reform science through observation and experimentation (Turner 1903). Bacon, in contrast to Albert's Dominican background, was an English Franciscan friar. In the late Renaissance, Francis Bacon characterized Roger Bacon as an exceptional figure among the school men, as a man engaged in the mechanical understanding of the secrets of nature. (Bacon 1968).[144] While both Albert and Bacon were interested in rooting truth in empirical science, for Albert the individual remained subordinate to the universal, while for Bacon the individual came to have definite ontological priority over genera and species.[145] In this way causation begins to be understood in a

[142] Plato, *Five Dialogues*, 'Phaedo', 96a6-10.

[143] This is not to assume that Albert accepted Aristotelian metaphysics *per se*. Indeed, just as with Plato, Albert devotes an entire chapter to what he calls "the errors of Aristotle" (*Summa Theologia*, P. II, tr., I, iv).

[144] *Works of Francis Bacon*, III, 534.

[145] In the *Stanford Encyclopedia* entry to Roger Bacon, Jeremiah Hackett makes a specific reference to in which Roger Bacon serves as a foil for Heidegger's discussions on the originality of modern science. He writes: "For Heidegger, Bacon did not achieve the post-Galilean and Post-Cartesian discovery of a mathematical projection of nature and the consequent modern experiment.

mechanistic way as forces acting upon matter, and understanding causes came to separate from the necessity of essences (categories) thus leading to the nominalism of modern science and the eventual divorce of empirical science from philosophy.

On the other hand in modern philosophy in the wake of Descartes and Kant, causation comes to be subsumed within the categories of the understanding, and philosophy becomes divorced from empirical science. In 1781 Kant writes of the Principle of Casualty in the *Critique of Pure Reason*, "everything that happens presupposes something which it follows in accordance with a rule… All alterations occur in accordance with the law of the connection of cause and effect".[146] However, we only have access to this truth as a structure of our own thinking. In their Introduction to the *Critique*, Guyer and Wood summarize Kant's argument, as the claim that

> a genuine necessary connection between events is required for their objective succession in time, and that the concept of causality in which this connection is expressed is imposed on experience by our own thought as an indispensable condition of its possibility.[147]

Thus it was not only the rejection of teleology in Galilean and Newtonian physics, but the collapse of questions of causation into a theory of the categories in transcendental philosophy and the rejection of the validity of categorical questions in nominalistic science that leads to the separation of questions of empirical causation from philosophical reflection.

It was not until Ortega y Gasset's publication of *Meditations on Quixote* (1914) that *via* a new concern for technology, the question of technology becomes a question for philosophy once again (Chapter 4). Soon after Ortega y Gasset's work, Heidegger's in *Being and Time* (1927) works out a systematic theory of praxis that integrates questions of categorical understanding and temporality, and later in his essay 'The Question Concerning Technology' the question of causality

He claimed that it was false to argue, as many had done between 1880 and 1940, that Roger Bacon was the source for the post-Cartesian concept of science." Hackett, Jeremiah, "Roger Bacon", *The Stanford Encyclopedia of Philosophy* (Spring 2015 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/spr2015/entries/roger-bacon/>.

[146] Kant, CPR Division I, Ch. II, §3.3.B.

[147] Kant, CPR, 'Introduction', p. 21.

itself becomes the central question for philosophy. However, we must remember that Heidegger is not merely returning us to a forgotten question. His project is one of a creative retrieval that requires significant de-sedimentation of the tradition. As John Caputo explains in *Heidegger and Aquinas: An Essay on Overcoming Metaphysics,* according to Heidegger "it is even a mistake to understand Aristotle's *aitia* in terms of *causa*. 'Causal thinking' occurs only in the Roman – medieval periods; it is introduced in the Latin language … All causal thought is objectivistic and misses the simplicity of a sheer emergence into presence" (Caputo 1982, 220). This simple emergence, or *spontaneous* encounter with the world is what Heidegger wants to find as a possibility in the Greeks' experience of presence.

When something presences itself [*anwesen*] it does so as a gathering [*legein*] or collecting of beings into a whole, in something like an event: a coming to presence. Therefore, *phusis* as an event was originally not sharply distinct from *alētheia* (truth). Essence in the traditional sense reifies this event, where world becomes a representation (idea). Plato identified *phusis* with the "idea", thus developing the essential, and static "aspect" of beings into a representation, intervening between ourselves and the temporal flow of being. *Logos* becomes an assertion about beings, and *alētheia* the "correctness" of an assertion. Human beings become the "animal having *logos* (discourse, reason)"; originally, however *phusis* was "*logos* (gathering collecting [*legein*]) having humanity".[148] The process of representation (*Vor-stellen*, putting forth) devotes itself to securing and fixing in place.[149] The boundary line (*peras*) comes to mean *Ge-stell* (*enframing)* (Chapter 4). But this is not what Aristotle had in mind as we saw above. Thus, this section will outline Heidegger's unique interpretation of Aristotle's theory of causality, and show how the first order *poiēsis* (nature) and the second order *technē* (artifacts) are not absolutely distinct.

2.2.1. Heidegger's Re-appropriation of Aristotle's Causality

[148] IM, 134/147.
[149] SR, 167-168.

For the Greeks, because human beings were never subjects (in the modern sense), non-human beings could never be objects – "things that stand over against me".[150] Heidegger finds an expression of this ancient, authentic sense of truth in Aristotle's *Physics*. Given that phenomenological truth means the disclosure of things, which is also the disclosure of nature [*phusis*], in Aristotle's discourse on nature, he is undertaking a description of how things show themselves. In *Being and Time* Heidegger tells us *phusis* is "what emerges of its own accord (i.e., the emergence of a rose), self-opening unfolding, issuing into appearance in such unfolding, and persisting and remaining in appearance, in short, emerging-lingering- prevailing (*das aufgehend – verweilende Walten*)".[151] Aristotle affirms this in *Physics*: By nature, beings have in themselves the origin and ordering [*archē*] of their own motion and this is what is responsible for a being becoming what it is.[152]

This ordering is the content of Aristotle's cause. Ordering rules from within beings themselves. In this way, all beings have an internal tendency to become what they, by their nature, should be in the *terminal* and the *perfected* sense. Everything in nature strives to become itself, to achieve its own specificity, by reaching its particular end. Plants and animals *are* beings "only in so far as their essential abode and ontological footing is movedness".[153] Even at rest they are in movement through the maintenance of their being against the forces of entropy and the carrying out of their characteristic functions. Such ordering rules from within those beings themselves. Heidegger calls this "nonalteration".[154] The tree that is moved in this sense is at rest in so far as it is a tree that stands there. Up to now Aristotle calls everything that possesses its own origin and ordering, nature [*phusis*]. *Phusis* is "substance," or "essence" and as such it is being. For Aristotle, substance is "what lies present".[155] Heidegger writes "Whatever is nature

[150] *Pathmarks*, p. 189.

[151] BT, xxix, 38ff.

[152] Nature is matter and form, (B2. 199^{a}26 -33), form is a cause, purpose (B2.199^{b}32), ergo nature is in a constant state of motion see, Aristotle, *Physics*, trans., Robin Waterfield (Oxford, New York, 1996), pp 9 – 55, p. 52, 53.; hereafter *Physics*. See also on the essence and concept of being p. 189.

[153] *Pathmarks*, p. 190.

[154] Heidegger's analysis of Aristotle's movedness is a sense of change of place while at the same time remaining in the same place. For example, a plant that is rooted "in place" grows (increases) or withers (decreases): "something can be moved in the sense of withering and at the same time be moved in still another way, namely, by being altered," see *Pathmarks*, p. 190.

[155] *Ibid*., p.199.

(substance) has the character beingness (being), and is in the state of movedness; this is the mode of being, i.e., of presencing".[156] Thus, it is nature [*phusis*] that is the "*origin and ordering of the movedness of what moves from out of itself and toward itself*"[157] (Heidegger's italics) that is, the being of beings. How then is being properly determined?

Following hints left by Plato,[158] Aristotle argues that in order for a being to reach its own end, that being must be limited in its scope and existential determinacy. Heidegger interprets Aristotle's limit [*peras* (Gr), *Grenze* (Ger)] as a thing that is circumscribed, determined by what it is. Hence a limit brings a being into existence by setting out a boundary between the thing and what it is not. Limit gives definition and form to an entity. For "what comes up and becomes intrinsically stable [*Ständig*] encounters, freely and spontaneously the necessity of limit, *peras* ... Coming to stand accordingly means: to achieve a limit for itself, to limit itself".[159] The limit draws the boundary against non-being, thereby allowing a being to come to stand according to its own internal particularity. A limit, thus, is not a defect or deficiency in a being. On the contrary, it is a beginning of a thing that comes to stand on its own internal order of change and form.[160]

Heidegger notes that in Aristotle these natural beings that contain their own source of movedness or being are contrasted with artifacts [*Gemächte*] such as couches, robes, ships, and houses. As we saw above, according to Aristotle, the character of *technē* is *intentional,* it can only exist in the craftsman, whose mind is the origin of the idea of the artifact and the ordering of its manufacture. A house for example, has the origin and ordering of its being a house in the architect's plan, which is given prior to construction as the idea [*eidos*] or "appearance as envisioned beforehand".[161] The idea orders each step of the actual constructing and governs the choice and use of materials. But because the house can never stand

[156] "Some things exist by nature[…]Natural objects include animals and their parts, plants and simple bodies like earth, fire, air, and water[…] they exist naturally" *Physics* B2 , 1 192^{b}8-10.

[157] *Ibid,* 200."

[158] See *Philebus* 16c and *Meno* 76d.

[159] IM, 60.

[160] "Consequently, in one way *being* is spoken of *as follows*: it is what primarily and antecedently underlies each single thing as 'the order-able' for beings that have in themselves the origin and ordering of movedness and thus change. But in the other way, (being is addressed) as placing into the form, i.e., as the appearance, (namely, that) which shows itself for our addressing" See *Physis* (193a 28-3). Note: this is Heidegger's translation from *Pathmarks* on page 208.

[161] *Ibid,* p. 197

from out of itself, it can never take root it the earth and hence renounces any claim to knowing and grounding truth as such.[162] Coming out of the phenomenological tradition of Husserl, Heidegger finds this strict division between beings with the principle of movedness or being in themselves (most notably in the unconscious vegetative processes of all living beings) and beings with the principle of movedness or being outside themselves (the meanings imposed on nature by the intentions of the craftsman) to be problematic. Heidegger wants to hold onto the link Aristotle notices in craftsmanship between actualization and *telos* as the ground for the becoming of beings. But he wants to re-interpret these processes in way that makes them less as purely dependent products of human consciousness, bringing the things of nature and the things of human craftsmanship closer together and re-integrating *technē, phusis, poiēsis,* and *epistemē* in a more relational understanding of being.

2.2.2. Distinction between (*Wesen*) Essence and (*An-wesenheit*) Presence

Heidegger attempts to achieve this by re-thinking our traditional, philosophical notion of essence in a less reified more relational and more temporal way. In his essay 'The Question Concerning Technology' Heidegger interchanges between *wesen* (essence) and *Anwesen* (presencing) to denote the event-like meaning of essence. *An-wesen* is coming to presence whereas *wesen* in the traditional sense is the stable condition of an entity. In normal usage there is no hyphen in this word; by using the hyphen Heidegger intends to emphasize the prefix *an* (to, at, toward) to indicate essence as a "coming to presence"[163] as a way of challenging the philosophical tradition that he sees as reifying the notion of essence and thus losing its event-like, historical, and relational nature.

Drawing on the original meaning of the verb form, Heidegger accords to the word *wesen* a crucial role in his speaking of the happening of being. Moreover, he asserts that *wesen* is "not whatness, *quidditias*, but enduring as presence,

[162] *Ibid*. p.198.
[163] QCT, p. 9.

presencing, and absenting".[164] Essence is also identified as *währen*, to endure, as Heidegger states: "The noun is derived from the verb *wesen* and is the same as to last or endure (*währen*)".[165] It is in the enduring that the being of *what-is*, as presencing [*An-wesen*], governs everything that, maintaining itself on-goingly in its own particularity, presents itself by way of time as a temporal duration for the essence is opened out by way of man and lived out by him.[166]

Heidegger's creative use of etymologies also links *wesen* to s*ein*, to be.[167] This then creates resonances with his etymologies in "Building, Dwelling, Thinking" where he links the *bin* of the Cartesian *Ich bin* (I am) to *bauen* (building) and *buan* (dwelling). Thus, as with Plato we must think of essence in terms of the fullness of being, but Heidegger wants us to see being, not as a static, absolute truth separate from the realm of becoming, human involvement, and human experience, but more akin to the sheltering and stable (but not eternal) space for meaning created in a home that fits harmoniously into the rhythms of human life in a particular setting. In a similar vein Heidegger reminds us that a gathering of the assembly of free people in ancient Germanic societies was called a thing (*ding*).[168] This further reinforces the idea that to be a thing (*ding*) is to have an essential nature but that his nature is tied to living, temporal communities and shared ways of life.[169]

Heidegger's reinterpretation of the essence of technology is an attempt to draw out the idea that technology is nothing technological, i.e. a purely universal and objective reality. He associates *Wesen* [essence] with Aristotle's expression to *ti ēn einai* ("what [it] was to be"), which, like *Wesen*, has to do with the past: meaning what a thing was, or has been, before it is actualized, and what we

[164] Note: this is Heidegger's translation from *Pathmarks* on page 208. Also, IM, p. 59.
[165] QCT, 161.
[166] 'Time and Being', in On *Time and Being*, p. 12.
[167] Martin Heidegger, 'Time and Being', in *Time and Being*, p. 12. Here after TB. Also, Lovitt et al., p.253, IM, p. 59.
[168] "Building, Dwelling, Thinking", 355.
[169] Further resonances with Heidegger's thesis come from Irish etymology in which *bí* (to be) and *buan* (lasting, enduring, permanent, solid) both come from the same Indo-European root, *bʰuH-* (to grow, become, appear). See *An Foclóir Nua Béarla-Gaeilge*: Grá buan (abiding love), Dath buan (fast color), Bóthar buan (long road), Do chara buan (your faithful friend), Gura beo (long may he live).

understand "earlier", already or *a priori* about something.[170] Thus, he could say, to question the essence of technology is to question how technology as a phenomenon is enduring and has come to presence. The crucial link between the desire for being and temporality understood as the coming to presence of things in the act of knowing suggests that that there is a bond between ontology and technology, for as we will see it is the technologies that offer the promise of easy access to the presencing of beings that have come to dominate recent times.

Historically *Technikon*, 'technology, engineering, technique,' comes from the Greek word *technē.*[171] *Technē* and *epistemē* are linked together, the latter related to that which comes-forth out of its own nature alone and the former related to that which comes-forth only by our intervention with that nature. As forms of *poiēsis*, both *technē* and *epistemē* are modes of revealing; but, in contrast to *epistemē*

> *technē* [...] reveals whatever does not bring itself forth and does not yet lie here before us, whatever can look and turn out now one way and now another [...]. Thus, what is decisive in *technē* does not lie at all in making or manipulating nor in the using of means, but rather in the aforementioned revealing. It is as revealing, and not as manufacturing, that *technē* is a bringing-forth.[172]

Thus, for the Greeks, *technē* quite properly belonged to the general notion of bringing-forth, *poiēsis*. The fundamental Greek experience of reality was, Heidegger believes, one in which men were immediately responsive to whatever gives itself; "they openly received whatever was presencing to them".[173] For the Greeks, the coming into the "present" out of the "not-present" was *poiēsis* [bringing-forth].[174]

In contrast, *technē* also brings forth something but not itself. In *technē*, the bringing forth of a thing was possible by a combination of elements – "'matter,'

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[170] *The Basic Problems of Phenomenology*, trans., A Hofstadter (Bloomington: Indiana university Press, 1982), p.120. GA 24: *Die Grundprobleme der Phänomenologie*. Edited by Friedrich-Wilhelm von Herrmann, 1975. Hereafter BP.

[171] IM, p.159. See also QCT in BW pp.311-317.

[172] QCT

[173] AWP 131.

[174] QCT 10, BW 317.

'aspect,' and 'circumscribing bounds'".[175] This *technē* was experienced through art and handicraft. Moreover the arts of the mind were called *technē* also.[176] *Technē's* origin has now a metaphysical connotation. "Philosophy, as a thinking that considered reality and therewith made it manifest in its being, was *technē* also in its own way".[177] Here lies the root of what Heidegger means when he says technology is nothing technological. Technology is a way of revealing the epoch in which being finds itself. From the beginning of human history humans have used tools – technology, but different types of tools reveal the world in different ways.

Conclusion

Because the subject of this thesis is ontology and technology, the current chapter focused on the intermingling of the human and the technological such that the question of technology cannot be divorced from the question of humanity. Using Heidegger's analysis of the theory of causality, we extended Aristotle's phenomenology by collapsing the radical distinction he makes between natural and artificial beings. The reason for this, as we will see in Chapter 4, is to highlight the similarities between ancient and modern technologies, rather than the propensity today to point to their distinctive natures. This does not mean that we should collapse the distinction altogether. Rather, by understanding the essence of technology as *legein* (as categorical *and* causal), we can begin to understand the extent to which technology is tied to metaphysics. Only by such critical reflection can we anticipate future technologies and the crucial role they might play in the future. For example, in common usage, "technology" speaks to us not of the way that the world is revealed through human engagement with reality, but of a particular aspect of modern life in which human thought and action produce and utilize all manner of instruments and machines whose functioning is specifically designed to facilitate human control of the world. This underestimates the experience of technology as a mode of presencing, and subordinates technology to

[175] QCT, 7-8.
[176] *Ibid*, 13.
[177] Lovitt xxv.

the more serious concerns of philosophy. This way of thinking has its roots in Greek philosophy.

It is from their experience of reality that Greek philosophy arose – wonderment and awe at the presencing of things. However, beyond this wonderment arose the desire to grasp reality and to discover what might be "permanent within it".[178] Thus, while the Greeks had the ability to openly receive and make known that which offered itself to them, they nonetheless sought to master it.[179] In particular, against supernatural and mystical explanations of reality, Plato sought to understand the world as a rationally ordered system in which *ideas* became the true foundation and justification of existence. Plato's *idea* should not have become the sole and decisive interpretation of being.[180] This is what distanced the Greeks from being, which was manifesting itself in the presencing of all particular beings.

Recovering the essence of Aristotle's theory of causality as constitutive of being, it becomes clear that technology as a complex mode of thinking, acting, and relating subsumes the metaphysical constructs of a particular epoch. For the ancients metaphysics, and hence technology, represented the natural world. In contrast, modern technology which is grounded in a theory of consciousness, formalism, and logical facts, are manifest in the hyperworld of digital algorithms and fact statement programs. It is the latter notion we turn to in the following chapter. Here we will describe Kant's *Transcendental Aesthetic* and the paradoxical duality of experience and abstraction in what he describes as synthetic *a priori* perception. The trajectory from Platonic ideals to Aristotle's original logic and Kant's formal logic begins to emerge as an epistemological abstraction that gets taken up by the mathematicians in logical positivists of the neo-Kantian school.

[178] QCT. xxv.
[179] Rubenstein: *Strange Wonder* (Columbia UP, 2010)
[180] IM, p.182.

3. Chapter Three: Time in Relation to Technology

Analyzing our total absorption with modern information technology with its promise of presence is a complex interrelatedness between a desire to experience the present, and the promise of a future time. In computational science the present is referred to as "real-time", and means the asynchronistic inputting of data with the amount of time it takes to process that data. Although this comes close to a simultaneous event, it only ever reaches an infinitesimal approximation. Traditionally, an infinitesimal quantity is one, while not coinciding with zero is smaller than any finite quantity. In the theory of limits the term infinitesimal is sometimes applied to any sequence whose limit is zero. "An infinitesimal magnitude has been somewhat hazily conceived as a continuum "viewed in the small", an "ultimate part" of a continuum".[181]This is what Charles Sanders Peirce called *synechism*, the idea that things are connected in a continuous uninterrupted whole. Continuity connotes unity. Peirce's continuum while it denies it is made up of discrete points, it nonetheless harbors within it an unboundedly large collection of points which he terms a *super multitudinous* collection, which today mathematicians call a *proper class*.[182] It is this logic (together with Peirce's development of Boolean logic) that constitutes computer technology and is grounded in the idea that time is continuous, arising from Aristotelian metaphysics. However, with Aristotle presence all but disappears in a state of non-being.

Yet when we think of presence we ordinarily think of it as this particular moment in time, the "now". Time, for Aristotle, is linked to change and movement. Where there is alteration or movement, there is time, for everything that comes to be and ceases to be is in time. Change exists because time exists, for "every alteration, and all that changes, is in time".[183] The notion that time is part of nature is a challenge to Plato where there are no significant ontological differences

[181] John Lane Bell, *The Continuous and the Infinitesimal in Mathematics and Philosophy* (Milan: Polimetrica 2008), p.16.

[182] *Ibid*, 211.

[183] *Physics*, 222b31.

between present, past, and future times; the differences exist simultaneously in eternity.

Kant accepts Aristotle's notion of time which he argues is immanently infinite. He appropriates Aristotle's theory of time which is inclusive of succession and simultaneity. This notion of progress is characteristic of modern information technologies, arguably beginning with the *pragmaticism* of Peirce. Heidegger's project is to distance truth from knowledge and he does this by thinking of time not merely as an *a priori* structure of understanding, but also as an event within the context of the world. Time for Heidegger perdures, and it is within this structure that beings come to appearance at all. Thus, time is recognized by Aristotle, Kant, and Heidegger as the very basis of experience and thus fundamental to any understanding of the reality.

For Aristotle time is a succession of "nows", and for Kant time is successive but this succession is rooted in the unity of the transcendental ego. In the wake of these two great thinkers, the classical ways of understanding being and time are empirical (or discrete)[184] and metaphysical (or continuous).[185] Henri Bergson eloquently summarizes this duality as follows: "The first implies that we move round an object; the second that we enter into it" (Bergson 1955, 21). The former is characteristic of a view of cognition wherein the intellect approaches a thing externally from a particular point of view, uses symbols to express its findings, and yields knowledge that is relative to it. This type of knowledge we associate with Aristotle and Albert Magnus's work on nature.[186] The latter is the process of intuition, which we can associate with the metaphysics of Plato and Kant.[187]

[184] Etymologically, "discrete" derives from Latin "to separate." It also has its roots in the verb "discern" and the cognate "discreet" – to show discernment, hence "good behavior. It is interesting to note that while continuity and discreteness are antonyms, "continence" and discreetness" are synonyms.

[185] Etymologically "continuous" comes from the Latin "to hang together" or "to cohere." Its noun "continent" is an expanse of land unbroken by the sea, and "continence" means self-restraint. Synonyms for continuous include: connected, entire, unbroken, and uninterrupted.

[186] This is not to say that Aristotle restricts time to the real presence of a thing. For Aristotle, time takes place in the "soul" and also in the "mind." Likewise Kant is specifically interested in empirical evidence of the world. However, the metaphysical grounding of their systems takes us in these two characteristic directions.

[187] This is a broad characterization of these movements in philosophy and is meant only as a reference point. It is well known that Descartes began his Meditations first by sense-experience

Heidegger extends the Kantian critique of pure reason to include a historical-cultural condition of being through his analysis of time as "ecstatic temporality".[188] His notion of ecstatic time overcomes the inherited problematic of thinking of time as "present-at-hand" [*Vorhandenheit*], a succession of nows interpreted as an objective sequence.[189] The essential structure of ecstatic temporality is "care". The three temporal *ecstases* which constitute ecstatic temporality are i) projection (*Entwerfen*), ii) thrownness (*Geworfenheit*), and iii) concern (*Besorgen*) as laid out previously. These three ecstases in their essential unity are what constitute the original time in which Dasein's being is understood. Heidegger writes: "being-in-the-world is ontologically bound up with the structural totality of the being of Da-sein which we characterize as care".[190] They correspond to the temporal structure of time as past, present, and future but are not reducible to them. In his later works, specifically a lecture course entitled 'Identity and Difference', Heidegger adopts the term "perdurance" to explain the event of being (*Ereignis*) within this framework. Perdurance means to endure or persist continuously, but unlike Kant this concept disentangles spatiality from temporality.

The present chapter aims to show how time presents itself not merely as perdurance, duration, or an imaginative intuition, although these too constitute time, but also as an experience of time as an actual *occurrence* of feeling. Our discussion will focus on part 1 and part 2 of the 'Transcendental Doctrine of Elements' and Kant's first antimony of pure reason concerning space and time.[191] Understanding, as laid out by Heidegger in both *Being and Time* and in *Kant and the Problem of Metaphysics*, is held hostage to *a priori* conditions for the possibility of experience. Heidegger argues that because such a philosophy relies

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and that Aristotle deduced that only the mind could render a thing intelligible. Hume, too, can be credited with the turn to formalism with his distinction between his relations of ideas and matter of facts. David Hume, *Enquires into Human Understanding and Concerning the Principles of Morals*, eds., L.A. Selby-Bigge and P. H. Nidditch, 3rd ed., (Oxford: Oxford University Press, 1975), p. 21.

[188] Etymologically the Greek *ecstatic means a state of being "beside oneself", thrown into a frenzy or a stupor, with anxiety, astonishment, fear, or passion in an experience of self-transcendence. These four states of being beside oneself, are example of what Heidegger expresses as "moods'. The adjectival form, ecstatic, is used to describe* the nature of trance, catalepsy, mystical absorption, stupor, or frenzy. "Ecstatic, adj. and n." OED Online. Oxford University Press, September 2015. Web. 13 September 2015.

[189] BT, 422/386.

[190] BT, 209/193.

[191] CPR, A426- A433/B454- B461.

on a notion of being as permanence, it necessarily conceives of being within the horizon of time and in doing so remains Greek.

After an introduction to transcendental idealism and Kant's break with ontology, I will present the first three arguments for his transcendental aesthetics, underscoring his departure from Aristotle (I). Following some general objections to Kant's conditions of possibility grounded in time, I will offer Heidegger's objections (II). This will provide the ground for the Classical/Kantian synthesis by which William Dilthey sought to emerge from subjective time to bring world history back into the question of philosophy. Dilthey offers a solution to Kant's antinomy which he calls "world-experience", a concept that dominates Heidegger's earlier thinking. Dilthey, however, fails to fully work out a theory of praxis. Thus we turn to Peirce who not only accounts for world history, but also for a radical break from internal time and the being of presence understood as feeling. Heidegger follows this tradition by bringing back the question of the life-world into philosophy. In his analysis of "worldhood" he introduces the distinctively existential thematic of space and time. Later he develops the theory of perdurant time, which can be understood as the event of being (III).

3.1. Section I: Transcendental Idealism: Kant's Rejection of Aristotle's Production Metaphysics

If we are to understand the nature of modern technology and its break with ancient technology, we need to trace back the theory that underlies it, which begins with Kant's formal logic. By doing so we can find the weakness within the structure itself, and thus attempt to move beyond formal logic. Heidegger gives us a clue to the puzzle by pointing us to his notion of time. Thus this section will work out the meaning of being by means of an existential analytic and the conditions of experience as outlined by Kant.

For Kant, time is presupposed in all human experience, but not in the Aristotelian sense as inherent in the natural world. Time for Kant is "nothing other than the form of inner sense", which cannot subsist on its own. (A32/B49). In other words, time is the *a priori* and necessary condition of any experience. Because

Kant is attuned to the inability of understanding what lies beyond human cognition, he goes about a total transformation of Aristotle's ontology, which directed knowledge towards the object, by arguing that knowledge is only possible if "the object [as an object of the senses] conforms to the faculty of intuition".[192] For Aristotle truth is *adaequatio* – a conformity of description to the object. Kant's objection is that in Aristotelian philosophy the external world is given as an independent fact. In contrast, and in terms of Heidegger's language, Kant intends to show that not all knowledge is ontic and that where such knowledge is given, it is possible only ontologically (KMP, 17).[193]

In the *Critique of Pure Reason* Kant put together a list of twelve *a priori* categories (or concepts) that are objectively valid i.e., that apply necessarily to all objects in the world that we experience, giving us the *a priori* forms of our sensible intuition (space and time). Kant's division in the "Transcendental Logic" between the "Transcendental Analytic" and the "Transcendental Dialectic" is derived from the Aristotelian distinction between the logic of truth and the logic of probability (metaphysical insights and things themselves).[194] It is under the transcendental analytic (A11/B25) that Kant unpacks Aristotle's distinction between concepts and principles, the first of which argues for the universal and necessary validity of the pure concepts of the understanding, or the categories (concepts such as substance and causation), and the second of which argues for the validity of fundamental principles of empirical judgment employing those categories, such as the principles of the conservation of substance and the universality of causation. Kant's transcendental analysis is not concerned with objects of empirical cognition, but "the conditions of the possibility of our experience of [objects] by examining the mental capacities that are required for us to have any cognition of the objects at all" (Guyer and Wood, p. 6).

[192] Kant, *Critique of Pure Reason*, 110

[193] Ontic judgments are about particular conditions of beings. Ontological interpretations are about being, i.e. that in terms of which beings as such exist.

[194] Kant follows the Jena professor Joachim Georg Darjes (1714-1791) in distinguishing between the positive contributions of the understanding, working in cooperation with sensibility, to the conditions of the possibility of experience and knowledge and the spurious attempt of reason working independently of sensibility to provide metaphysical insight into things as they are in themselves. (Introduction, 5).

Implicit in the transcendental deduction is the presupposition that all truth is made possible by certain rules that make thinking possible, rules that are uncovered by logic, which Kant defines in the Preface to the second edition of *Critique of Pure Reason* as "the science that exhaustively presents and strictly proves nothing but the formal rules of all thinking" (CPR, ix). Logic, for Kant, becomes the *a priori synthesis* or structure of understanding (*Verstehen*). This is a criticism against Aristotle's original logic or "realism" which makes available the basic structure of the possible object and then discloses the being of that field of inquiry. Kant's criticism of original logic was not its failure as a science, but rather the assumption that all cognition must conform to objects, which leads to its failure to provide an answer to the question of how cognition reaches its objects.

In the "Transcendental Analytic" under the subheading "Analytic of Concepts", Kant argues against ontology (general metaphysics) or any attempt to acquire knowledge of "objects in general" through the formal concepts and principles of the understanding (CPR, B105). He argues that Aristotle's general logic does not yield any knowledge of the universal and necessary validity of the categories. This lack of a principle on which to ground the categories leads to confusion between pure sensibility (concepts such as when, where, and position, and the relations of priority and simultaneity), and empirical intuitions such as motion. Kant's argument against Aristotle, then, is not so much about the content of the categories as the methodology used at arriving at them. Against Hume's skepticism, Kant wants to argue for the validity of these concepts, but he has to show how the nature of the object and the nature of thought could be unified. He does so by means of a "transcendental deduction", where certain pure concepts or categories, including substance and causality, are universally valid with respect to possible experience, since they are necessary conditions of such experience.

Kant's concept of the categories, which is the ground of experience, begins with an empirical encounter with the world. Only reason, which demands clarity and certainty, gives us such knowledge.

> Now such universal cognitions, which at the same time have the character of inner necessity, must be clear and certain for themselves, independently of experience; hence one calls them *a*

> *priori* cognitions: whereas that which is merely borrowed from experience is, as it is put, cognized only *a posteriori*, or empirically" (Kant 2000, 127, A2).

However, this does not cause a split between *a priori* and *a posteriori* knowledge. On the contrary, because the formal structure of scientific knowledge coincides [*zusammenfalle*] with the formal structure of natural experience, both natural and scientific knowledge are built up through the same acts of synthesis and in conformity with the same laws by way of the categories of the mind (common to all rational beings), thus guaranteeing the objectivity of causal accounts.

If, on the contrary, causal accounts arose purely from experience, causal knowledge would be

> entirely surrendered as a mere fantasy of the brain. For this concept always requires that something *A* be of such a kind that something else *B* follows from it necessarily and in accordance with an absolutely universal rule. Appearances may well offer cases from which a rule is possible in accordance with which something usually happens, but never a rule in accordance with which the succession be expressed empirically, namely that the effect does not merely come along with the cause, but is posited through it and follows from it (Kant, 200, A91/B124, 223).

Here Kant is arguing not simply for the fundamental principles of science but also the universal law of causation: that every event has a cause and can therefore be explained in accordance with the law of nature, precisely because the law of causation is a condition of the possibility of cognition. This is a reaction to both Leibniz who thought of causality as a mere phenomenon and Hume who thought of it as simply a custom or habit of association. Kant argues that a necessary connection between events is required for their objective "succession" in time and that this connection is a causal connection. However, as causation, like all the other categories, is a structure of consciousness not a property of things-in-themselves, it cannot be derived from experience, but is rather a condition for the possibility of experience.

Kant offers the example of knowledge in geometry as a synthetic *a priori* intuition (CPR B40). But what really seems to motivate his position is the success of Newtonian physics. Modern physics is grounded in Euclidean geometry where space is both unlimited and immeasurable, so the infinitely distant parts of any plane seen in a certain perspective appear as a straight line, in which case the sum of the three angles of a triangle equals to a straight line and so amounts to 180º[195]. For Kant absolute "space is not something objective and real, nor is it a substance, nor an accident, nor a relation; rather it is subjective and ideal. Space is issued from the nature of the mind" (A39/B56). This understanding of space as *a priori* is meant to oppose both the realism of the "English" who posit space as the "*absolute* and *boundless* receptacle of possible things"[196] and against the epistemological view of Leibniz who argues that the propositions of geometry describe space as merely abstracted from an experience of relations among objects, which for Kant reduces geometry to principles that are empirical and not certain. For sense impressions are not qualities of things but merely alterations of our sense organ, which we have good reason to suppose occurs in the same way in everyone. On the contrary, a synthetic *a priori* intuition such as space is not a sense; nothing that is intuited in our experience of space is a thing-in-itself, rather what we call outer objects are nothing other than mere representations of our sensibility (CPR, A30). By this argument he holds to the principles of "absolute" certainty (of mathematics), and the impossibility of experiencing the thing-in-itself.

In summary, we can say that the rejection of Aristotelian ontology is not oriented towards Aristotle's commitment to reason or what we have called his "hermeneutical phenomenology" where the deliberative process allows for boundless possibilities in the discovery of meaning, but in his failure to ground the possibility for cognition to reach its object. In a groundbreaking way, Kant solves this problem by re-interpreting Aristotle's categories as categorical structures of the mind, thus providing a ground for knowing on the model of the certainty of Euclidean geometry, and integrated into the temporal framework of the human subject. Thus, Kant's metaphysical structure depends on the strength of his theory

[195] See Peirce's discussion of the apriori nature of modern science in 'The Architecture of Theories' in *The Essential Peirce: Selected Philosophical Writings*, eds., Nathan Houser and Christian Kloesel. Vol. 1. (Bloomington & Indianapolis: Indian University Press, 1992), pp 285-297, 295.
[196] "Absolute space" is an allusion to the Newtonian theory of space, CPR, A23/B38, B 69-72.

of i) succession and simultaneity, ii) the apodictic certainty of Euclidean geometry, and iii) his theory of unity or identity. The next section will elucidate these three conditions of subjective time which Kant presents in the first three arguments for the "Transcendental Aesthetic".

3.1.1. The First Argument: Succession and Simultaneity as a Transcendental Idea

Kant's exposition of time is in confrontation with Aristotle *synechism*[197]: the first systematic analysis of continuity and succession (or discreteness) and the common sense notion that time exists, found in Book V of the *Physics*. Thus a brief introduction to Aristotle's analysis of time, which is tied to his analysis of quantity, will prove fruitful. Continuity and discreteness are attributes of quantity.[198] Continuous quantities include lines, planes, solids, movement, time and space. These things, whose limits are sutured together, each form a unity. Discrete or successive quantities include numbers and words. Something is continuous "when the limits by which the two objects are in contact have become identical and … enable one object to continue into the other. This is impossible where there are two separate limits".[199] For Aristotle a thing is continuous when it is sutured or "glued" together with a common boundary. Whitewater notes that the word "continuous" in Greek means "held together". In other words, if the limits of x and y "are identical" where they touch, then the whole which has x and y as parts will move as a piece.[200] On the other hand, something is successive when "it has to succeed something and it has to come later than that thing".[201] Successive then is such that if x succeeds y then x must come after y in some suitable ordering.

[197] Bell uses this term, borrowed from Peirce as a way to distinguish between discreteness and the infinitesimal. John Lane Bell, *The Continuous and the Infinitesimal in Mathematics and Philosophy*, 15.

[198] Quantity is found in Book VI of the *Categories*. Here Aristotle associates quantity not merely with continuity and discreteness but the value of "how much" and distinguishable by being "equal" or "unequal."

[199] *Physics* 227a6-a17.

[200] *Ibid*, 271.

[201] *Ibid*, 226b34.

When we examine this analysis of measuring in terms of time, Aristotle arrives at the same conclusion. Just as a point cannot be successive to a point, a 'now' cannot be successive to a now in such a way that they form a "stretch of time". He writes

> a point cannot be successive to a point, nor can a now be successive to a now, in such a way as to make up a length or a stretch of time. I mean, things are successive if there is nothing of the same kind as themselves between them, but there is always a line between points [divisible at intermediate points] and a stretch of time between nows [divisible at intermediate nows]. Furthermore, anything can be divided into its components and so on this hypothesis a length or a stretch of time could be divided into indivisible things. But we found that no continuum is divisible into a thing which lack parts.[202]

This means that we cannot think the present in isolation from the past and future. "For anything which is divisible into parts, if it exists, then when it exists some or all of its parts must exist".[203]

The argument for time examines the past and future, and proceeds in two steps. In the first step it is assumed that time is a thing with parts; past and future. But past and future *are* not which means time does not seem to be. The past is no longer and the future is not yet. The second step confirms the first. If a thing with parts is to be, all or some of its parts must be. Although time is made of parts, some is past and some is future thus none of it is. Accordingly, if some permanently divisible things exist, all their parts must exist, but it is not possible that time exists if its parts do not.[204] So time seems to be composed of two non-beings, and, therefore, cannot show itself capable of substantial being.

This means that the substantiality of time must reside in the present moment. However, if "now" is now at every moment between two points in time, then that time span could be divided infinitely into ever more now's. Thus there

[202] *Ibid*, 231b6-b18.
[203] *Ibid*, 218a3.
[204] *Ibid*, 217b33-18a3.

would be simultaneous "innumerable 'nows' between any two".[205] This seems to mean that change between one now and a different now is impossible, but if 'now' always remains the same, then "things that happened two thousand years ago would be simultaneous with what happened today".[206] Also past and future are such that they are non-being and only that which *is* instantaneously present deserves to be addressed as 'is'. Here continuity causes an aporia; if the past is a non-being and future a non-being, then the present cannot exist, and it seems clear that past and future are indeed non-beings.

Kant solves this problem with his claim that the representation of simultaneity and succession must be mind-dependent, since they are presupposed in our experience in time. Kant formulates his first argument for internal time writing:

> Time is not an empirical concept that is somehow drawn from experience. For simultaneity or succession would not themselves come into perception if the representation of time did not ground them *a priori.* Only under its presuppositions can one represent that several things exist at one and the same time (simultaneously) or in different times (successively).[207]

The implication for this first argument implies that experience is excluded from any possibility of forming a concept. For example, "cat" cannot be an empirical concept since "[cats] would not themselves come into perception if the representation of [cats] did not ground them *a priori*".[208] Let us examine the claim, "the cat is on the mat". For this to be a possible truth claim, we must specify a temporal dimension. The representation of "now" the cat is on the mat, requires a time *prior* and *posterior* to its being on the mat. It exists as the same representation in our inner cognition as the very same cat that presents itself on the mat, but now at a different successive time, where it no longer is on the mat.

This may satisfy the problem of the non-existence of Aristotle's continuous moments because simultaneous and successive moments may be represented

[205] *Ibid*, 218c.
[206] *Ibid*, 218a.
[207] CPR, A30/B46.
[208] *Ibid*.

through *a priori* concepts rather than ontological ones. It is not clear, however, how we can ever apply those *a priori* temporal concepts to the empirical world. While the argument for the harmonization of the empirically real and transcendentally ideal may stand with regard to space, where difference can be grasped within the unity of a single moment of consciousness (one cat is to the left of the other and therefore the cats are clearly differentiated), with regard to time it seems to suggest an infinite regress into the mind where we can never truly catch sight of the *difference* between different moments or different degrees of time.[209] As Kant writes, "The finitude of time signifies nothing more than that every determinate magnitude of time is only possible through limitations of a single time grounding it. The original representation of time must therefore be given as unlimited".[210] As unlimited, time has only one dimension, i.e., succession. "Different times are only parts of one and the same time".[211] Succession and simultaneity becomes a series of *memories* from past to present and from future to present.[212] It seems that no two things can remain (persist or endure) simultaneously because only things that exist necessarily, exit simultaneously. Kant, of course, is confronting the question of how cognition can distinguish between sameness (unity) and difference (discreteness).[213] The answer lies in the *a priori* structures of understanding, his second argument for subjective time.

3.1.2. The Second Argument: The Priority of Time

If time does not exist independently of the mind, it exists as the ground of experience in the mind. Thus we cannot talk about time outside of intuition.

[209] It is worth noting that for Aristotle the Law of non-contradiction is the firmest of all principles and without it all knowledge would be impossible. He formulates it thus: "It is impossible for the same thing to belong and not to belong at the same time to the same thing and in the same respect" (*Metaphysics*, IV 3 1005b19–20). Spatial comparisons do seem to yield something like this kind of confidence.

[210] CPR, A32/B48.

[211] *Ibid*, B47.

[212] Contemporary physics has successfully integrated time and space, but only by understanding time as the 4th dimension of space. It is the subjective experience of the future as radically different than the past has not been spatialized or integrated into our current physics.

[213] Intuiting difference in spatial relations seems to be much less mysterious than in temporal relations. If I wonder whether two tables are of the same length, I can push them together to compare their differences. If I want to compare two durations of time it is impossible to ever 'bring them together' to compare them.

Furthermore, time is only valid as a way of intuiting objects, "time is therefore merely a subjective condition of our (human) intuition (which is always sensible, i.e., insofar as we are affected by objects), and in itself, outside the subject, is nothing) (CPR, A35). Of course, this does not mean that Kant holds time to be a result of my psychological processes. If the actuality of appearances disappeared, that would mean that nothing appeared to me, but time would still be.

> Time is a necessary representation that grounds all intuitions. In regard to appearances in general one cannot remove time, though one can very well take the appearances away from time. Time is therefore given *a priori*. In it alone is all actuality of appearances possible. The latter could all disappear, but time itself (as the universal condition of their possibility) cannot be removed".[214]

Kant continues later, "We can extract clear concepts of [time and space] only because we have put them into experience, and because experience is thus itself brought about only by their means".[215] Time therefore is both the ground of experience, while at the same time limits those experiences. The result of the delimitation of time suggests that within a subjectively constituted spatiotemporal framework we can never know things "in themselves". In other words, there can be no grasp of naked reality, because "How things may be in themselves […] is entirely outside our sphere of knowledge".[216] Thus, Kant does not allow for the continuous motion of external time. Rather, the concept of alteration is tied to the concept of motion (as alteration of place) which "is only possible through and in the representation of time". But this becomes problematic. In reference to the law of non-contradiction, Kant sees that "only in time can both contradictorily opposed determinations in one thing be encountered, namely successively".[217] Time, it seems always accompanies movement, but movement as the ground of difference does not seem to be amenable to *a priori* investigation.

For Aristotle, this tension between change and intelligibility comes together in the "now". Aristotle's analysis focuses on the interplay between (i) the

[214] CPR, A31/B46.
[215] *Ibid*, A196/B294.
[216] *Ibid*, A190/B235.
[217] *Ibid*, A31, B48, 180, B49.

now as the present and the instant[218] and (ii) the now as identical and different.[219] The present character of the now is its continually changing position between past and future, while the instantaneous character of the now is its indivisibility, which is only revealed as "the result of the operation of dividing time into past and future".[220] At *Physics*, 218a6-8 the now is addressed as an "indivisible instant". Aristotle argues that as an instant, it cannot be considered part of time, as a series of "nows" cannot make up a line any more than a series of points can make up a line. Points, are likewise potentially present in a line, but any actually present part of the line is itself a divisible line, not an indivisible point.

While Kant grounds his theory of time on physics rather than mathematics, the Euclidean nature of Newtonian physics offers the same structures to thought as Euclidean geometry, and Kant too thinks about continuity and simultaneity in terms of the line and its points. So his account of successiveness and simultaneity is remarkably similar to Aristotle's division of continuity into the 'now' as present/instant and the 'now' as identical/different. The difference is one of metaphysical interpretation: Kant argues that Aristotle's depiction of time is merely an intuition since the analogy is based on outer intuitions. For Kant, in order for finite beings to come to terms with time, we create analogies and represent the temporal sequence through a line progressing to infinity as if this were an ontic truth about time. However, as we have begun to see, it is not clear how difference can be grasped transcendentally, and so we have no reason to accept that our transcendentally constituted knowledge of change "matches-up" with the way things change in their noumenal aspect, as they are in-themselves. This question of difference lies at the heart of Kant's third argument for the categorical nature of time.

[218] For a more complete discussion of the present and the instant as aspects of the now in terms of temporal order see Sarah Waterlow (note 57), *Nature, Change and Agency in Aristotle's Physics vii* (Cambridge: Cambridge University Press, 1990).

[219] Owen, in *Aristotle and Time*, 51, claims that Aristotle conflates, in the question of the identity and difference of the now, the present and instant. G.E.L., Owen, 'Aristotle on Time' in *Articles on Aristotle*, ed., by Jonathon Barnes et al., 140-58. (New York: St. Martin's Press, 1979.

[220] See John Protevi's *Time's Exteriority: Aristotle, Heidegger, Derrida* (London: Bucknell University Press, 1994), 63.

3.1.3. The Third Argument: The Infinite Whole

Aristotle provides us with a second issue concerning a conflict between identity and difference in the "now".[221] He summarizes the problem as the tension between the following two truths: 1) Because of the non-identity or non-being of past and future, there must always be a now that is present such that each now must have the same character of presence; 2) Difference is also needed for time. All the nows must be different from each other, for time marches on. To be different, the character of now or its identity must be 'destroyed' to make way for another now. So how is the now destroyed?

Aristotle firstly[222] discusses the impossibility of ascribing pure difference to the now if the now is "always different and different".[223] Because two different nows ought not to exist at the same time, the earlier one should be destroyed. But at what instant should that now be destroyed? The first impossibility of the now as pure difference is that the previous now that once existed cannot be destroyed in itself.[224] For, if each now is purely destroyed, history is destroyed as history - that is history is only a flash of nows. The second impossibility is that the now cannot be destroyed in another now.[225] This is because Aristotle does not understand the continuity of time as a series of consecutive nows, but as a succession. For Aristotle the consecutive is that which succeeds -- has nothing of the same genus -- and whose limits touch. Continuity here is defined as consecutives whose limits are one and the same. But if the present now were destroyed in the successive now, the newly present now would be unlimited and thus would be indistinguishable from the past and the future. The present now would have existed at the same time with infinitely many intervening nows. Thus we lose the pure identity of the now.[226] As Aristotle puts it, if time is to exist it cannot be "always the same".[227]

So, we still have to account for the destruction of the now. Otherwise, all nows would exist simultaneously and, impossibly, things 10,000 years ago would

[221] *Physics*, 218a8-30.
[222] *Ibid*, 218a-21.
[223] *Ibid*, 218a11.
[224] *Ibid*, 218a16.
[225] *Ibid*, 218a17.
[226] *Ibid*, 21a21-30.
[227] *Ibid*, 218a20.

be at the same time with things now.[228] Aristotle concludes that as such simultaneity would mean that the "prior and posterior" would not be different from one another.[229] But this gives us our clue to the resolution of the dilemma; time *is* defined by the *prio*r and *posterior* so that the identity of now is determined in relation to the prior now and the posterior now, and without this time would not be. This ultimate rooting of time in succession is shared by Kant as well, if we understand successive moments to exist as wholes at every moment at which they exist at all. Thus, in Kant's transcendental understanding the unity of time and its *a priori* nature are intimately interconnected.

> This *a priori* necessity also grounds the possibility of apodictic principles of the relation of time, or axioms of time in general. It has only one dimension: different times are not simultaneous, but successive […]. These principles could not be drawn from experience, for this would yield neither strict universality nor apodictic certainty.[230]

The successive moments of time allow for differences between times, but do not fracture into the equivocal rupture of pure difference because they are united by the unity of transcendental apperception.

3.1.4. Conclusion to the Transcendental Aesthetic

In conclusion we can see that Kant remains close to much of Aristotle's understanding of time. Both saw time as constituted by indivisible wholes and as marked by succession. The main difference lies in Kant's re-interpretation in the transcendental aesthetic of these truths of space and time as conditions of our sensibility – the pure forms of intuition – and at the same time necessary conditions of the possibility of experience. Confronting Newtonian physics Kant's proposition assumes that particular axioms of geometry and mathematics are synthetic *a priori* truths, therefore space and time must be forms of the subject whereby it is affected in intuition. Space and time precede our representations of

[228] *Ibid*, 218a28-29.
[229] *Ibid*, 218a29-30.
[230] CPR, A31/B47.

objects and events as necessary conditions of the possibility of those representations. It is the universal form of all awareness's of the external world and spatial dimensions, and of internal objects of attention: "time [and space] is nothing other than the subjective condition under which all intuitions can take place in us ... it is thus *a priori*".[231] "In itself, outside the subject, [time] is nothing".[232] Time, thus, becomes the structure of intelligibility.

In effect, everything in space and time – and hence presumably also space and time themselves – are the mere appearance, dependent on being perceived as represented by minds for their existence. Because time is *a priori*, all actuality of appearances are possible. Kant writes: "Empirical intuition is possible only by means of the pure intuition [of space and of time]".[233] "Noumenal time" arises from the fundamental thesis that time is a subjective form of human apprehension. "We can extract clear concepts of [space and time]", he says, "only because we have put them into experience, and because experience is thus itself brought about only by this means".[234] Time is a way to understand nature, and thus bring it into our own cognitive grasp. Efficient causality and the scientific laws we deduce from it are the means of which we understand and interpret the processes of change that seem to describe the natural world so that we can conform to its requirements as we function within it.

Kant, thus, presents two concepts of time: physical and psychical. Time passes from past to future as a part of the natural processes of the universe, but also time is a way of making conscious decisions. Because we can only vaguely perceive our future, it is necessary to use our knowledge of past causal processes of the physical world around us to predict future outcomes, allowing us to project our own willful decisions onto an anticipated future, beyond which all human knowledge is impossible. This twofold character of time, the temporal flow of change as determined by states of affairs in the past and our decisions based on the

[231] CPR, A33/B49, 180.
[232] *Ibid*, A35/ B51.
[233] *Ibid*, A165/B206, 289.
[234] *Ibid*, A196/B241.

projection of causal efficacy into the future, flow in different directions and come together in the living present in a simultaneous synthesis.[235]

3.2. Section II: Objections to Kant

For Kant, absolute reality i.e., time and space, are predicates and are, therefore, unreal. This allows Kant to avoid some of the problems in which Aristotle remained mired, in particular with regard to the question of how the present moment, understood as ontologically real being, could be united to the past and the future, understood as non-beings. But this transcendental nature of time is also the aspect of his theory that has provoked the strongest criticism. Johann Heinrich Lambert objected to the unreality of time based on alterations: "if alterations are real then time is also real, whatever it might be".[236] Against the notion of subjective time, Moses Mendelssohn's objection is rooted in the argument about succession. "Succession is at least a necessary condition of the representations of finite spirit. Now finite spirits are not only subjects, but also objects of representations, those of both God and their fellow spirits". Hence the sequence [of representations] must be objective. [237]

Against these charges, Kant defends the thesis that time has a reality; "time is certainly something real, namely the real form of inner intuition. It therefore has subjective reality in regard to inner experience, i.e., I really have the representation of time and [my] determinations in it. It is therefore to be regarded really not as object but as the way of representing myself as object".[238] Time (duration) and alteration could not occur without a determination of the subjective *a priori* where I have a clear intuition of my inner sense through consciousness. Absolute reality is a positive approach where, for example, mathematicians assume two eternal and infinite self-subsisting non-entities (space and time). These exist without any

[235] This raises fundamental questions regarding the second antinomy and the role of freedom in Kant – a theme which becomes important for Heidegger when he critiques Kant's account of freedom as rooted in a concept of causality. A subsequent work could tease this relationship out.

[236] CPR, See Letter 61 to Kant of 18 October 1770.

[237] See CPR, note 20 p. 721.

[238] *Ibid*, A37, 182.

reality only in order to comprehend everything real within themselves.[239] If, on the other hand, time and space are merely a relation of appearances (next to or successive to one another) they cannot be thought of existing as real but only in the imagination as that which mediates understanding and sensibility.

Thus, Kant rejects the relational aspect of time and space based on their *a priori* structure (which for him is always sensible), because relational ontology ends up abstracting from the experience (which in effect is metaphysics). When something is seen in relation to something else, it loses its content as a self-identical thing. Reality (in this case time and space), then, become merely "creatures of the imagination" (A40/B 57).[240] This falsifies relational ontology which is grounded in metaphysical notions of time, and instead turns to epistemology as first philosophy. Kant and his followers decisively win the debates with Lambert, Mendelssohn, and other critics of a transcendental notion of time. But with renewed interests in the "philosophy of life" and "existential philosophies" in the late nineteenth and early twentieth centuries, momentum is building for a more successful challenge to Kant. For thinking through this renewed challenge, we will take Heidegger as our guide.

3.2.1. Heidegger's 1st Objection to Kant's a Priority of Time

It is important to point out that Heidegger does not completely reject transcendental idealism. Indeed in the "Introduction" to *Kant and the Problem of Metaphysics*, Langan writes "Heidegger wants to profit as much as possible from the *Critiques'* transcendental analysis of the synthesis of imagination as a foundation of a temporal horizon of significance" (Heidegger 1962, xxi). Thus, Heidegger understands himself as engaged in the same project as Kant, that is, showing up how finite being is the ontological structure of being, which renders objective

[239] *Ibid*, A39/ B56.

[240] It might be worth noting that Aristotle had already identified the difficulty in separating the cognitive capacity and experiential capacity: "one must cognize magnitude and motion by means of the same faculty by which one cognizes time [i.e., by that which is also the faculty of memory]…". Accordingly, memory [not merely of sensible, but] even of intellectual objects involves a presentation: hence we may conclude that it belongs to the faculty of intelligence only incidentally, while directly and essentially it belongs to the primary faculty of sense-perception." *On Memory and Reminiscence*, 450a10-15.

experience possible. Notwithstanding, Heidegger points out that because the entire *Critique of Pure Reason* is grounded in the transcendental aesthetics of space and time, Kant's whole thesis will stand or fall based on this analysis. He offers an interesting alternative with his ideas of "ecstatic" and "perdurant" temporality.

Heidegger identifies two problems arising from the subjectivization of time i) the loss of a meaningful relation to the world, and ii) internalization of history. To set time free from this Platonic universalization of time, Heidegger unpacks the transcendental aesthetics. Firstly he proposes that the *Critique* is a defense of metaphysics and as such an analysis of ontology. But because Kant *a prioritized* time, neither the subjectivity of the subject nor the historicity of human beings as culturally embedded can be known.

In *Being and Time* Heidegger delineates Kant's architectonic failure on two accounts: 1) Kant's interpretation of time moves within the structures of time already laid out by Aristotle, and thus remains metaphysical; and 2) Kant did not make clear the subjectivity of the subject. He writes:

> Two things prevented [the insight into the problem of temporality]. On the one hand, the neglect of the question of being in general, and in connection with this, the lack of a thematic ontology of Da-sein – in Kantian terms, the lack of a preliminary ontological analytic of the subjectivity of the subject.[241]

In other words, Heidegger believes Kant fails to clarify the being of beings, which is a failure in the clarification of identity. Time as pure sensibility cannot form a primordial unity with the "I think". Heidegger argues that because the pure ego is conceived to be extra-temporal and opposed to time it cannot be considered "temporal" and thus has no contact with the now.[242] This necessarily leads to a second objection concerning identity of nows. In *Identity and Difference* Heidegger argues that identity is limited to Kant's synthetic tautology, which forecloses on the thing itself.

[241] BT, 24/21.
[242] KPM, §31, 178.

Heidegger claims that Kant's *Critique* is a critique of metaphysics and not of reason.[243] As such, Kant is engaged in an ontology of being. In other words, Kant and Heidegger are both inquiring into the being of beings. But because Kant still remains mired in unthought metaphysical presuppositions, the project ultimately fails as an ontology of being. This failure arises, in part, because Kant's *a priori* structure of time as the primordial ground of possible experience remains within the Platonic notion of truth as eternal. As such time cannot be successive. Heidegger argues this happens because of Kant's inability to identify the subjectivity of the subject. As a result consciousness *qua* consciousness remains identical, collapsing the distinction between intuition and reason. Once this happens the faculty of imagination becomes identical to intuition, which means that simultaneity is only operative within intuitions and not representations. Heidegger systematically draws out the argument in the *Critique* and shows how Kant misses the receptivity of time.

Heidegger argues that the function of the transcendental aesthetic is to expose the ontological perception [*perceptio*], which makes possible the knowledge of the being of a thing *a priori*. Furthermore, time as a "pure" form or idea in the mind can never get beyond the subject. As a result, if time remains an intuition, i.e., time as *form*, then knowledge of the world remains within the cathedral of the mind and is never empirical. Like Newton, time can only be understood in relation to space because time is the form of inner space.

> That which in experiencing the phenomena is held in view from the first, although unthematically and unobjectively, is pure succession [*Aufeinander*]. Time, therefore, is the form of inner sense, that is, of our intuition of ourselves and of our inner sates.[244]

Here time and space refer to two distinct regions of experience. However, time becomes the "formal" condition *a priori* of all phenomena. Heidegger is explicit

[243] This argument is very dense and involves Kant's *transcendental schematic*. I cannot possibly do justice to this argument, all I merely want to achieve is to point out the limitations of internal time consciousness, and the manner in which Heidegger finds a way for Kant to extend his project to include historical Dasein.

[244] KPM, 51.

that although the "Marburg school"[245] has treated time and space as categories in the logical sense, this is not Kant's intention.[246] Time, rather, is the central ontological condition of possibility.[247] Heidegger argues that in such a case

> time takes precedence over space. As universal pure intuition, time therefore, and not space, must be the dominant and essential element of pure knowledge and hence of transcendence as well, since it is pure knowledge which makes transcendence possible.[248]

Time is immediately limited to the data of internal sense and can be, ontologically speaking, more universal than space only if the subjectivity of the subject consists in being overt to the essent. The more that time is subjective, the more original and extensive is the freedom from limitation of the subject. But

> if transcendental imagination is to be the primordial ground of human subjectivity taken in its unity and totality, then it must also make possible a faculty on the order of pure sensible reason. But pure sensibility, according to the universal signification in which it must be taken for the laying of the foundation of metaphysics, is time. [249]

Heidegger's point is that because the transcendental imagination is the origin of pure sensible intuition, pure intuition (and thus time) arises from the transcendental imagination. However, it seems impossible that time as pure sensibility can form a unity with the "I think". Pure thought has its roots in transcendental imagination, which Heidegger argues *is* time.[250] Furthermore, sensibility and finite intuition are the same". As a sensible faculty, the imagination is included among the faculties

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[245] In March 1929, Heidegger and Cassirer debated their different interpretations at Davos, Switzerland, in an event which came to be known as the "Cassirer-Heidegger disputation." Cassirer was a Hegelian neo-Kantian. For Cassirer, our categories vary over historical time. 'Symbolic forms' including language, art, myth, and religion, are equally important as the sciences. When human beings ascend to symbolic forms they are infinite, whereas for Heidegger human beings and thus knowledge is finite. This preoccupation with finitude clearly aligns Heidegger with Kant against Cassirer and Hegel.

[246] KPM, 152.

[247] CPR, A34, B 50,

[248] *Ibid*, §10, 52.

[249] *Ibid*, 178.

[250] *Ibid*, 153.

of knowledge, which are divided between sensibility and understanding".[251] The imagination as a mode of intuition does not need itself to be present, "the imagination does not intuit what it apprehends in its act as something actually on hand".[252] It is independent, or free of its objects.[253] In other words it is spontaneous, and because Heidegger already defended the idea of a receptiveness associated with spontaneity, it is also formative.

> As a faculty of intuition it is formative in the sense that it produces an image (or aspect). As a faculty not dependent on objects of intuition it produces, i.e., forms and provides, images. This "formative power" is at one and the same time receptive and productive (spontaneously). In this "at one and the same time" is to be found the true essence of the structure of the imagination.

In the same way that Aristotle's imagination straddles perception and reason, imagination here unites reason and intuition. This is also similar to Peirce's "consciousness of polarity". But whereas for Peirce "feelings" bridge the object and subject, for Kant imagination bridges perception and reason. Imagination as pure freedom or spontaneity forms, shapes, and differentiates all non-perceptive representations.[254] It is from the "power of the imagination" that such things as comparison, differentiation, and forming first arise. Objects are first constituted or "created" when the unconceptualized data of sense are organized or *framed* within the *a priori* logical structure of judgment itself. However, we cannot explain how the object of knowledge becomes possible on the basis of the *a priori* logical structure of judgment alone. What is required are *additional a priori* structures that mediate between the pure forms of judgment of general logic and the unconceptualized manifold of impressions supplied by the senses. These mediating structures are the pure forms of sensible intuition: space and time.

As Stanford Kant scholar, Michael Friedman explains, "logical forms of judgment only become categories in virtue of the transcendental *schematism* of the

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[251] I*bid*, 135.

[252] *Ibid*.

[253] Because imagination is receptive, i.e., spontaneous, Heidegger argues in §26 under the title 'The Transcendental Imagination as the Formative Center of Ontological Knowledge' that Kant was closer to the empirical world than he was aware.

[254] Including fancying, contriving, fabricating, worrying, and daydreaming.

understanding – that is, when pure forms of thought are given a determinate spatial-temporal content in relation to the pure forms of sensible intuition".[255] For example, the categorical judgment becomes the category of substance only when it is schematized in terms of the temporal representation of *permanence*; similarly, a hypothetical judgment becomes the category of causality when it is schematized in terms of the temporal representation of *succession*. This dualist conception of the mind between the logical or conceptual faculty of pure understanding and an intuitive, non-conceptual or receptive faculty of pure sensibility is what Heidegger rejects. Heidegger argues that in spite of Kant's attempt to classify the imagination as a faculty of spontaneity, it still retains its intuitive character.

While Kant still holds that intuition, imagination, and pure thought occur at different "levels" of the intellect, Heidegger concludes that there is no hierarchy between reason, intuition, and imagination. Understanding for Kant is a "closed unity". What is unified are intuitions and the act of representation. Heidegger considers this representation of "abiding unity" and the identity of the complex matrix of representations as the fundamental character of the act of ob-jectication.[256]

> In this act, more precisely in the "self" "exteriorized" with it, the "I" of this "self;" is necessarily made manifest. It is in this way that the "I represent" "accompanies" every act of representation. … the "I" "goes with" the act of pure self-orientation. Inasmuch as this "I" is what it is only in the "I think", the essence of pure thought as well as that of the "I" lies in "pure self-consciousness". This "consciousness" of the self can only be explained by the Being of the self, not conversely. Being cannot be explained or rendered superfluous by consciousness.[257]

Heidegger juxtaposes Kant's thesis that time is the formal structure of being. Rather being gives time. The "finitude of time signifies nothing more than that every determinate magnitude of time is only possible through limitations of a single time

[255] Michael Friedman, *A Parting of the Ways: Carnap, Cassirer, and Heidegger* (Chicago: Open Court, 2000) 27.
[256] KPM, 156.
[257] *Ibid*, 157.

grounding it. The original representation of time must therefore be given as unlimited".[258]As unlimited, time has only one dimension, i.e., succession. It seems that no two things can remain (persist or endure) simultaneously because only things that exist necessarily, exit simultaneously. Paradoxically, precisely because intuition is receptive, it is *not* a forming. However, to receive still remains a limited act i.e., the act of receiving something given or present. This act takes place in the formation of ideas. The act of forming for Heidegger is not yet a pragmatic act. Rather the act necessarily implies that imagination has its kinship with theoretical reason insofar as the act of free formation is exercised by pure thought. Kant's thesis fails because, as Heidegger writes, if

> [s]pontaneity constitutes only one element of the imagination and that consequently, although thought is indeed related to the imagination, the two are by no means completely identical. The imagination, is also and above all a faculty of intuition, i.e., receptivity. It is receptive not merely in addition to, and over and above, its spontaneity but in the primordial, non-composite unity of receptivity and spontaneity. [259]

Thus, Heidegger reduces pure intuition and pure thought to transcendental imagination. The imagination is co-constituted by spontaneity and receptivity. In this case, understanding and reason are not free because they have the character of spontaneity. How might this impact Kant's transcendental aesthetics? Time, says Heidegger, is only pure intuition in so far as it spontaneously pre-forms the act of succession. "Time is, by nature, pure affection itself".[260] Time is not merely one structure, albeit the primary structure, of consciousness. Rather time as pure self-affection is already included in pure apperception, which first allows the mind be what it is. Time, therefore, is what is abiding and unchanging. Abiding and unchanging are transcendental determinations. The ego pro-poses in advance the idea of permanence and immutability. The "abiding ego" forms the concept of persistence. In other words the ego forms time originally.

[258] CPR, A32/B48.
[259] KPM, 161.
[260] *Ibid*, 194.

Heidegger has located the three-fold unity of time (past, present, and future) within the transcendental imagination, which is essentially spontaneous receptivity. Pure self-affection is primordial time. This is not conceived as the *a priori* succession of the *now*-sequence, which Kant offers. Rather for Heidegger the nature of time *perdures* within a world. (See below).

3.2.2. Heidegger's 2st Objection to Kant's Succession and Simultaneity as Unity and Discretion

Kant's first argument for time is the claim that the representation of simultaneity and succession must be mind-dependent, since they are presupposed in our experience of simultaneous and successive moments in time. In the second argument, Kant holds that time is *a priori*. However, a problem arises when the original representation of time must be given as unlimited. In such a case, time has only one dimension, i.e., succession, leading to the ancient problem of understanding time in terms of an idealized form. In Kant's third argument for transcendental time, the question of unity forces him to fully complete this step. He writes, "Different times are only parts of one and the same time" (B47), in a direct appeal to Leibniz's principle of identity, A = A, as a fundamental truth prior to the question of whether this identity is simultaneous or successive.

This tautological approach to time has serious implications for understanding how things appear historically, and these problems are what occupied the neo-Kantians for over a century. Two different ways of taking up these problems comes to a head in the debate between Cassirer and Heidegger, but the basic lines of disagreement had already been established by the alternative approaches to logic taken by their predecessors, Natorp and Rickert. Friedman using Cassirer's work *Substance and Function* summarizes their positions as follows

> *Substance and Function* identifies formal logic with a new theory of relations developed especially by Bertrand Russell in *The Principles of Mathematics* (Russell, 1903). Following Dedekind's work, in particular, we can then identify the object of arithmetic or

> the theory of number with a particular species of relational structure – with what we now call a simply infinite series or progression. What the numbers are, therefore, are simply "places" within such a series or progression, and the concept of number is just as logical as any other relational concept.[261] [Rickert, on the other hand] still identifies formal logic with the traditional subject-predicate logic, which is indeed confined to relations of genus and species and thus to the purely symmetrical relations of identity and difference.

For the Marburg school, knowledge is an infinitely progressive series of layers of symbolic forms. This formal structure has no content, merely "layers" of successive pure thoughts converging to make an empirical scientific statement. In opposition to Kant's *synthesis* of intuition and logic, this *convergence* claims to have no access to either pure unformed matter or pure contentless form but rather "an infinite series of levels in which any two succeeding stages relate to one another relatively as matter and form".[262] In this convergence empirical evidence emerges as "reality" but in such a way that it only ever approaches truth, it never truly can get to the thing. This "logical idealism" denies both the material sensual world and the transcendental world of ideas. The only reality is within pure thought itself and the realm of pure formal logic as constituted by the totality of pure relational structures. Within this structure there is no change and no temporality. How then do we account for the spatial-temporal empirical world of experience? For Cassirer the only way we can know the world is through our artifacts: religious, political, and artistic.

By contrast, Rickert maintains the distinction between pure logic and the manifold of sensation in the same way as Kant separates logic from mathematics. The problem of symbolic form does not arise here. However it does bring up the initial problem in Kant's schematic; how do such pure forms of thought apply to the manifold of sensations and make the object of cognition possible. For Rickert,

[261] Cf. Cassirer, 1910. Chapter 2. Friedman makes a note to remind us that for Cassirer the number series can only be defined through the formal properties of a particular relational system, and as such rejects the Frege/Russell reduction of numbers to classes.

[262] Freidman, 31.

the transcendental logic consists in separating psychological being from sense, thus accepting the positivistic gulf between fact and value.

In response to this move, Heidegger writes in 1924 that philosophy has been "reduced by this school to an empty methodology".[263] His attempt to overcome the "empty methodology" was to work out an analytic of Dasein. But to do that, he first had to overcome the problem of identity and difference against the formal structures of logic. This task took a winding path, but I will present two characteristic moments that illustrate Heidegger's turn from the idealized anti-materialism associated with the Marburg school and Plato. The first example tackles the Kantian problem of identity, the second the Platonic notion of truth.

In his 1957 his essay, 'Identity and Difference', Heidegger tackles the question of time and its relation to unity. He argues that within the Kantian tradition, identity is limited to a synthetic tautology, which forecloses on the thing itself. To move beyond this impasse, Heidegger offers a reformulation of the statement of identity, A=A, as "A *is* A". This holds the multiplicity of *both* A and A within its own as "the same with itself", while at the same time implying a relation between A and A. Through a mediated synthesis, the union of both A with itself and with "A" prevails in that identity which was already implicitly present through the mediation within identity.[264] But although identity appears within the framework of Plato's "Sameness" and Kant's pure synthesis, Heidegger makes clear that the intention is other than an abstract representation of unity. Rather, "A *is* A" names every being as it "is itself as the same with itself".[265] This is the being of beings and to every being there belongs identity; the unity with itself.

In contrast to Kant, therefore, each being not only corresponds to itself, but is in relation to that to which it corresponds. For example, a human being *belongs* to the totality of being in the same way as a rock or a stone. But a human being, as distinct from a stone being, is the being who thinks and is open to being. The tension, therefore, arises between being and beings first, before the tension between concept and thing or between sameness and change. It is this difference that Kant does not account for, and this oversight explains why Kant cannot ever give an

[263] HCT, 17.
[264] ID, 24.
[265] *Ibid*, 26

adequate account of the notion of simultaneity. And without simultaneity, there can be no identity. As a result Kant failed to work out a transcendental determination of time and so in the end, despite his best efforts remains mired in Platonism.

So ultimately, it is the Platonic notion of time that remains the fundamental one, the one from which Heidegger spends his life trying to "twist free", while at the same time affirming the centrality of *logos* against materialism. Here we will examine Heidegger's unique translation of the "Allegory of the Cave"[266] in 'Plato's Doctrine of Truth'. [267] Like neo-Kantianism, Platonic realism subordinates potentiality to the lower division of intelligibility, while contemplative "theory" is elevated to the highest statues. Complicit with Kant, the *Allegory* is a journey taken by the philosopher from potentiality to actuality, or the ideal forms [*eidos*]. From the shackles of materialism Plato calls the student to seek clarity and truth in the supraintelligible world. What constitutes reality is the abiding essence of form. So when we remain pre-occupied with individual things and fail to see them in their essential nature, we remain distanced from reality, stuck with what Plato calls, an image or a copy of truth [*αλήθεια*]. However, for most of us the situation is even worse, for we view individual things through culturally constructed images. So when someone encounters an artistic or rhetorical depiction of something, say a human being, she encounters a second distantiation from reality. Thus, for the most part we encounter only copies of copies of truth. Not only does this distance us from reality and hold us captive to a world-view constructed by those who would use the power of their art to enslave us, it also fails to provide any firm foundation in the search for a good life. Our perceptions of reality and truth are merely belief systems or opinions and opinions conflict. We see this throughout the Platonic corpus, but perhaps most powerfully in the *Euthryphro*, were neither Euthyphro nor Meletus or indeed the great poets could agree on what constitutes piety or justice.

[266] The "allegory of the cave" is presented at the beginning of the seventh book of the "dialogue" on the essence of truth in *Republic*, VII, 514a2-517a7. It is story told between Socrates and Glaucon. Socrates presents the story, while Glaucon reaches an enlightened state of intelligibility.

[267] GA 9: 203–238, "Platons Lehre von der Wahrheit (1931/32, 1940)"; "Plato's Doctrine of Truth (1931/32, 1940)," translated by Thomas Sheehan, 155–182. Hereafter PDT.

For Plato the only hope for a firm foundation for one's life as well as immediate contact with reality is the discovery of a thing's true form that which makes it what it is. These abstract concepts are not a construction, for Plato. Forms are distinct from consciousness. They exist in the *hyper*world of ideas. In such a case there is but one characteristic form in all instances of things, for example, piety or justice (*Euthryphro*, 5, D). As such, the use of reason points to a firm and stable standard for distinguishing all instances of piety from other (similar or different) cases.

Socrates wants to find this standard through a dialectical exchange of questions and answers. This dialogical technique suggests that a philosopher is both wise and expert in the methods of her discipline. Plato employs the dialectical method in the lower division of the divided line but, thereafter, in the quest for truth, he searches for that dimension beyond the physical world and leaves dialectic behind. In the journey to enlightenment, the student turns toward a higher realm mediated through geometry known only through thinking [*dianoia*], the intellect. In stepping over the threshold of the intelligible, the student adjusts her sight and turns towards the full actualization of truth. The upper division of the line, here, represents a hyperworld, i.e., speculative philosophy. As speculative philosophy it subordinates *technē* to the realm of philosophical expertise, *theoria.* Heidegger's contention with Plato is the emphasis he places on *dianoia* in the rational sense over and against being. Certainly, this is how Heidegger interpreted the shift in thinking from *logos* as *poiēsis* to *logos* as *dianoia* and eventually rational thinking.

Two particular problems that arise from this identification of truth with the supersensible and a-temporal include naming the categories and classifying sameness. Aristotle's response to these problems is found in the *Metaphysics.* For Aristotle, Plato's forms *are* categories, and categories only make sense in terms of descriptions. This is a transformation of the philosophical project from one of "pure" reason to one of observation and description and thus ties philosophy to the concrete use of language in the interpretation of nature. Thus on Aristotelian grounds we must think of *logos* as closer to what we call hermeneutic phenomenology today than to formal reason. Most importantly, this means that Aristotle's ontology is grounded in temporality. Heidegger offers an example of this in Section six of *Being and Time*.

> The outward evidence of this – but of course *only* outward – is the determination of the meaning of being as *parousia* or *ousia*, which ontologically and temporally means "presence" ["*Anwesenheit*"]. Beings are grasped in their being as "presence"; that is to say, they are understood with regard to a definite mode of time, the present" (BT, 26, 24).

Aristotle's twofold character of being is presence and duration. Implicit in this is an existential determination of being that implies both being and time. Consistently with Plato, Aristotle notes that time cannot always be the same, i.e., it must account for change. There seems to be no time without change: trees lay bare, the ball moves position, the cat grows older; "in contemporary terms, change is a necessary condition for our noticing of time".[268] Secondly, the notion of time presupposes a system of measurement, i.e., that the reference to mind is indispensable to the definition of time. Aristotle tells us that only when we delimit or "distinguish [*horisômen*]" a change do we say that time has elapsed.[269] So Aristotle had already identified the notion of delimiting change as crucial in the move to define time. Time does need intervals for its existence. These intervals can be thought of in contemporary terms as perdurants or occurrents.

By way of contrast, Plato's dialectics of *logos* assumes the ontology of time without ever addressing it. Yet it is implicit in the very meaning of being as *parousia* or *ousia* as that which is temporally present. Appearance [*apophantesia*] implies a presence of something at hand. Plato does not allow for this interpretative process and thus cannot understand the fundamental ontological function of time. Time remains for him an as an everlasting likeness, moving by number, of eternity (*Aion*)[270] that abides in unity. Leyden in his essay "Time, Number and Eternity in Plato and Aristotle" describes Plato's eternity as the "timeless eternity" or "timeless present"; Plato we are told "adopts the language of Parmenides' description of the One as being now all at once, a single whole" such that it is incorrect to think of

[268] Provoti, 65.

[269] *Physics*, 4.11.218b32.

[270] Felix Ó Murchadha in *A Phenomenology of Christian Life* (Bloomington: Indiana University Press, 2013) details several ways in which to translate *aion*: 'life time,' 'ages', 'world-time', 'forever', and 'everlasting', 178. Although he shows that this diversity of meanings points to the difficulty is justifying a particular reading, we will use Leyden's interpretation which holds together the tensions between world-time and eternal time.

something eternal in terms of past or future[271]. For Plato, as for Parmenides, the word 'is' makes up the proper designation of the eternal. "*Aion is* a unit in which temporal distinctions are all present together".[272] Discrete moments are part of the continuous whole. But where does this leave the possibility of a historical past that has passed away? How can we account for a future that is not yet decided?

To solve these problems, Heidegger thinks "eternity" ought to be tied to his theory of language as *legein* or "indebtedness," rather than solely to abstract reason. To say that something *is* true is to assert something. "Is" signifies "it is true". Truth, then, is not understood as factual, theoretical, or universal, but rather as part of an interpretative process by which truth comes to presence. This shift is critical for the recovery of the question of being.

Thus, for Heidegger while being, in the sense of *Aion*, *is*, it simultaneous is not, i.e. not temporal, not successive, not dynamic. This acknowledgment of the non-being or negation at the heart of what is true, the *lethes* in *a-lētheia* is lacking in the dominant philosophical tradition that culminates in high modernity. When we think of *logos* as reason we fail to grasp the event of being. Thus, we tend to reduce *logos* to scientific evaluation or egotistical consciousness. Nonetheless, while Heidegger wants to reject the a-temporality of Platonic forms, he must account for the unity of the things we experience, the "count-as-one" nature of the world, to use an expression from Badiou.[273] Again, it is a re-appropriation of Aristotle that holds the key to Heidegger's solution.

Heidegger's solution is to think of the categories, not as the structure of consciousness or as the structures of the inner relations of life, but rather as meaningful relations *in* the world. He turns from Kant's imagination to understanding as the ground of possibility for experience. For Heidegger, the

[271] W. von Leyden. (1964). 'Time, Number, and Eternity in Plato and Aristotle' in *The Philosophical Quarterly* Vol. 14, No. 54, Plato and Aristotle Number (Jan., 1964), pp. 35-52, 37. Published by: Oxford University Press on behalf of the Scots Philosophical Association and the University of St. Andrews Stable URL: http://www.jstor.org/stable/2955440 Downloaded 21/1/2015.

[272] Von Leyden. (1964), 36.

[273]Badiou wagers that "the one is not" (*l'un n'est pas*) but "there is Oneness" (*il y a de l'Un*). The One is not, but exists only as "operation," as "count-as-one." The multiple is that which presents itself. So *stricto sensu*, being is neither one nor multiple (the multiple is only the "regime of presentation" [see below, Med. 4: the void is subtracted from one / multiple dialectic]). Being and Event, Part 1 Mediation 1.

fundamental experience of the world is a lived experience. Following Dilthey's human sciences, Heidegger undertakes the project of rethinking categories in terms of history, as the basic orientations of a "world-view" created in works, i.e., things that are produced. Thus Heidegger follows in the post-Kantian tradition that rejects the idea that categories can be thought of as transcendental structures alone from which he developed his hermeneutical phenomenology grounded in praxis. He takes his departure from Willian Dilthey who had already extended Kant's transcendental idealism to include the lifeworld and a turn to hermeneutics.

3.3. Section III: Solutions to Internal Time Consciousness

3.3.1. Dilthey's Pragmatism

While Schleiermacher was the precursor to hermeneutics, William Dilthey extended the theory to encompass understanding of human behavior and culture. He proposed that the validity of Kant's critique of theoretical reason - i.e. analysis, justification, and determination of its limits - is restricted to the natural sciences [*Naturwissenschaften*], while his own critique of historical reason aims at a transcendental investigation concerning the conditions of the possibility of historical knowledge in the human sciences. He initially regarded his project, for which he had chosen the Kantian title *Kritik der historischen Vernunft [Critique of Historical Reason]*, as a complement to Kant's transcendental critique of pure reason, with the caveat that it is impossible to understand reality without an interpretation and history of human activity. Gradually, however, Dilthey's project turns out to be a fundamental transformation of two ontological presuppositions of Kant's transcendental investigation. 1) In the first place, he understands categories to be categories of life [*Lebenskategorien*] rather than formal categories. His transcendental self-reflection aims at an explication of the fundamental structures of the primordial nexus of life and shares with Peirce the idea that man is always already situated in existential relationships that precede the theoretical distinction between subject and object. In this context, Dilthey criticizes Kant's critique as

being narrowly intellectualist in its emphasis on cognition and falsely ahistorical in its elucidation of the categories. He wants to point us again to what Jos de Mul calls "a reality which is immediately given [to us] in the interplay of thinking, willing, and feeling".[274] 2) In the second place, Dilthey rejects the Kantian presupposition that the *a priori* structures of experience are universal and timeless claiming instead that they are characterized by a historical development.

Thus, Dilthey makes important progress by showing us that self-understanding can only come from without, from experience, and not from the inner structures of consciousness alone. With the emphasis on the historicity of the categories of life, Dilthey radicalizes two themes which already play an important role in Kant's transcendental enterprise, namely, the finiteness and contingency of human life. The profound topicality of Dilthey's transcendental-historical philosophy is revealed by the fact that these two themes belong to the central preoccupations of contemporary philosophical concern. Dilthey's quest for a "logic", that is, an epistemological foundation of the historical and human sciences, eventually leads him to seek an articulation of the "categories of life", the basic structures of historicity.[275] These categories find their roots in life itself, prior to any articulation or judgment. The task is not to let go of questions of intelligibility, but to let experience come to a natural conceptual blossoming. This attempt to find a systematic methodology for life proved elusive for Dilthey, particularly when pitted against the philosophy of consciousness presented by Descartes' *res cogitans* as the basic theme of philosophy.[276] Thus, for Heidegger, it is hermeneutics alone that gives us the resources to escape the pitfalls of modern philosophy. There seems to be no evidence that Heidegger was in any way influenced by Peirce, and I am not familiar with any work that draws on Peirce's pragmatism, but it is clear to me that both in Germany and America there was a need to turn to questions of concrete existence not merely as rational beings, but beings that are practically engaged in the world.

[274] Jos de Mul. *The Tragedy of Finitude. Dilthey's Hermeneutics of Life* (New Haven and London: Yale University Press, 2004), 311

[275] *Ibid*.

[276] See Heidegger, HCT, § 4. "The situation of philosophy in the second half of the 19th century"; Gadamer, *Truth and Method*, 3.2. "Dilthey's entanglement in the aporias of historicism" and 3.3. "Overcoming the epistemological problem through phenomenological research."

The turn to pragmatism with its emphasis on language would seem organic then. It originated in the United States around 1870, beginning with Peirce as a radical reorientation of philosophical thinking away from the entire discipline of Kant's claim about the *a priori* status of space and time. Rather, for Peirce, the structure of space and time is an empirical inquiry.[277]As such philosophy must be grounded in objective practices and not ideal categories. Pragmatism specifically that of Peirce who coined "pragmaticism",[278] appeals to practical experience, with an emphasis on instrumentalism where thought is considered to be an instrument or tool for prediction, problem solving, and action. Interestingly, Peirce like Heidegger was influenced by Duns Scotus and together with Saussure, were regarded as the founders of semeiotics. This appeal to the logic of pragmatism fueled the current philosophy of postphenomenology (Chapter 4). For now we will return to Peirce's notion of synechism, which begins to look something like Heidegger's ready-to-hand.

3.3.2. Peirce's Pragmatism

At the heart of Peirce's *pragmaticism*, like Heidegger's, lies a philosophy of time developed in dialogue with Aristotle and Kant. Its basis is Peirce's "continuum thesis" which elucidates the two fundamental properties of a continuous series. The first arises from what he calls "Aristotelicity"[279] (every continuum contains its limits) and the second from what he calls "Kanticity" (every continuum is infinitely divisible). Since we have seen above the difficulties Aristotle and Kant have in integrating these truths into an acceptable philosophical system, we can turn now to the way Peirce tries to overcome the difficulties.

[277] See Peirce's *Reason and the Logic of Things*.

[278] This was to distinguish himself from John Dewey and William James who were calling themselves pragmatists at the time. See Robert Burch, "Charles Sanders Peirce", *The Stanford Encyclopedia of Philosophy* (Winter 2014 Edition), Edward N. Zalta (ed.), URL <http://plato.stanford.edu/archives/win2014/entries/peirce/>.

[279] See Charles Sanders Peirce synechism is derived from his pragmatism, a method of sorting out conceptual confusions by relating meaning to consequences. Synechism confronts Kantian theory of succession, which gives rise to his theory of tychism, the thesis that chance is really operative in the universe.

The Classical conflict between continuity and succession (discreteness) is one between the One and the Many, a debate that arose between the Eleatic philosophers such as Parmenides[280] and Zeno. They were concerned with the problem of the unity of being as a continuous whole. Aristotle was the first to undertake the systematic analysis of continuity and discreteness. His answer to the Eleatic problem was that continuous magnitudes are potentially divisible to infinity, and he defines continuity as a *relation* between entities, rather than an attribute pertaining to a single entity (Aristotle 1996). In Book VI of the *Physics*, Aristotle argues that continua cannot be composed of indivisibles. He argues that a single continuous whole can be sutured and brought into a whole such that the continuity of the whole is made from its discrete parts.

This theory was fully worked out by Peirce in a few short paragraphs, "Analysis of Time," in "The Law of Mind" (from *The Monist Metaphysical Series*, 1892) as the theory of *synechism.*[281] Peirce coined the term *synechism* (from Greek *syneche,* "continuous"), as the idea "being connected".[282] He explains this as two sides of an instant or "the polarity of consciousness" (Peirce 1992, 260). Feelings bring together two infinitesimal parts into the "sum total of which we have in immediate and instantaneous consciousness; they are what is present" (*ibid*, 259). Therefore, for Peirce, we "feel" the present, not in the utilitarian sense of pleasure and pain but rather we feel the now within a consciousness of polarity.

He does by examining the structure of cognition within his overall triadic system: feelings (firstness), will (secondness) and process (thirdness). At the top of Peirce's hierarchy we find a set of universal categories, an idea Peirce shared with many of the greatest systematic thinkers including Aristotle, Kant, and Hegel. Firstness is that which is as it is independently of anything else. Secondness is that which is as it is relative to something else. Thirdness is that which is as it is as mediate between two others. In Peirce's opinion, all conceptions at the most fundamental level can be reduced to these three. Philosophy has three grand

[280] The Eleatic position can be inferred from Plato's *Parmenides*.

[281] Charles Sanders Peirce, "Analysis of Time," in "The Law of Mind" (T*he Monist Metaphysical Series*, 1892). Arguably, there's a more or less full anticipation of Whitehead in "Process and Realty."

[282] John Lane Bell, *the Continuous and the Infinitesimal in Mathematics and Philosophy*, 15. Bell notes that the term synecology was first introduced by Johann Friedrich Herbart (1776-1841) to explain the continuity of the real.

divisions. The first is *phenomenology*, which simply contemplates the *universal phenomenon* and discerns its ubiquitous elements, Firstness, Secondness, and Thirdness, together perhaps with other series of categories. The second grand division is *normative science*, which investigates the universal and necessary laws of the relation of phenomena to ends, that is, perhaps, to truth, right, and beauty. The third grand division is *metaphysics*, which endeavors to comprehend the reality of the phenomena. [283]

What is of interest here is that for Peirce feelings are the ground of possibility of experiencing the "now", the present moment. By associating the present with feelings, Peirce means to deconstruct the *a priori* categorical understanding of time as presented by Kant. In his article, "A Guess at the Riddle",[284] Peirce gives us a summary of his view of the tripartite function of the mind: feeling, knowing, and willing. Of these three, feeling is the locus of time for Peirce. In this way, he adopts Aristotle's tripartite structure of reason, where feeling or perception functions as one of the three faculties of the human soul. Peirce recognizes the importance of pleasure and pain as a faculty of the mind (258).[285] For example he writes; "there is pleasure in the contemplation of a theorem of geometry. Pain is perhaps essential to the consciousness of exertion…". This bridging of mind and reality (world) with feeling ties them to the concept of the instant, already taken up by Aristotle. Feelings "form the sum total of all of which we have in immediate and instantaneous consciousness; they are what is present".[286] Of the future we can only infer, of the past we can only remember. In the instant, however, we can "feel" a transcendent reality. This is not a question of

[283] CP 5.121.

[284] *Collected Papers, Vol I: Principles of Philosophy.* Cambridge, MA: Harvard University Press, 1960.

[285] As with Heidegger Peirce was influenced by Scotus. He had accepted the world of thought or signs, and the reality of the universe of facts (Scotus). By 1879 he broadens his evolving realism to accept the reality of the universe of possibility, influenced by Aristotle. Recognizing the significance of these steps for the growth of his thought, Peirce now characterized himself as "an Aristotelian of the scholastic wing, approaching Scotism, but going much further in the direction of scholastic realism" (CP 5.77n1). To his categories in their form of thirdness (feeling, or signs of firstness; sense of action and reaction, or signs of secondness; and sense of learning or mediation, or signs of thirdness) and in their form of secondness (qualia, or facts of firstness; relations, or facts of secondness; and signs, or facts of thirdness), Peirce now added what might be called his ontological categories, his categories in their form of firstness: firstness, or the being of positive qualitative possibility; secondness, or the being of actual fact; and thirdness, or the being of law that will govern facts in the future (CP 1.23).

[286] CP 1.259.

a definition time but rather noticing the experience of time. In this experience, we are directly in touch with temporal transcendence, for in sensation the present moment is immediately opened onto the past and the future.

> While I am seated calmly in the dark, the lights are suddenly turned on, and at that instant I am conscious, not of a process of change, but yet of something more than can be contained in an instant. I have a sense of a saltus, of there being two sides to that instant.[287]

Peirce calls this sense or feeling a "consciousness of polarity". Feelings bridge the past and the future, the object and the subject. Once the instant has passed the immediate consciousness can never return to become a reflective object for consciousness. "It is totally and absolutely gone".[288] Presencing, in other words, is not an appearing as resemblance. There is no resemblance between memory and sensation, for to resemble means to dismember and reassemble. Nor is it appealing to time as a formal structure. This type of consciousness is immediate. It is simultaneous, not because it conforms to an object outside of my mind, but because of the spontaneous nature of human sensation. The polar sense splits into two: in one there is an active and a passive sense, in the other there are external will and sense (in opposition to internal self-control and internal introspection). This is remarkably similar to Heidegger's receptivity thesis which both receives and informs as we will see below.

That Peirce interchanges between "now" and "feeling" is not arbitrary but an attempt to overcome time as given *a priori*.[289] This is made clear in "The Law of Mind" where Peirce writes: "there are two generally recognized principles of association: contiguity[290] and similarity, the former is a connection due to a power without, the latter a connection due to a power within".[291] Peirce develops the

[287] CP 1.260.
[288] CP 1.259.
[289] CPR, A31/B46.
[290] OED: Law of Contiguity: the principle that 'Actions, Sensations, and States of Feeling, occurring together, or in close succession, tend to grow together, or cohere, in such a way that when any of them is afterwards presented to the mind, the others are apt to be brought up in idea' Bain *Mental & Moral Sc.* For Hume contiguity is the qualities, from which (i) an association arises, (ii) by which the mind is after this manner conveyed from one idea to another, are (iii) viz.: Resemblance, Contiguity in time or place, and Cause and Effect. And for Mill: Contiguity of two sensations in time means the successive order.
[291] CP 1.314.

thesis of continuity under what he calls the two fundamental properties of a continuous series.

> To say that a state is *between* two states means that it affects one and is affected by the other. Between any two states, in this sense lies, an innumerable series of states affecting one another; and if a state lies between a given state and any other state which can be reached by inserting states between this state and any third state, these inserted states not immediately affecting or being affected by either, then the second state mentioned immediately affects or is affected by the first, in the sense that in the one the other is *ipso facto* present in a reduced degree.

Peirce is working out *synechism* "the theory that continuity prevails" and that the presumption of continuity is methodologically important for philosophy.[292] This way of thinking about time is concurrent with our relation to technology: we "feel" each instant that we are absorbed in by a game of, for example, 'Athena', each instant promising a moment of presence. As will be worked out more fully in the next chapter, in the encounter with information technologies, every instant attaches itself to the next instance in a recurring algorithm which has the promise of an encounter with the now, but paradoxically continues in an infinite loop, denying any possibility of a true coming to presence.

This desire for presence is an ancient, and perhaps universal, one, but it is pursued in characteristically different ways by different cultures. Through a highly complex sequence of cognitive events and habitual practices, the ancients sought an inner daemon, or flash of insight. Today, on the contrary, we input a series of complex instructions into a computer that produces extremely accurate *predictions.* The ancients modeled knowledge on crafting; modern intelligibility is modeled on algorithms. It is clear to see that Heidegger is correct in identifying metaphysics as technology. Modern technology, specifically information technology, is not simply an outgrowth of ancient instrumentalism; it emerges in the mid-nineteenth century

[292] CP 1.xxii.

and the mathematicians beginning with Georg Cantor's "continuum hypothesis," (1895),[293] and Peirce's synechism.

This developed out of Galileo's theory of physical motion 300 years previously. Ernst Cassirer, in *The Philosophy of the Enlightenment* explains that rather than describing a field of natural phenomena, Galileo develops a theory of nature as such. Aware that nature cannot be directly observed, he developed the cognitive tools to understand it *a priori*. "The phenomena of nature present themselves to perception as uniform events, as undivided wholes" (Cassirer 1955, 10). This is a radical metaphysical break with the ancients and inaugurates a major new turn in enquiry into the natural sciences.[294] It is the origin of what Edmund Husserl calls the mathematization of nature; "through Galileo's mathematization of nature, nature itself is idealized under the guidance of the new mathematics; nature itself becomes … a mathematical manifold [*Mannigfaltigkeit*]".[295] It is this turn to the mathematical consciousness of the modern sciences that will provide the locus for the debates between logical positivism and neo-Kantianism, on the one hand, and phenomenology on the other.

[293] References to logical positivism are almost exclusively drawn from Alain Badiou's Magnus Opus, *Being and Event* together with interpretations of this text. The reason I have chosen this text for its historical significance which spans the history of mathematics from Plato to Paul Cohen in a non-mathematical, philosophical sense. Logical positivism was established in Germany (Berlin Circle) and Austria (Vienna Circle) in the 1920's. The movement was in response to the highly developed and advance mathematics coming out of nineteenth century including but not exclusive of Bernard Colzano's " intermediate value theorem – a continuous function that is negative at one point and positive at another point must be zero for at least one point in between – (1817); Janos Bolyai, Carl Fredrich Gauss and Nikolai Ivanovich Lobachevsky invent hyperbolic non-Euclidean geometry; George Boole formalizes symbolic logic; August Ferdinand Möbius invents the Mobius Strip (1858); Richard Dedekind defines irrational numbers which is now used for surreal numbers; Georg Cantor presents "uncountable infinite" (1874), the "diagonal argument (1891), and "continuum hypothesis" (1895);Vector calculus was being exploited to develop non-Euclidean geometry, used in physics and engineering specifically electromagnetic fields, gravitational fields and fluid flow between 1545 and 1910. See in particular Michael J. Crowe, *A history of Vector Analysis: The Evolution of the Idea of a Vectorial System* (Notre Dame, Indiana: University of Notre Dame Press, 1967) where he traces the genealogy of the 3-space system and the development of "quaternions." David Hilbert presents a set of self-consistent geometric axioms in *Foundations of Geometry*, in 1900 he publishes his 23 unresolved problems in mathematics. John von Neumann's "game theory" (1928); Kurt Gödel's "incompleteness theory" (1931).

[294] This would require an independent study in its own right but I will refer briefly to their work within the limits of this project.

[295] Edmund Husserl, *The Crisis of European Sciences*, §9, 23.

3.3.3. Heidegger's Pragmatism

Heidegger argues that temporality is the necessary precondition of existential involvement and is an inseparable horizon of worldhood. For these reasons Heidegger returns to the question of time to understand being and reappropriates both Aristotle's praxis ontology and Kant's existential ontology, which he extends to develop into his own version of pragmatism, "being-in-the-world". With the subjectivizing of time in modernity, time is still understood as succession, but it is freed from its tie to external objective motion. Maintaining a tension between objective time and subjective objectivity is Dasein's intrapersonal relation to the future and the past. What is crucial to Heidegger is not so much the objectivity of Kant's time but rather the ontological structure of time as existential. That time becomes internalized or qualitative brings the question of time into the realm of a temporal event where "in presencing there prevails, in an unthought and concealed manner, presence and duration – there prevails time. Being as such is thus unconcealed in terms of time" (Heidegger, *Introduction to Metaphysics* 2014, 286). In his earlier work, *Being and Time*, Heidegger concludes that the innermost constitution of existence is grounded on the single phenomenon of existential temporality. Unlike Kant, the temporal horizon he calls "primordial temporality" should not be mistaken for a primal source of spontaneity such as the "transcendental unity of apperception". Rather for Heidegger, human beings are "thrown" into the world "never to have power over one's ownmost being from the ground up" (BT, 329-330/284-85). His solution, therefore, to the "transcendental" structure of being and time is to work out an "existential analytic" of Dasein.[296]

Heidegger takes his departure from Kant's distinction between pure intuition *and* act of intuition.[297] Dasein's worldhood is analogous to the Kantian categories in so far as they are the *a priori* constitutive condition of possible experience, although not in the Kantian sense of mental representations. [298] Dasein's worldhood (*Weltlichkeit*) is a constitutive part of Dasein's own intentional

[296] Peter E.Gordon, *Continental Divide Heidegger, Cassirer, Davos* (Cambridge: Harvard University Press, 2010), 219.

[297] KPM, 152.

[298] BT, §14.

structure (the tripartite structure of Dasein, the "existentials", are being-in, being-with, and worldhood).[299] Worldhood is an existential that belongs to the ontology of Dasein and informs Dasein's own self-understanding as a being-in-the-world, which is distinctively Pericean. World is prior to all "objectivity" (*res extensa*), all conceptualizing (*res cogitans*); it is therefore also prior to subjectivity, since both objectivity and subjectivity are conceived within the subject-object schema. As we have shown above, a thinking that cannot think prior to the subject-object divide misses the ontological character of "worldhood" that informs Dasein's own self-understanding as a being whole in the manner of being as being-in-the-world. This is not a world of scientific evaluation. As with Peirce, Heidegger's main contention with Kant is that the conditions for possible experience are not mental but practical. Thus Kant's transcendental analytic *viz* imagination was replaced with an "existential analytic" and philosophy recovers an orientation toward a thinking that begins with wonder at the coming to presence of beings. Heidegger thinks of this in terms of an event, *Ereignis*.

In *Identity and Difference* time takes on the character of an event, or "perdurance". Joan Stambaugh explains perdurance as the between that "endures with an intensity that never lets up" (*Identity and Difference*, 17). To perdure is to belong. Belonging means to participate but not in an identical way. This tension confronts Kantian metaphysics, specifically Kant's synthetic *a priori* tautology. Because perdurance allows for simultaneity which is not reducible to identity, the multiplicity of things within an event maintain their own integrity while at the same time belong to being. Perdurance means to endure or persist continuously, thus retrieving the Aristotelian notion of continuity, but not as a whole of continuous discreet moments. Rather each moment is stretched between two boundaries conditions. In this way Heidegger bridges the gap between external and internal time in much the same way as Peirce, without reducing difference to a distinction (*ibid*, 62).

Perdurance is the tension or the *difference* between the ontic and the ontological. Being and beings are always already present, by virtue of and within the difference. This difference is an empty concept but it is the space in which

[299] See in particular Paul Gorner, *Heidegger's Being and Time an Introduction*, (Cambridge, New York, Melbourne: Cambridge University Press, 2007), 35.

being and beings *as* beings come face-to-face. Time is internal to the event. For example, I belong to my family, but I am different to my parents. The genetic pool extends before my birth but will also extend after I am dead (if I procreate). Likewise to perdure means to sustain and endure, though not in a conflictual way.[300] It can be thought of in terms of simultaneity, I am both myself and part of my family, where being and beings are the same, while at the same time maintain difference. This is both a receiving and a giving. The receiving is not merely a passive call; it is also a forming. Between the event of birth and death, Dasein forms itself, but never as discrete moments. Thus simultaneity as potential and active faculty is other than the Kantian synthesis of intuition with the object, rather is refers to both what is continuous and also contemporaneous. As with Peirce, Heidegger ties his notion of time with feelings. Unlike Peirce, however, feelings for Heidegger express the mood of an epoch. This, for Heidegger, is expressed as perdurant and endurant, the former is based on Heidegger's notion of the difference between being and beings, that latter is expressed as ecstases (past, present, and future) as is worked out in *Being and Time.* Perdurance calls practical reason into question.

Conclusion

Technology is grounded in metaphysics, specifically the way metaphysics interprets time. Like Kant's notion of time, modern technology depends on the succession of time within a continuous whole. The correlation is not accidental. Modern information technology is an outgrowth of formal logic that beings with Kant, and gets fully worked out with Cantor and Peirce. Pure logic is a mathematical projection onto the world of human creations. But this is not something that just appears to human consciousness. On the contrary, we have shown that Aristotle's theory of time is appropriated by Kant, not because of its inability to account for the being of time, but precisely because time as successive

[300] Joan Stambaugh translates *Austrag* (perdurance) as "carrying out, "holding out." In consultation with Heidegger they agreed that the basic meaning of the word is "to bear" (See note 3, 17).

is the prior conditions for the possibility of experience. In thinking of time we are thinking in terms of metaphysical presuppositions which are broadly understood as past, present, and future correlating to internal time of memory, anticipation, and feeling, or to succession and simultaneity. Both Peirce and Heidegger find the *a priori* structure of time limits experience to pure cognition. Extending the ontological turn in Kant, Peirce's synechism develops his theory that the world is always in a state of progress. This is precisely the theory that grounds modern technology. It may not surprise us therefore that Peirce developed the theory of probability. Furthermore, Peirce's idea that reality is a kind of *tendency* is akin to Heidegger's *potentiality* thesis. Both break with the teleology of perfected ends as laid out by Aristotle. However, while Peirce synechism accepts the fundamental principles of Aristotelian succession and chance events, Heidegger's *ecstases* rejects the Aristotelian/Kantian thesis of succession entirely. Nevertheless. Heidegger's perdurance is remarkable similar to Peirce (and Plato).

For both thinkers, instrumentalism emerges from the interrelation of scientific progress, mathematics, and logic. Heidegger's objection to such a formalization is that our understanding of the world becomes reductive and disconnected from questions of meaning. He sees the consequence of this type of formalism submitting to systems of total rationalism equated with the array of technological apparatus in our world: "It is the way in which the actual reveals itself as standing reserve". [301] Modern technology leads to a world where agriculture becomes "a motorized feeding-industry, essentially the same as the fabrication of corpses in gas chambers and the death camps, the same as the blockade and starvation of countries, the same as the making of hydrogen bombs.[302] To overcome the rationalism project, Heidegger seeks the answer in the subjectivization of time, and finds a weakness in Kant's transcendental aesthetics which he argues does not adequately account for the subjectivity of the subject. In other words, because Kant's thesis on the psychology of time fails, then his entire schema is called into question. He develops his theory of perdurant time as a

[301] QCT, 329.

[302] GA, 79: *Bremer and Freiburger Vorträge*. Edited by Petra Jaeger, 1994. *Bremen and Freiburg Lectures: Insight into That Which Is and Basic Principles of Thinking*. Translated by Andrew J. Mitchell (Bloomington: Indiana University Press, 2012), 79. This has led to one of many criticism of Heidegger's anti-Semitism.

counter-thesis, and argues that time is simultaneous with our primordial being-in-the-world (Chapter 1). Our primordial understanding of reality therefore is mediated not by abstract concepts, but by tools.

Perdurance attempts to overcome the reliance of thinking time in terms of succession. But Heidegger's analysis of perdurant time is limited when confronting technology based on Boolean logic. Thus, the current debate in the philosophy of technology understandably suspects Heidegger of tending towards mysticism and Romanticism concerning technology. Furthermore, Heidegger's theory of *enframing* does not account for our total absorption in computer games and social media. It is to Peirce we turn for such an analysis who extends the debate on technology not merely within its own limits as grounded in logic but also invites us to think of time in terms of feelings which is representative of our interaction with modern technology today, with its promise (while at the same time denial) of presence. Modern technology, specifically information technology is therefore not a continuous outgrowth of ancient instrumentalism. However causality still perdures in the development of set-theory, with Aristotlicity and Kantnicity underpinnings. As such Heidegger is correct in saying that while modern and ancient technologies are certainly distinct, there is not a radical rupture between them. But precisely for this reason Heidegger has been accused of dismissing or ignoring the ethical and political consequences of technology. It is the theme to which we now turn in Chapter 4.

4. Chapter Four: Modern Technology

> "The limitless domination of modern technology in every corner of this planet is only the late consequence of a very old technical interpretation of the world, which interpretation is usually called metaphysics". [303]

Given the current proliferation of information technology, biotechnology, and genetic engineering and our continued uncertainty over what they mean, the question concerning technology remains a leading question for philosophers today. Since Heidegger's writings, the complex relationship between humans and technology has been widely documented [304] yet contention lies within the conflicting critiques of technology. This is due to conflicting notions about the concept of truth. Thus, the present chapter will uncover the third and final category of technology as truth.

Historically, truth is understood as the theory of correspondence (positivists such as Bertrand Russell and Georg Cantor) and the theory of coherence (rationalists such as Leibniz and Spinoza), and in more recent thought as a theory of pragmatism (the relativism of Dewey and Peirce) and a theory of praxis (Badiou). Correspondingly, time is understood as sequential, as spontaneous and sequential, as spontaneous and continuous or as an historical event. Because Heidegger understands time as neither simply sequential nor continuous but as contemporaneous he must reject the historically dominant theories of truth and their respective theories of time. Instead he offers a theory of disclosure, he calls *alētheia*, which has affinities with pragmatism. *Alētheia*, parallels with Heidegger's theory of time, perdurance (event). *Alētheia* is not merely a definition, but a sign of an ontological feature of Dasein. It belongs to the nature of Dasein to disclose. The disclosure of Dasein also points to Dasein as a "thrown-project": as

[303] GA 52: *Hölderlins Hymne "Andenken."* Edited by Walter Biemel, 1982; lecture course, 1941–42.*Hölderlin's Hymn "Andenken."* Translated by William McNeill and Julia Ireland, Bloomington: Indiana University Press, forthcoming.

[304] Carl Mitcham, *Thinking Through Technology The Path between Engineering and Philosophy* (London, Chicago: Chicago University Press, 1994). See also Clarke, Desmond, "Blaise Pascal", *The Stanford Encyclopedia of Philosophy* (Fall 2015 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2015/entries/pascal/>. Francis Bacon (1561-1626) and his contemporaries, René Descartes (1596-1650) and Blaise Pascal (1623-1662) are considered the first philosophers of technology.

always already belonging to a definite place and time as perduring, disclosing its own possibilities.

For Heidegger truth, therefore, is a state of movement [*kinesis*] (a coming into presence); it is not most fundamentally a stable entity. This can be broadly understood as a tension between coming to presence [*An-wesen*] and the present [*Wesen*]. In a similar way technology (which is a derivative of truth), as a movement of consciousness, is tied to the nature of humans as living, temporal beings within a shared community. When this relational and revelatory nature is forgotten, technologies generally, and information technology in particular, are shaped by the tendency of the logicians to reduce reality to objects present-at-hand. While we remain determined by the positive sciences, the *facts* of science create a "fact-minded" society (Husserl 1970, §2, 6),[305] and the *alētheic* aspect of nature and humanity is lost. If our philosophy remains exclusively preoccupied with an elucidation of the categories of understanding divorced from the question of truth as unconcealment, as our attention is engrossed in a superficial encounter with objects and the great task of our responsibility for being is ignored. Thus in Section I of this Chapter, I develop Heidegger's *alētheic* notion of truth in light of his analysis of modern technology and show how *enframing*, as the dominant mode of thinking today, can be challenged by a call to art and poetry.

While Heidegger has been central to the development of the philosophy of technology, his views have been subject to serious criticism, and his death occurred before the rapid proliferation of computing and information technologies, technologies made possible by Boolean logic as developed in computer languages. Thus in Section II we review the work of two of Heidegger's critics, Andrew Feenberg and Don Ihde. Both make criticisms of Heidegger that I argue are false; however, both also make advances on Heidegger's own work that will be important for my final application of the philosophy of technology to graphic design.

[305] For Husserl the crisis with the sciences was the separation of meaning from facts. In the Crisis of the European Sciences he writes "The exclusiveness with which the total world-view of modern man, in the second half of the nineteenth century, let itself be determined by the positive sciences and be blinded by the "prosperity" they produced, meant an indifferent turning away from the questions which are decisive for a genuine humanity." See Husserl, *The Crises of European Sciences adn Transcendentental Phenomenology An Introduction to Phenomenological Philosophy* (Evanston, Northwestern University Press 1970).

Feenberg's great contribution is to argue that the creation and design of technology must come into dialogue with the contemporary arts and humanities. This contribution will be important for my argument in Chapter 5 that an encounter with art must play an important role in the practice of the graphic designers who create the infrastructure for so much of our engagement with information technologies. From Ihde, I inherit the emphasis on careful phenomenological analysis of particular technologies and a heightened awareness of the contingencies and fluid nature of technological meanings as the relations between our "technofantasies" and technical production rapidly change through cultural time. Finally, I argue that while Ihde and Feenberg's criticism of Heidegger as a naïve romantic "stuck" in the past is inaccurate, their emphasis on contemporary technologies does inspire a Heideggerian philosophy that is better able to integrate the positive aspects of computer technology. Thus in Section III, I develop a theory of truth called "hyperology" that builds on Heidegger's notion of *alētheia* while integrating Ihde's emphasis on technological embodiment, Feenberg's emphasis on the integration of technical design and the humanities, and a speculative element that opens the contemporary philosophy of technology to transcendence.

4.1. Section I: Heidegger's Analysis of Modern Technology

The relation between being and technology should at this stage be clear. Indeed it is recognized by Heidegger as a fundamental way of understanding our current orientation towards the world. But technology is also related to truth. Thus, 'The Question Concerning Technology,'[306] is illustrative of his understanding of the entire ontological structure of being.[307] Rojcewicz, in the *Gods and Technology*,

[306] GA 7: 7–36, "Die Frage nach der Technik" (1953); "The Question Concerning Technology," translated by William Lovitt. In *The Question Concerning Technology and Other Essays*, 3–35. New York: Harper and Row, 1982. GA 7: 7–36, "Die Frage nach der Technik" (1953) = "The Question Concerning Technology," translated by William Lovitt. In *The Question Concerning Technology and Other Essays*, 3–35. New York: Harper and Row, 1982. Here after QCT.

[307] Ihde, 1990, 3. As such Martin Heidegger is considered one of the first philosophers of technology.

recognises technology as fundamental to understanding a much broader metaphysical system. He writes, because

> metaphysics and modern technology are essentially the same…for Heidegger humans are not the subjects of this technology… Technology is not merely, and not even primarily, a human accomplishment. [308]

This receptivity of Dasein to the world is not merely passive; it is co-constituted by both *giving* and *receiving,* in Heidegger's terms. This oscillation of reason and practice (or thinking and thanking) is appropriated from Aristotle's conception of truth as a deliberative process, as expressed in the theory of causality in opposition to Kant's transcendental aesthetic [309] (Chapter 2 and 3).

While the traditional reading of Aristotle's four factors of causation tends to understand each of the factors in isolation and ignore their mutual relationship, we have shown how Heidegger asserts that the essence of causation lies in what unifies the four. "The four causes are the ways, *all belonging at once to each other*, of being responsible for something else".[310] This *legeinic* structure emerges as a singular thing, or event, where the four causes are collectively responsible. The thing caused "comes into presence"; it perdures, thus the factors are cooperatively responsible for bringing it forth. In this way, Heidegger discovered the very essence of causation in the Greek word "to occasion".[311]

This notion of coming into presence can be found already found in Plato in relation to *poiēsis. A*ccording to Heidegger's translation, Plato writes in the *Symposium*, "Every occasion for whatever passes over and goes forward into presencing from that which is not presencing is *poiēsis*, is bringing-forth".[312] Plato, however, in an attempt to explain the intelligibility of reality, set up the world to be understood as a rationally ordered system in which ideas became the true

[308] Rojcewicz dedicates his book to the reading of the above essay in light of being as God. See Richard Rojcewicz, *The Gods and Technology A Reading of Heidegger* (Albany: State University of New York Press, 2006), 5.

[309] See Aristotle *Nicomachean Ethics*, specifically Book 6.

[310] Heidegger, Martin, 'The Question Concerning Technology' in *Basic Writings*, ed., David Farrell Krell (London; New York: Routledge, 1993), 314.

[311] BW, 316.

[312] BW, 316 -17.

foundation and justification of existence, thus severing truth from coming to presence. For Heidegger, Plato's idea should not have become the sole and decisive interpretation of being.[313] This is what distanced the Greeks from being, which was manifesting itself in the presencing of all particular beings. It is from their experience of reality that Greek philosophy arose – wonderment and awe at the presencing of things. However, beyond this wonderment arose the desire to grasp reality and to discover what might be "permanent within it".[314]

Contentiously, it is this desire to be in control of the being of beings that lies at the heart of the modern technological age. Heidegger starts his essay with our everyday understanding of technology as instrumental, as a way of getting things done. He asks what we mean by "instrumentality" and moves into a discussion of "cause". The examination of cause, in turn, leads him to a discussion of *poiēsis* as a bringing forth or revealing. At the close of the last section, he relates this bringing forth to the Greek word for truth. He wants us to start thinking about technology as a kind of *poiēsis*, a way of bringing forth or revealing – and, as such, as "the realm of truth".[315] What does Heidegger mean by this? What does he gain from the seemingly radical and far-fetched association of technology and poetry? Well, by way of the *aletheic* nature of truth, technology is opened to a hermeneutic phenomenology and can thus be reassessed and re-evaluated in terms of meaning.

The craftsman is entirely at home, expert in his knowledge. He reveals whatever is to be brought forth, according to the terms of the four modes of occasioning. The craftsman gathers together in advance all the ideas, forms, and matter in his mind with a view to the finished product. Seen in this light, what is decisive in *technē* does not lie in making and manipulation, nor in the using of means, but rather in the revealing. The problem with technology is therefore not the instruments we use but rather our "orientation" to the world.

4.1.1. Essence of Modern Technology: *Enframing*

[313] IM, 182.
[314] QCT. xxv.
[315] IM, 294.

Modern technology's mode of revealing is not *poiēsis*. Natural resources are now being stored up to be 'on call'. Hydroelectric plants use the current of the Rhine to generate electricity, on demand. The river is dammed up into the power plant.

> The revealing that rules in modern technology is a challenging [*Herausfordern*], which puts to nature the unreasonable demand that it supply energy which can be extracted and stored as such.[316]

Thus, through the hydro-electric technology, the meaning of the Rhine changes; it becomes an energy resource, no longer a source of poetical inspiration, culture, and regional pride. It merely becomes a challenging forth of energy to be stored up for supply. In general, nothing is seen as good in and of itself only good *for* something. Things no longer 'arrive'; the river has no meaning other than to be at human beings' disposal.

The essence of technology is a mode of enduring, that is, the peculiar mode of pursuing its course as presence. For this epoch the essence of technology encompasses a vast multitude of particularities. Heidegger's name for the ruling enduring according to which everything that lies under the dominion of technology is *das Gestell* (*Enframing*).[317] *Gestell* has a number of meanings: rack, skeleton, or the basic sense of a framework. It corresponds to the idea of categorizing something, putting things into boxes. *Enframing* is humanity's impulse to put the world "into boxes", to enclose all of our experiences of the world within categories of understanding, mathematical equation, physical laws, systems all of which we can control. *Enframing* gathers everything forth into the rigid structuring of purposeful setting-in-order and holds sway with every technical encounter of man and nature.

Modern technology "sets-upon" nature and challenges-forth its energies, in contrast to *technē* which was always a bringing-forth in harmony with nature. Man and machine incessantly order and reorder everything as a reserve ready to serve some projected end. This is evidenced everywhere and in all things that lend themselves to be ordered. Heidegger draws attention to what he called the "danger" inherent within *enframing*, whereby the latter is that mode of revealing (disclosing,

[316] QCT, 320.
[317] *Ibid*, 324.

unconcealing) of being which views everything in terms of functional standing-reserve [*Bestand*] or stock ordered according to the concerns of that which does the ordering, human beings. What comes to presence, the revealing that rules in modern technology is (a setting-upon,) a challenging, which puts to nature the unreasonable demand that it supply energy. This "challenging" revealing of modern technology has a propensity to unlock, transform, store, and distribute the resources that nature has to offer,[318] treating nature as standing-reserve [*Bestand*].

The Rhine provides an example that exposes the twofold character of modern technology (challenging-revealing). Contrasting the meaning of sophisticated modern technological devices with that of older, more primitive ones not completely under the epochal sway of modern technology illustrates how each epoch is set apart. Heidegger compares the hydroelectric power plant on the Rhine River with the sawmill in a secluded valley of the Black Forest,[319] both revealing the metaphysics that is peculiar to the epoch in which they were originally given. Since the old sawmill's meaning was originally constituted by a matrix of relationships that were contextually grounded in a different epoch, the old sawmill cannot be given in the same way that the hydroelectric plant is given under the dominion of modern technology. Subsequently, they are not commensurate in what they reveal.

Similarly, as a representative of the old technology, the windmill took energy from the wind but converted it immediately into other manifestations such as the grinding of grain; the windmill did not unlock energy from the wind in order to store it for later arbitrary distribution. Modern wind-generators, on the other hand, provides another example of *enframing*. They convert the energy of wind into electrical power, which can be stored in batteries or otherwise. The significance of storage is that it places the energy at our disposal, and because of this storage the powers of nature can be turned back upon itself. The storing of energy is, in this sense, the symbol of our over-coming of nature as a forceful object. In this sense, recent "green technologies" are not so very different from the petro-chemical industry, by which "a tract of land is challenged into the putting out of coal and ore. The earth now reveals itself as a coal mining district, the soil as a

[318] QCT, 322.
[319] *Ibid*, p 5, 16.

mineral deposit".[320] Not only is this achieved by force, but also it is achieved by placing nature in our subjective context, thus setting aside natural processes entirely and conceiving of all revealing as being relevant only to human subjective needs.

According to Heidegger, this use of technology as dominion stems from the human drive for a precise and scientific knowledge of the world. In the Greek epoch humans were relationally involved with other objects in the process of coming to presence; in the era of modern technology humans challenge-forth the subjectively valued elements of the universe, so that within this new world order objects lose their significance except in their subjective status of standing-ready for human design. For the ancients the world appeared in a manifold of meaning. In contrast for the moderns the world only appears within the context of human subjectivity as the basic constituents of world-hood, space and time, become internalized as structures of consciousness (Chapter 3).

4.1.2. Ontology of Technology Revisited

Immanent in the idea of ordering is the submission of being, in particular human beings, to definition and classification who are summoned for use.[321] This challenging summons, or this ruling of *enframing* in modern technology, is a mode of being's revealing itself, but also being's withdrawal from revealing itself. So the summons thus *enframed* in modern technology is all but devoid of being. Yet both the ancient *technē* and modern *enframing* have their roots in a particular "Gestalt". *Gestalt*, is a term which Heidegger interprets in the light of the verb *Stellen*, to place, and the noun *Ge-stell*,[322] a "framing" or "framework" that provides a location or context for what is thus "framed" or *enframing*. The ancient technology and modern technology are not therefore in absolute opposition to one another. They both gather a world that perdures within an epoch, and that epochal revelation is not something which is at the command of human beings. The radical break only

[320] *Ibid*, 320.
[321] QCT, 19.
[322] A full account of *Stellen* is given on page 16 in the Introduction.

occurs within the derivative level of a particular metaphysics: in the ancient world reality was a gathering of truth within a sociopolitical world of mythology, while in the modern world this gets worked out in transcendental idealism. But because these modes of being have been set in opposition, with mathematics taking a preeminent priority over *poiēsis*, the enduring culture has resulted in the human being reduced to a bunch of matter and the reduction of the world to formal logic. Heidegger's project is not simply to highlight the difference between ancient and modern metaphysics, but to find a common root which will allow us to identify the point of departure, which began with Plato. In this way we can say that human beings are not responsible for the technologies we create. What we can take responsibility for is the metaphysics that directs and "sends" humanity on a particular path to building a culture.

Therefore what is at stake in this chapter is not an investigation of particular technologies themselves but the orientation we have to technology. In the previous chapter, we saw how Heidegger tries to reveal this relation through the concept of "world". The potential of any given thing is in its ability to world and, thus, is much deeper than merely its instrumental value. In his essay 'The Thing' Heidegger establishes how each thing worlds within a social context. Phenomenologically he discloses the nature of a thing as an event of being. Uncovering the etymology of the term "thing" he finds it to mean *das Ding*, *res, causa, Rosa, chose*, words that describe a gathering movement towards "that which bears on or concerns man," that which is present, "as standing forth-here".[323] In other words, a thing is not a representation or a sign that signifies something, nor is it, first of all, an object. Rather, a thing is a relational gathering that perdures. A thing perdures in the fourfold: earth, air, mortals, and divinities. When a thing is not simply an essence with its own limits, but is in relation with other entities, then it is worldly. For example, a jug gathers a world to itself, a gathering to which the potter merely contributes by shaping the clay. For Heidegger, in opposition to Husserl, the jug is not an object revealing itself with each new aspect, and in opposition to Aristotle the form of the jug is not contained in the mind of the potter, nor much less in the

[323] *Poetry, Language, Thought*, 173, 174.

Platonic sense of an outward appearance as idea. Rather the jug emerges from its own void and is only "a thing in so far as it things".[324]

Using the old Germanic meaning of the word thing, (gathering) he uncovers the essential nature of the jug as a "poured gift".[325] The outpouring distinguishes it from other objects, say for example a hammer, and makes the jug a jug. The jug is an aggregate vessel which "holds" wine or water, a thing "made" from the earth, "sits on" the earth, with sides and a bottom, which "holds" substances such as air and atoms and can be replaced by liquids. The world depends on the unity of the four. The worlding is the joining together of each of these separate natures into a "onefold". The thing (jug) stays (no longer in the process of being made) – gathering and uniting the fourfold.

> The thing things. In thinging, it stays earth and sky, divinities and mortals. Staying, the thing brings the four, in their remoteness, near to one another. This bringing-near is nearing. Nearing is the presencing of nearness.[326]

Thing is not a delimiting object but an unfolding of the fourfold. "[T]o create is to let something emerge as a thing that has been brought forth".[327] For example, a truthful work of art bids all that is world - earth and sky, divinities and mortals – to gather into the simple onefold of their intimate belonging together,[328] as something that stays for a while.[329] Things perdure.

Things in this context have inherent meaning and cannot be viewed in isolation. The jug is only a jug insofar as it used for pouring. The form (jug) follows from its function (out pouring). The function of the jug is what makes a jug, a jug. This is not the scientific way of thinking of a jug as an aggregate of individual causes. Rather the jug is an event of being. As an event (of the fourfold) it brings something to light, it quenches thirst, or is used as libation. The thing (jug), things (pours). In pouring it gives, but also holds something back. We do not see the well

[324] *Ibid*, 175.
[325] *Ibid*, 170.
[326] *Ibid*, 175. See also, 177, 178, and 180
[327] OWA, 185.
[328] *Language*, 203.
[329] See *The Thing*, 172; BDT, 148-149.

from which the water was drawn, or the ocean as its storehouse. These things are concealed; they remain invisible. The jug can only be truly known when it forms a unity within the manifoldness of being. In other words, the truth of the jug is not alone the material out of which it is made, its shape, or the purpose to which it is put, all which stand out there in appearance. Rather, the jug is an event that happens historically from out of being. The jug sets itself into work.[330]

4.1.3. The Saving: Preliminary

To understand truth, then, we appear to be looking within a framework of a complex mode of being, rather than any mere assertion of truth or falsity. Truth is embedded in a world of arts and crafts, light, genius, even trickery and of the underworld. It hovers within a rift of oppositions; truth and untruth, being and non-being, revealing and concealing. The truth of the work of art is its *Gestalt* or framework. As such art and technology occupy the same mode of being. This foreshadows Heidegger's ultimate claim that in such dangerous times of mathematical and rational thinking, we can find hope where truth emerges.

This is most clearly seen in the end of his essay 'The Question Concerning Technology' where Heidegger concludes ‘where the danger is/ so grows the saving power also.’ It is the poet and not the philosopher who can trace the fugitive gods.[331] Poets emerge at dark times and ‘utter the holy”.[332] Poets alone are “on their way to the destiny of the world’s age”. For Heidegger Hölderlin and Rilke are such poets that speak of the rich tapestry of embodied thinking that comes from the study of philosophy, language, and beauty evoking a sense of being. Appearance can show a greater unity of being in poetic form. The gathering in Hölderlin’s poem ‘Homecoming/To Kindred Ones’ refers to the coming together of such elemental thinking. It is the synthesis of all that is.

> But you, above the clouds,
> Father of the fatherland! Might aether! And you,

[330] *Ibid*, 185, 186, 187. This is analogous to the act of founding a state as sacrifice of both a giving and receiving.
[331] WPF, 92.
[332] *Ibid*.

> Earth and light! You three in one, who reign and love,
> Eternal gods! My bonds with you shall never break.
> Parting with you, with you too have I wandered,
> You, O joyous ones, more experienced now, I bring you back.[333]

This evocation of the fourfold (earth, sky, gods, and humans) illuminates the idea that the mystery of being becomes present or perdures between the memory of what has passed and a future time to come. Contrary to transcendental idealism with its complementary aesthetic theory of art, this is not a private experience but an oscillation of potentiality and actuality, being and non-being, between the true and the untrue. Through each true work of art – whether a mighty temple or a simple earthenware jug – a particular domain of being is set forth in unconcealment, but by that very act something is also, and necessarily, concealed. In taking the jug into my hands, I turn away from the plate. In taking the jug and admiring it as a beautiful jug I overlook the clay from which it was molded and see only its formal perfection. I stop dancing to look at the painting. In looking at the glass, I ignore the light streaming through it. In my dealings with such works the world is presented to me in a particular way, in a particular and necessarily singular, and therefore also exclusive, aspect. The scientific urge towards repeatability in method and universal objectivity in epistemology bypass this original singularity and foreclose on the deep import of technology, but we can recover technology as a revealing by seeing it the light of art.

The work of art is not an object; it is a thing because it belong to the earth. We need art to draw truth out from the light, according to Heidegger. He writes "there lies hidden in nature a rift design, a measure and a boundary and, tied to it, a capacity for bringing forth – that is art".[334] Because art lies hidden in nature, it can only become manifest through the work. The setting-into-work, also means the "bringing of work-being into movement and happening. This happens as preservation. Thus art is the creative preserving of truth in the work: *Art then is a*

[333] *Elucidations of Hölderlin's Poetry,* 44.
[334] *Ibid*, 195.

becoming and happening of truth".[335] We will see in Chapter 5 how modern 3D art works in this way.

Truth is established in the work as a strife between world and earth. Within this strife opponents are brought together and in their unity find common ground. "This rift does not let the opponents break apart; it brings what opposes measure and boundary into its common outline".[336] The earth reclaims all its elements: the gravity of the stones, the hardness of the wood, and the dark glow of color, and fixes it in place in a figure, *Ge-stell*. Such use, however, does not use up or misuse the earth as matter, but rather sets it free to be nothing but itself.[337] Art is knowledge in so far as it opens a realm in which beings perdure as beings. In this way art as knowledge is a *technē*. But *technē* means other than the use of technical skills, tools, and materials. Art, as *technē*, is knowledge.[338] Within *technē, deinon* [violence] and its derivative *dikē* [overpowering] lurk. "The *deinon* as the overpowering [*dike*] and the *deinon* as the violent [*technē*] confront one another".[339] In this confrontation *technē* bursts forth. Within the confrontation man is tossed about. The violent one [*dike*], the creative person compels the unhappened to happen and makes the unseen appear; she ventures to master being although she may run the risk of instability, disorder, and mischief.[340] Being drives the artist to stabilize the work and so hold open the assent as a whole.[341]

The essence of knowing, therefore, is the revealing of beings, the apprehension of what is present. Being comes to presence in the realm where revealing and unconcealment take place, where *alētheia*, truth happens. 'Revealing [*Entbergen*]' necessarily suggests the role of humans who, among all multiplicity, allows its self-manifestation to reach fulfillment. Art allows truth to arise [*entspringen*]. Art arises as the founding preservation of the truth of beings in the work. The work of art, in particular poetry, is a more originary encounter with things. Heidegger writes, "the letting happen of the advent of what is, is as such

[335] OWA, 196, Heidegger's italics.
[336] *Ibid*, 188.
[337] *Ibid*, 189.
[338] *Ibid*, 160.
[339] *Ibid*, 160.
[340] IM, 161.
[341] *Ibid*, 163.

essentially poetry".[342]The work of art, then, as an instance of bringing-forth from unconcealment, is not the presentation of a finished product with a determinate significance (that "the work means *this* and nothing else")[343] but an active bringing-forth, a process of unconcealment. Consequently, the truth of the work, that which is unconcealed in it, always stands in a determinate relation to the prior state of concealment from which it emerges. As such a truly great poem (or picture or temple) will be inexhaustible in its capacity to reveal new depths, new aspects. New meaning goes behind what is read in an undisclosed reservoir of hidden truth. This is proof of a truthful work of art; there belongs to "the reservoir of the not-yet-uncovered, the uncovered".[344] Truth is always dynamic.

In this respect truth is in a state of concealedness and concealing; to both conceal and be concealed implies a veiling, a masking, a veneering but also conserving, preserving, holding back, entrusting, and appropriating. Concealedness also includes the multiple forms of closing off and closedness.[345] But within that unconcealedness something becomes clearer. Heidegger writes,

> the word 'unconcealedness' indicates that something like a suspension or cancellation of concealedness belongs to the Greek experience of the essence of truth…Un-concealedness can mean concealedness is taken away, cancelled, evicted, or banned.[346]

Within the opposition of the visible and invisible lies truth. It is not just that truth is always underway, always in the process of uncovering what is still concealed but never reaching an end. Truth itself is a form of concealment. The equivalence of truth and unconcealment as we have said above means that "Truth is untruth". But since the conventional view is that a proposition is either true or untrue, this statement appears to be absurd. So how can true at the same time be untrue? Nietzsche gives us a clue.

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[342] LPT, 72.
[343] IM,
[344] OWA, 60.
[345] *P*, 13.
[346]*Ibid*, 14.

For Nietzsche truth is an error that is so old it has solidified.[347] It is not a supreme value. It is for him nihilism. "The will to appearance, to illusion, to deception, to becoming and change (to objectified deception) here counts as more profound, primeval, 'metaphysical' than the will to truth, to reality, to mere appearance";[348] the *tragic-Dionysian* state is the highest state of such affirmation. Thus, according to Nietzsche, "art is worth more than truth".[349] In a similar way truth for Heidegger is untruth in the sense that it is inseparable from what is not yet concealed in it. *Alētheia* is more divine than truth.[350]

A work of art, as *technē*, is where truth is sheltered, the truth that enables beings to appear *as* beings and craftsmen to produce their artifacts (*Contributions* 69, 243, OWA 184, QCT). The connection between Heidegger's philosophy of technology and his philosophy of art begins to emerge here. This connection is the centerpiece of my philosophy of technology that I elaborate in dialogue with graphic art in Chapter 5. However, Heidegger's work itself does not contain all the resources we need to fully integrate a philosophy of art and a philosophy of information technologies. So in preparation for achieving that goal, we must turn to Heidegger's students who have carried his beginnings into dialogue both with more recent technological advances and with the broader academic world of the social sciences.

4.2. Section II: Contemporary Field in the Philosophy of Technology

If a fruitful philosophy of technology may be inspired by Heidegger, it will also have to expand the resources at its disposal beyond the Heidegger's writings, to include much more work in the phenomenological analysis of actual contemporary

[347] Friedrich Nietzsche, *The Will To Power*, Translated by Walter Kaufmann and R.J. Hollingdale, ed., Walter Kaufmann (New York: Vintage Books, 1968), Book 3. IV. 853. II, 452.

[348] *Ibid*, 3.IV. 853. III, 453.

[349] *Ibid*.

[350] This is not an "aestheticism." Aesthetic beauty stems from the manmade metaphysics of modernity and coheres with the conception of beings as what is "objectively representable" (*Contributions to Philosophy*, 503): one's own states, one's feelings in the presence of something, determines each thing encountered (*Nietzsche 1*, 99). This tendency of applying aesthetic value to art objectifies the art, subjugating it as a mere device for the provision of "experience [*Erlebnis*]" (*Contributions*, 91).

technologies. In the first place this is because some of Heidegger's critics are right that Heidegger over-looked the significance of the Marburg School, its power and influence. Modern technology generally, and information technology in particular, is shaped by the tendency of positivism to reduce reality to objects present-at-hand. This means that more work needs to be done in linking the mathematical roots of positivism, including Boolean logic, set theory, and probability, to contemporary technologies. If this is not done, Heidegger's endeavor to bridge the distinctions between the subject and object remain disconnected from our actual technologies. In the second place, Heidegger's critics are right that a true philosophy of technology must be able to speak to our actual policy decisions and design discussions as outlined by critical theory and postphenomenology. This can only be done by rethinking our relationship between the technical and the social spheres. Thus, a philosophy of technology is only meaningful if it provides a careful analysis of the actual technologies that we use and to takes seriously the question of both politics and ethics inherent in technology. Finally, if technology is "shaping" the social and political landscape (Winner), and human beings are embodied in those technologies (Ihde), then we must ask, 'what kind of beings are they shaping?' (Ihde).

Thus, this section enters the contemporary debate on the philosophy of technology by looking at two thinkers, Don Ihde and Andrew Feenberg. Both were immersed in Heideggerian scholarship early in their careers, one writing *Questioning Technology* in response to Heidegger's 1953 essay, the other writing *Heidegger's Technologies*. However, they both sought to wrest free from what they consider to be an essentialist morality, which ultimately fails to account for either the historical development of technologies or the intersection of technology with sociopolitical concerns. Andrew Feenberg, while sustaining a critical relationship with Heidegger, re-situates his perspective primarily into a political context within his version of critical theory. Influenced by Marx, Hegel, and Marcuse, Feenberg's focus is on the political impact technology has on society, calling for a *democratization* of technology. In a similar way, Ihde argues that Heidegger does not overcome the essentialist project that seeks a stable condition of possibility in which to ground truth. Unlike Feenberg, he is critical of the work of phenomenology, in particular Heidegger who, he argues, falls back into the illusion

of the old metaphysics of presence. For Ihde, because we can no longer think of ourselves as beings without technology, we require a different philosophical methodology to understand the self today. He argues that the modernist project, including Heidegger, adheres to the illusion of an ultimate truth and an absolute language, which leads to the illusion of an essential reality. Rather, for Ihde, the world of contingent presentations proves to be more authentic and primary than the so-called true reality. Ihde extends phenomenology (Husserl, Heidegger, and Merleau-Ponty) to account for such embodiment and variation. Combined, he refers to these phenomenologies as "relativistic ontologies".[351] He explains relativistic ontologies as beings that "always take place within a multidimensional environment or "worlds" [where] each part of the interrelation is mutually depended upon the other for the emergence of understanding" (ibid).

Although Ihde claims in 2010 that Heidegger is an essentialist, I have already defended Heidegger against this charge in Chapter 2.[352] Nevertheless, both Feenberg and Ihde still agree that Heidegger's theory of technology is essentialist, determinist, and dystopian. Thus, I will revisit this claim and argue, instead, that if Heidegger is an essentialist, he is so historically and not biologically or metaphysically. Ihde, himself, gives us a way to think about this historical essentialism in his genealogy of the typewriter. I agree with Feenberg and Ihde that the world needs more than a diagnosis of the question of technology, it also requires a serious reflection on the practical possibilities not only for resistance and democracy in Feenberg's critical theory, but also to accept highly advanced technologies and their corresponding ethical considerations (Ihde). For example, I cannot handwrite my thesis and deliver it to the exams office, I must type it on a processor and send it electronically. Here the ethical and political implications recede into the background. I no longer think of the electricity that I am using when running my personal computer, or the Spokane River from which the energy flows, or the dams that are built to harness the energy, or the infinite worlds of meaningful relations that are contextualized around these worlds. The world withdraws in response to the technologies we use. This withdrawal has been interpreted

[351] Ihde, 2006, 275.
[352] Ihde, 2010, 19.

negatively within the guild of philosophers of technology, as a reification of technology, not giving substantial import to specific technologies.

This leads to the distinction Ihde makes between his postphenomenology and Heidegger's hermeneutic-phenomenology based on Ihde's embodiment theory and multistability. Ihde argues that in discussing technology in terms of metaphysics Heidegger reifies it, and in so doing reifies the ethical and political. However, as I have shown above technology, for Heidegger, is a state of being: it is neither simply instrumental nor anthropocentric. Removed from its purely universal and objective reality as a thing, Heidegger argues that technology is a space where meaning can emerge. Human beings are that site of that emergence. While, on the one hand, the world of the river withdraws when typing on a PC, on the other hand, the world of thinking and contemplation opens up within the guild of the philosophy of technology. Here Ihde and Heidegger are not too distant from each other. For Ihde, human beings are mediated *through* technology; for Heidegger, technology is the medium where the world discloses itself via human interactions. Human-technology relations are the ontological framework that underlies the phenomenology of technology. In a more radical sense Ihde extends this thesis, and suggests that technologies transform the sense of one's body.

Both Feenberg and Ihde take their departure from Heidegger *via* Langdon Winner's *forms of life*. For Winner technology shapes existence. But he warns, as we make our world, we must ask ourselves what kind of world are we making? Postphenomenologist, Verbeek, extends this critique by asking as we shape the self, what kind of self are we shaping? (Verbeek 2009). So, we will see, while the current debate has subsumed the lifeworld critique, it seeks to move beyond it. The object and subject are no longer ontologically distinct as they were for the early Heidegger. Now we are technological beings. Technology shapes the surrounding world (Winner), as such we need to democratize technology (Feenberg) but this is problematic with mediated technologies because of the changing nature of technology (Ihde). Nevertheless it is critical to evaluate the political and social implications of these technologies, rather than blindly accept them into our lives. This can be done by speculatively addressing the multiple possibilities of new technologies *prior* to production.

4.2.1. Feenberg: Critical Theory of Technology

Andrew Feenberg's *Critical Theory of Technology* (1991) projects a general analysis of technology, and its relation to culture, with the aim of opening opportunities for democratic development. This constructivist approach to technology is a response to Winner's political and economic concerns, and is an attempt to reappropriate technology within a humanities perspective. The dual character of the technological phenomenon is a socially constructed historical phenomenon. Concomitantly there are two types of actors involved in every technology: firstly the technological master actors (technicians and programmers), and, secondly, the subordinate actors (users of technology) who influence the evolution of their design.[353] These two actors are what make up the technological phenomenon. The first is based on positivism, where technology is devoid of meaning. Thinking of technology exclusively in these terms eliminates the history of technology, understood in terms of Heidegger's present-at-hand (object-being). The second is based on life-experiences, i.e., the ready-to-hand (work-being).

This distinction was also used by Winner. Historically, according to Winner, we have inherited an uncomplicated relationship with technology, which can be divided into basic categories: making and use. [354] These are concerned with "how things work" and "making things work:" The first instance, how things work, is the domain of inventors; technicians, engineers, repairmen, and the like, who prepare artifacts to aid human activity and keep them in good working order. Secondly, making things work is the use and interaction of the tools made, "one picks up a tool, uses it, and puts it down".[355]A person gets on a plane, flies from point A to point B, and then gets off. The proper interpretation of the meaning of technology in the mode of use seems to be "nothing more complicated than an occasional, limited, and non-problematic interaction".[356]

However, technologies, for Winner, are not neutral; they provide structure for human activity and are forms of life that reshape social activities and

[353] Feenberg, QT, p, xii.

[354] Langdon Winner, 'Technologies as Forms of Life' in *Philosophy of Technology*, ed., by David M. Kaplan (Oxford: Rowman & Littlefield, 2004), pp. 103-113, 104.

[355] *Ibid*.

[356] *Ibid*.

relationships. When we adopt devices into our everyday existence they shed their tool-like qualities; new worlds are built and new patterns of human activity take shape. New technologies change individual habits and social relationships. For example, the television set was never intended to be employed as the universal babysitter, and yet that has become one of the television's most common functions in the modern home.[357] The television has become a central focal point of everyday life, in the workplaces, schools, and other social gatherings. Thus, it is apparent that television is a phenomenon that in the larger sense, cannot be "turned off". "Deeply insinuated into people's perceptions, thoughts, and behaviour, [the television] has become an indelible part of modern culture" (*ibid,* modified). The construction of such a technical system brings with it a reconstruction of social roles and relationships. Hence, the very act of using the television as a sitter soon becomes "second nature", and the television becomes "a form of life" (Winner 2004, 108).

Feenberg calls this the *domestication* of technology. Technology can no longer be thought of as a means-end relation. Feenberg uses the example of the house and argues that "we have 'domesticated' the technicised house and made it ours in all sorts of ways that have little or nothing to do with efficiency".[358] The essence of technology needs to encompass this complexity. The house is full of meaning and is not merely a device. While a house is the centre of an electrical, communications, heating, plumbing, and mechanised system designed and created by the master actors, a house is more than that. Dwellers live in the house and often romanticize about the house by hiding and concealing devices, in traditional facades. Dwelling *in* the house obscures its technical character. In a paradoxical way, the house has become the "*machine* for *living*". While it belongs to our lifeworld, it is also an efficient device. Its goal is to shelter us from the weather, but also belongs to the realm of meaning. The essentialist response to this argument is that the duality of the house of devices is different to the house as a human environment: One belongs to the realm of technology and the analytic domain, the other to the life-world. The distinction is between the electric circuit as technology, and the experience of warmth and light in the space we occupy. However, Feenberg

[357] Winner, 2004, 108.
[358] Feenberg, 1999, xi.

argues persuasively that these two "practices" (dwelling and devises) cannot be separated. The experience of these two dimensions – device and meaning, technical and life-world practise – are intrinsic to each other, as the user is aware of the technical source of warmth in the home.[359]

While I agree with Feenberg's argument, it is not clear that this is entirely at odds with Heidegger's encounter with modern technology. Modern technology is also a site of ontological significance. In 'Building Dwelling Thinking' Heidegger's highway bridge is an example of this gathering. The spatial hyperbola of a bridge defines the river. It "gathers" the earth and sky. It preserves itself as a crossing over a river and at the same time "grants mortals the way".[360] Like the Cathedral square, villages etc., bridges gather the fourfold into what Albert Borgmann calls "focal practices" which function to gather peoples to the divinities. "The bridge *gathers* as a passage that crosses, before the divinities".[361] This "Gathering [*Versamulung*] is called 'thing'".[362] Thus, the bridge is not merely an unknown entity that determines people's views in an essentialist manner. Because of the bridge's existence it draws into itself a *site*, a place that is freed for settlement and lodging with a boundary, an horizon of being. Bridges are constructions that create a hyperbolic space providing a *locale* in which dwelling can occur, to the extent that people respond to this invitation. As such the technology of bridge building is always rooted in the larger project of being's dwelling. And while the technological understanding of being can be disassociated from technological devices, it is not necessarily so. Like Feenberg's example of the house, the highway bridge is neither separate from the experience of drawing two communities together by crossing over the bridge, nor from their awareness of the social and political implications of this river crossing.

Highway bridges are not just an aid for human activity, according to Winner; they "reshape" those activities and meanings. Technology has in effect created multifarious worlds. Winner's example of the car exemplifies this radical reshaping of worlds. Drivers and pedestrians use bridges to arrive at their

[359] Feenberg, *Critical Theory of Technology*, xii.
[360] BDT, BW, 354.
[361] *Ibid*, 355.
[362] *Ibid*, 355.

destination. However, both those activities reveal different worlds. Prior to the highway bridge, neighbors would bike or walk. With the development of the highway bridge, the car driver and pedestrian live in their own world; any attempt to extend a greeting is complicated by the presence of a technological device, and its standard operating conditions. Communication between neighbours is "shaped by the incompatibility" of two forms of locomotion – one known as walking, the newer one, driving an automobile. Thus, the instrumental/functional knowledge of automobiles is not adequate to develop our understanding of how automobiles affect the "texture" of modern life.[363] He writes "[i]ndividual habits, perceptions, concepts of self, ideas of space and time, social relationships, and moral and political boundaries have all been powerfully restructured in the course of technological development".[364] The side effects or what he terms "secondary consequences," to these transformations of technology is to repeatedly enter into a series of social contracts, the terms of which are revealed only *after* the signing of the contract. Winner calls this a state of "technological somnambulism" (Winner 1986).[365] He describes this as wilfully sleepwalking through the process by which technological entities reshape and condition our social and moral life.

Winner suggests that in the continuing activity of material and social production, the instruments and processes together with the production of psychological, social, and political conditions must be accounted for. This leads Winner to investigate the ways modern technology creates new forms of political life. In *The Whale and Reactor* Winner examines two ways artifacts can embody political implications. Mitcham (1994) summarizes these implications. The first is where human beings specifically make or produce technologies that solve political problems such as Robert Moses' Long Island parkway overpasses.[366] These overpasses were designed to restrict the use of buses, and by implication, access by the urban poor. The second case includes technologies that, independent of any human intention, embody certain inherent political implications.

[363] *Ibid*, 106.
[364] *Ibid*, 107.
[365] Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago, University of Chicago Press, 1986).
[366] See Mitcham (1994), 187- 188, and Winner (1986), 22-25.

Feenberg develops the political aspect of technology further by examining in detail how politics is embedded in tools or instruments. In a short essay "Subversive Rationalization", he offers the example given by Pinch and Bijker of the ways that the technological design of the bicycle has been influenced socially and politically.

> The object we take to be a self-evident "black box" actually started out as two very different devices, a sportsman's racer and a utilitarian transportation vehicle. The high front wheel of the sportsman's bike was necessary at the time to attain high speeds, but it also caused instability. Equal sized wheels made for a safer but less exciting ride. These two designs meet different needs and were in fact different technologies with many shared elements.[367]

But once closure is in place social origins are forgotten. Accordingly closure produces a "black box" effect.[368] The artifact that is no longer called into question is taken for granted. The artifact appears purely technical, even inevitable. The final object is arrived at through a democratic process. The rejection of Heidegger's *enframing* is apparent here. Instead of thinking of technology as a particular state of consciousness, technology is designed and modified as a result of practice and use, socially and politically. Unlike Winner who sees the political emerging after the technological invention, Feenberg sees it as embedded in the technology.

Ironically the bicycle is an invention from the period where modern consciousness demands categorization (mid-nineteenth century), and so does not provide the evidence that we are seeking in this thesis. However, it does affirm the phenomenological account that the essence of the bike is its function and not form. Heidegger is not referring to either terminal ends, perfected ends or the end that is finally black boxed. Rather, his ontology of technology is directed at the function of the bike. This is other than reductive determinism. The function is prior to the black-boxed effect. The inner structure or being of the bike is the metaphysical blueprint or the movement of consciousness that allows for the invention of the

[367] This paper expands on Chapter 1 of *Critical Theory of Technology* delivered at the American Philosophical Association, Dec., 28, 1991.

[368] Feenberg *Question Technology*, 11.

bike in the first place. How that bike is used, or what gave rise to modifications in the design, are merely superficial attributes. This does not deny variations in the bike, nor does it deny that the bike can be used for good or evil. Rather the bike, as opposed to a horse drawn carriage, has the political and social already embedded into it.

Essentialists argue that both the technological masters who reduce the world to raw material, and the ordinary person who encounters the technology as a dimension of their lifeworld, "inhibit technologically constructed spaces and environments" (Feenberg 1999, x). Thus the subordinate actors adapt technologies to be meaningful in their lives. But Feenberg is right, the house is more than a mere dwelling. It encompasses the whole range of technical and meaningful relations. He writes: "A solar house that gets its heat from the sun rather than from burning fossil fuels internalizes environmental constraints in its design, making them in some sense part of the "machinery" (Feenberg 1991, 217). I have shown above how this distinction is already present in Heidegger's calculative and the creative idea of truth emerging in the ready-to-hand. The difference for Feenberg is that the world is socially constructed, whereas for Heidegger the world gives itself to be transformed, but only insofar as the giving is a receptivity. Dasein does not "form" or construct the world, it receives it as it is given. If that disclosure is rational, then Dasein interprets it as such creating instruments that are rationally constructed (including the bicycle or the PC). This is different to an essentialism that suggests that we have always been destined to the current technological era. Instead, Dasein's receptivity is always already a response to the world, together with the metaphysical possibilities it presents.

Constructivists such as Feenberg view all of our knowledge as "constructed". As it does not necessarily reflect any external transcendent realities, it is contingent on convention, human perception, and social experience. It is believed by constructivists that representations of physical and biological reality, including race, sexuality, and gender are socially constructed. I agree that this is true; however, my agreement comes with the caveat that these constructs can only be understood in light of the metaphysics that precedes them. Nevertheless, this turn to metaphysics does not obviate the need, as we create technologies (as algorithmically defined), to critically think of the world we are making, as Winner

urges us. We also agree that politics are embedded in technologies as Feenberg demonstrates, and, thus, metaphysics can never replace politics. The design of technologies has hitherto being confined to engineers and technicians. Feenberg demonstrates how development of technologies encompasses the entire matrix of actors and inventors. As such, he calls for the democratization of technology where design must incorporate the political and social, the artistic, and the philosophical. In accordance with Feenberg, this thesis argues that the political is necessarily embedded in technologies prior to production. As such we need to be thoughtful about the technologies we create. Therefore, the design and research needs to extend beyond the engineers and technicians. Specifically, for this work, we argue that because graphic design, which is the bedrock for modern computer technologies, has become the dominant public visual experience, graphic designers must be attuned to an artistic sensibility.

4.2.2. Ihde: Postphenomenology

4.2.2.1 Mediated Technologies

We live in a world that discloses itself through high level technologies, power plants, nuclear energy, and information technologies. This complex matrix of material practices means we are increasingly *embodying*[369] these technologies, and this trend has accelerated since Heidegger's death. Examples of embodied beings include technologies that extend our temporal existence, such as pacemakers, computational and information technologies that extend our cognitive powers, and the construction of cyborgs as a prosthetic extension of our organic bodies in cybernetics. The human skin is no longer the immutable barrier that contains and

[369] Note: this is a term borrowed from Don Ihde. Phenomenologically, the syntheses between instrument and body overcomes the distinction between life world and the "world of science and becomes for Ihde the "embodied" relation of science and life world. In this sense we are already cyborgs. "Cyborgs [are] creatures simultaneously animal and machine, who populate worlds ambiguously, natural and crafted…the boundary between human and animal is thoroughly breached… [and a] second leaky distinction is between animal-human (organism) and machine." Cf. *Bodies in Technology* by Don Ihde, 89. On cyborgs see Donna Haraway, 'A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,' in *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991), pp.149-181.

defines the body in space. Instead, the human body has become the site of continuous transmutation.

To make sense of these technological transformations, Don Ihde argues that we must make a methodological shift from the modernist phenomenological tradition to what he coins "postphenomenology". By naming postphenomenology he constitutes his philosophy as a new cultural paradigm by differentiating it from phenomenology. At the heart of the project are differentiations between stability and multistability, between embodied beings and pre-technical conscious acts, and between technological determinism and technological evolution, differences, he argues, that are overlooked by Heidegger (Ihde, 2010). The demarcation is clear for Ihde: while Heidegger thinks that human beings are *involved* with technology, Ihde argues that we are *embodied* in technology, and so there is no ontological priority of human beings (Ihde, 2002). Rather human beings and technology coexist where technologies morph and adapt to human needs, shaping the extended the physical body.

Ihde claims that because human beings are technological beings we require a different philosophical methodology to understand the self, which he coins *postphenomenology*. He is also critical of the work of phenomenology on these grounds, in particular Heidegger who, he argues, falls back into the illusion of the old metaphysics of presence. He argues that the modernist project adheres to the illusion of an ultimate truth and an absolute language, which ultimately leads to the illusion of an essential reality. But, for Ihde, the world of contingent presentations proves to be more authentic and primary than the so-called true reality. Ihde's correction is to do a phenomenological analysis on specific technologies and concludes that we are always already embodied in instruments. As we create works, they become part of the living body. I want to argue that while this careful postphenomenological analysis is an important addition to a Heideggerian philosophy of technology, it turns out to be a continuation of the Heideggerian project rather than a radical break.

Beyond Feenberg, Ihde's instrumentalism is grounded on the thesis that instruments are never completely "black boxed" or reified; rather, technology can only be understood in light of how the body interacts with it. While we might dream

of an "ideal" transparent technology, this is impossible, for a technology is only meaningful in the context of the lived experience. Advancing Winner's theory, Ihde argues that we are not merely making the world, for as we embody technology, we are making the self. This is an evolving process, sometimes continuous with previous inventions, sometimes breaking with conventional inventions, but always changing. This changing nature of technology must address experiential technological scientific research (technoscience) to investigate the meaning of technological intentionality beyond phenomenology, which is the root of his embodiment theory.

Embodiment is an unmediated perceptual-bodily experience (Ihde, 2002). Ihde conducts a hermeneutical phenomenology of embodied beings, and concludes that phenomenology is only appropriate when talking about an unreflective life *without* technology. As bodies in technology we no longer live in this purely phenomenological world. Evan Selinger explains embodiment relations as the act of entering "into optimally transparent practices with artifact in order to amplify our body's perceptual abilities" (Selinger 2006, 5). Once a user adapts to eyeglass technology for example, vision becomes amplified. The use of the glasses falls into the background of conscious awareness, and it requires a hermeneutic reflection to make apparent the fact that things would appear differently through the use of different optical technologies.

An even more dramatic example of the phenomenon of technological embodiment is the use of prosthesis. Such devices are experienced *through* the body. The equivocal character of the prosthesis works in two ways: one in partial concealment, the other in partial withdrawal. For example, in hot weather prosthesis might conceal the heat of the day, or the hot earth, where the wearer cannot feel the earth beneath her feet. On the other hand, she might be more sensitive to the conditions of icy weather, where the prosthesis is more likely to slip. Thus, Ihde argues, these technologies can never become a full simulacrum of bodily sensory experiences, even though they are technologically embodied. Prosthesis is an extension of the here-body; the here-body and over-there body are interdependent. This is correct, and the high visibility of prostheses in our culture is changing the way we understand our body and the relation to the world. But can

it be said that these technologies are a radical break with the past? Prosthesis, according to Umberto Eco, is

> any artificial construction, which prolongs and amplifies the possibilities of our body, from the first sharpened flints through to the lever, the walking stick, the hammer … In this sense the term prosthesis also covers chairs, or beds or clothes…they are all but natural extensions, and like our body, we take care of them and decorate them. (Eco 2004, 382-383).

We are embodied beings prior to our postmodern condition, prior to the simulation of reality through repetition, and prior to any scientific orientation to the world. As such, we have not moved radically away from the modernist project. We take care of our extensions because they matter to us, and we decorate them because meaning and truth are found in beauty. Unlike Baudrillard's dystopian view of art as an "allegory for death," Eco, experiences beauty in all things, and so like Heidegger, art is an allegory of truth. In the 'Origin of the Work of Art' Heidegger writes: art "makes public something other than itself; it manifests something other; it is an allegory" (Heidegger 2009, 145). What matters is not what shows itself but only the possibility of *something* showing itself. Interpreting Heidegger, Günter Figal states that art is not something new, but lets things as a whole be seen anew (Heidegger 2009, 13). Art, or truth, or beauty is at the core of all extensions or technologies, and this is just as true of things today as it was with the Greeks. This potentiality for something showing itself means that something also withdraws from view. It is this withdrawal that we will turn to in the next section.

Finally, in following Ihde, we enter into alterity relations when we transcend the body. Particularly as we communicate or play in virtual reality, we are absolved from the limits of normal embodiment as subjects confronted by objects. In these experiences, things that would have once stood out before us as objects become part of our lived experience. In Ihde's examination of body identification he breaks down the body into two components: an active "here-body" [sight 1] and imaginative "over-there" body [sight 2]. In his view the over-there body constitutes the world of fantasy, or as he suggests, a hyperworld. Knowledge of the world begins with body one, and projects outwards into body

two, through instruments and imagination. In contrast to embodiment we experience disembodiment when we communicate or play in virtual reality. However, disembodiment or hyperreality cannot stand alone; it can never take the place of "real life".

Ihde's contribution is to think through the way hyperreality is embodied in technology. As embodied beings these projected fantasies have become constitutive of consciousness; they have become the new metaphysical way of understanding the world. He calls them *technofantasies*, the intersection of technology and human desires that take shape both bodily and socially (Ihde 2002, xiii) . Technofantasies, he admits, are not a modern concept. Roger Bacon had already fantasied about technological inventions (flying machines, wagons without wheels, modern sailboats), though these fantasies had physical and economic constraints. Technological fantasies about extended possibilities were more widely disseminated with Leonardo da Vinci during the Renaissance. Technofantasies differ in late modernity or postmodernity where they take on the form of virtual reality or hyperreality, and, particularly in the form of video games, they have been made actualized for large percentages of the population. However, these technofantasies are never transparent for Ihde. They "remain thin and never attain the thickness of flesh".

> The fantasy that says we can simultaneously have the powers and capacities of the technologizing medium without its ambiguous limitations, so thoroughly incorporated into ourselves that it becomes living body, is a fantasy of desire. And when we emerge from the shadows, effects, and hyperealities of the theater into the sunlight in the street, it is not Plato's heaven we find, but the mundane world in which we can walk, converse, and even find a place in which to eat. (Ihde 2002, 15).

Phenomenologically, hyperreality is as much a part of the lifeworld as "real" reality. Yet the distinction is clear; the real world and hyperreal are analogous to daily life and theoretical life. Nevertheless, hyperreality necessarily presupposes real reality. Ontologically, meaning is garnered from the interaction between the object and user. Indeed, Ihde himself tells us the distinction between universals and

embodied particulars for Plato is understood as a *process* of liberation from the cave and the emergence into sunlight, and it was this process of transition that taught the difference between the two.[370] What is phenomenologically significant here is not what hyperreality "is", but rather what *function* it serves. For the Greeks, the technofantasy Athena functioned as a deity that embodied truth and justice, crafts, and art. Today, video games function in the same way, for Ihde. Technofantasies display the feature of "otherness" but does not necessarily point to a transcendent world. Without the monitor, the key pad, and the knowledge to "read" the computer language one cannot play the video game. We can begin to see Ihde's historical/ material hermeneutics emerge here, where he understands the game as an evolution of the original technofantasy, Athena of the Acropolis. It is with this emphasis on the historical possibilities inherent in materiality that Ihde's analysis shows itself to be a fruitful continuation of the Heideggerian project rather than a radical break from it.

4.2.2.2 Material Hermeneutics/ Hermeneutical Ontology

Here I appeal to Heidegger's phenomenological description of the temple. The Greek word for temple is *naos*, meaning dwellings or structures to house the deity. Denis Schmidt refers to this type of art as "alive". John Sallis in *Stone* captures Heidegger's impression thus: "This sea, these mountains, these islands, this sky – that here and only here *A-lētheia* could emerge and the gods could enter into its sheltering light, indeed necessarily, that here Being held sway as presencing and human dwelling was established – for me all this is today more astounding and more difficult to think through than ever before" (Sallis 1994, 92). Sallis goes on to say "the temple gathers its lines and masses to the place, to its unique site, and, gleaming in the morning sun, the entire edifice seems suspended and yet thoroughly delimited in a presence akin to that of the rock on which it is erected" (*ibid*, 93). This wonderful description of the abandoned temple is indeed "alive" but also arouses us to the "absence of the goddess who has flown [but draws]

[370] Ihde, 2002, 13.

invisibly near". The "invisible" is more present in the absence of the goddess. The Greeks built (*naos*) within a sociocultural context.

In the example of the temple we could consider it a mere thing, but that may infer just an aggregate of properties, which clearly it is not.[371] The essence of the temple, its *hypokeimenon* comes from the idea of the craftsman and shows up as a symbol of spirituality. What emerges is the essence of what already exists. In other words, the core of the temple is not merely the materials from which it was made or of Athena, but the truth that grounds and directs the materials.[372] The essence or core of the artifact comes to light through imagination or in Ihde's way the "image body" and not through the technology itself. From out of the fourfold the truth of the Athenian culture shines forth. Ihde is critical of this Wagnerian/Nietzschean romanticism. He calls us to view the temple in light of its actual history and not the "world" from which Heidegger views it. Historically he reminds us that,

> In the centuries before the Golden Age of Athens, those same mountains were covered by forests and watered by springs and streams. The philosopher Plato saw evidence of the changes that had occurred not long before; there were buildings in Athens with beams fashioned from trees that had grown on hillsides which by his day were eroded and covered only with herbs, and he visited shrines once dedicated to the guardian spirits of flowing springs which had since dried up.

For Ihde, Heidegger's way of seeing is only one perspective, a romantic and nostalgic merging of art and technology. Ihde reminds us that historically the temple was also a destructive power. During the establishment and building of Athens, the natural world was used as *Bestand*.[373] The gathering of the fourfold into the Parthenon threatened the environment.

Ihde uses this example to point to the current ecological crisis. Building great empires is not a simple construction. The Greek gathering of the fourfold was

[371] Ihde, 2010, 74-77.
[372] OWA, 149.
[373] Ihde, 2010, 75.

destructive. He argues there was no time in human history that the gathering of society was environmentally gentle. Ihde sees Heidegger as embedded in a world of ambiguity where the preservers of the earth are at one and the same time the group of people who reign terror over their own land. Recognizing this, he thinks, will lead to a more balanced assessment of technology.

> What is needed is not a rejection of the deep and essentially phenomenological insights into technology as a culturally embedded phenomenon with its different gestalt features, but a deepening and more complex appreciation of all of the facets of our technologically textured modern of life … including both the politics of our artifacts, and the demythologization of nostalgic and romantic views of previous times … [374]

For Ihde, Heidegger's critique of technology has only regional or limited relevance particularly as it is tied to a demonizing of the present and a glorification of the past.

There is an insight in Ihde's criticism, but it does not lay in Heidegger's failure to think the multiplicity of being or its historical transformations. Heidegger recognizes both the multiple and contingent possibilities harbored within materiality and the ongoing moral ambiguity that technology manifests. Heidegger recognizes that technology is not intrinsically dangerous or evil,[375] and in his 'Memorial Address' he uses language that could have come directly from Ihde:

> For all of us, the arrangements, devices, and machinery of technology are to a greater or lesser extent indispensable. It would be foolish to attack technology blindly. It would be shortsighted to condemn it as the work of the devil.[376]

[374] *Ibid*.
[375] QCT, 28.
[376] *Discourse*, 53. See also QCT were Heidegger posits that *enframing* is a destining of revealing " that in no way confines us to stultified compulsion to push on blindly with technology or, what comes to the same, to rebel helplessly against it and curse it as the work of the devil." BW, 330.

The issue of contention should not be a blind denigration of the present, but the nature of historical change.

Ihde's contention is that as we embody our technologies, the human body itself becomes the site of continuous transformation through our scientific orientation towards the world. As such there is a radical break with original technologies or technofantasies as their function in society changes over historical time. In the example of the Parthenon, the form "Athena" follows from her function as a symbol of truth and justice as embodied in war, arts, and crafts. For Ihde, the form of Bionic *Man* or the video game *Athena*, also follows from their function. For Ihde in both cases hyper-existence functions as a way to map fantasies onto the world. It is merely the historical fact that while war has continued to occupy our cultural imaginary, fantasies of speed and power and sex have replaced fantasies of wisdom and justice in the symbols that dominate the public sphere.

In Ihde's view, Heidegger's philosophy cannot engage this fluidity of cultural meanings, thus remains cut-off from the present by an attachment to the stability of the past. It is true that the Greek technofantasy Athena, as the "embodiment' of truth lasted only as long as the world projected itself in that particular way. However, the fact that the Parthenon no longer functions in this way does not eliminate the essence of truth; it merely means we shift our meanings from one technofantasy to another. In either case we have the moral responsibility of discerning the ways in which our orientations are properly responsive to the revealing of being. Recalling the quote at the beginning of this thesis Bergoglio writes, "We have the freedom needed to limit and direct technology" … to devise intelligent ways of … developing and limiting our power… and to put technology at the service of another type of progress, one which is healthier, more human, more social, more integral".[377] We can do this when we think of the essence of technology as *legein* that brings together the potentiality of being and non-being as the perduring *alētheic* within the technological consciousness of humanity.

Accordingly, Heidegger is not guilty of essentialism or of an inability to account for fluid cultural manifestations of truth. We have argued that every

[377] Francis at the Senate and House of Representatives, the first papal address ever made to the United States Congress http://www.usatoday.com/story/news/politics/2015/09/24/pope-francis-full-address-congress/72728244// Accessed, 24/09/2015.

projection is contingent and arises out of multiple possibilities. In accordance with postphenomenology, then, Heideggerian philosophy demonstrates the multiplicity inherent in technology and its fluid nature. However, Ihde's criticism does contain some truth. It is not the case that Heidegger has some formally conservative allergy to change that blinds him from a careful analysis of contemporary technologies as they arise and change our cultural landscape. Rather, while Heidegger's carefully crafted ontology of being has provided this work with a fundamental ontology, I argue that Heidegger does not overcome his attachment to non-rational technologies, and so can never be receptive to advanced technologies that are ubiquitous in the world today.

Therefore, in the next section, I extend Heidegger's ontology of being to include the powerful resources of mathematics, the discipline Heidegger was most suspicious of. In the tradition of Pierce's pragmatism, I argue that human beings develop technologies arising from the ability to project onto a future, a creative and rational imagination. While Heidegger was concerned with the *hypokeimenon* or essence of technology, I propose a philosophy that integrates both causal and speculative philosophy. This is not a return to ancient crafting or medieval science, as they were immersed in the same technological consciousness. Rather it is being receptive to all technologies including, computer technologies, nanotechnology, and biotechnologies. What we take from Heidegger is a return to ancient metaphysics to remind us of what is lost, a worldview that does not treat nature as a standing reserve. This inner movement of reason and *poiēsis* is the condition of the possibility of innovations. This movement of consciousness is what I call hyperology. Hyperology is the study of modern consciousness shaped by formalism and crafting.

4.3. Section III: Hyperology[378]: An Alternative

[378] Roisin Lally, "Hyperology The Age of the Chimera." In *Technoscience and Postphenomenology: The Manhattan Papers (Postphenomenology and the Philosophy of Technology*, by Jan, Friis O Berg Kyrre and Robert P. Crease. Lexington Books, 2016).

Much of the recent pre-occupation with the "IT revolution" is rooted in the natural human desire for novelty. Symptomatic of this is our total absorption in what we call today, revolutionary technologies. But is information technology a radical rupture from the past or is it merely a transformation of what went before? This section will look at two contemporary thinkers, Alain Badiou in *Being and Event*, and Felix Ó Murchadha, in *The Time of Revolution*, and show how they tackle the question of novelty in terms of "revolutionary time". Both thinkers understand time in terms of *praxis*: Following Heidegger, Badiou refers to revolutionary time as the event, Ó Murchadha calls it *kairological* time. At first sight these two notions of revolution seem contradictory. However, the difference is methodological only; one is explored through the lens of mathematics, the other through the lens of being. But this seems to be a question of interpretation.

Therefore, I will point to the necessity of an interweaving of both ontologies, mathematics and being, to broaden our understanding of reality, and to incorporate contemporary technologies that disclose reality in innovative ways by looking at how both thinkers present their notion or truth and relate it to time, specifically the time of revolution. I will then show how Badiou's notion of truth needs to be supplemented with *kairos* to account for technology's ability to disclose a world in all its multiplicity and variations, which for Badiou is prohibited in a truth procedure. This will point to and beyond, postphenomenology, such that we take the *naming* of technologies as seriously as the technologies themselves. For if Badiou is correct, it is by naming an event, for good or evil, that truth is stabilized. By so doing, I extend Heidegger's ontology of being to include the powerful resources of mathematics. I argue that human beings develop technologies arising from the ability to project onto a future, a creative and rational imagination. I call this study *hyperology*.

Hyperology draws on the postmodern term "hyperrealism" used to signify the Information Age. Paradoxically, hyperreality has been described as a world that ranges from excessive reality to a non-existent reality.[379] The ambiguity lies in our understanding, or lack thereof, concerning the drive towards a *hyper-existence.* Hyperreality is not an uncommon concept. Etymologically *hyper* is taken from the

[379] See Borgmann, 1992, Epstein, 1999, Baudrillard, 1985, Dreyfus, 1995.

Greek word *hupēr* meaning "over", "above", "above measure" signifying a condition above or beyond. Its opposite, *hypo,* "under", is used by Aristotle in the construction *hypokeimenon,* (lying under) to describe the natural world of essences, thus becoming one of the central concepts of western metaphysics. For the most part, *hyper,* on the other hand, was lost to philosophical reflection until the latter part of the twentieth-century when it took on a different meaning with the advent of the Internet. People began to refer to the language of the Internet as "hypertext" and "hyperspace" to indicate a negation of both word and space.

The concept "hyperreality" has been advanced by the French sociologist and philosopher, Jean Baudrillard in his book *Simulation and Subterfuge* (1994). He describes it as a conceptual point at which reality becomes indistinguishable from simulation, implying a presence that is non-existent. It is the disappearance of reality brought about by the dominance of the mass media, a concept that is heavily influenced by Sausserian (and Peirce's) linguistics, in which signs are perceived to be an arbitrary psychological union of a signifier (sound image) and the signified (concept) (B. William 1996) where signs only convey meaning through their relative position to other signs (Saussure, 1959). In hyperreality the experiential aspect of the subject that exists as an interplay between temporal reality and the internal world of myth/ideology is distorted by simulations, thus threatening to destabilize the border between the real and the imaginary. The simulation is the implied presence of something that is non-existent, producing a hyperreal: "the product of an irradiating synthesis of combinatory models in a hyperspace without atmosphere". [380] For Baudrillard hyperreality, through simulation, is no longer that of a territory, a referential being or a substance. It is the generation, by models, of a real without origin or reality: a hyperreal. Baudrillard uses the example of Disney's Main Street as a kaleidoscope of hyperreal representations. It is, for Baudrillard, an orbital recurrence of models without reference to anything that is real, yet it emerges as more authentic, exact, and "real" than the reality that surrounds us.

[380]See also the hyperrealism of simulation is expressed everywhere by the real's striking resemblance to itself in Albert Borgmann's *Across the Postmodern Divide* (1994) which claims that new technologies are taking us into the sphere of hyperreality, a term he borrows from Baudrillard. He argues we are losing touch with our bodies, with nature, with other people and with focal things and practices.

Illustrative of hyperrealism is the art movement of the 1970's and early 1980's that includes the works of Andy Warhol. Here the real and the imaginary, production and art, are "confounded in the same operational totality".[381] The world of art no longer transforms everyday life. Instead, it absorbs the most ordinary experiences, re-producing them as images over and over until the image becomes more substantial than the thing that it is purportedly representing. Warhol's art, iconic in its ability to reproduce without ceasing to be art, is so successful in combining the machine and the metaphor, that "Unreality no longer resides in the dream or fantasy, or in the beyond, but in the real's hallucinatory resemblance to itself" (Baudrillard 1988, 145). We can see the result of this type of metaphysical thinking in architecture, specifically skyscrapers. Like hyperreal art, architecture spirals upward simulating a representation of reality immanent in its repetition. It is as Walter Benjamin says

> the desire of the present-day masses to "get closer" to things, and their equally passionate concern for overcoming each thing's uniqueness by assimilating it as a reproduction. Every day the urge grows stronger to get hold of an object at close range in an image [*bild*], or, better, in a facsimile [*Abbild*], a reproduction. [382]

The reproductions of magazines, advertisements, and virtual reality games extract sameness even in its uniqueness. It is the promise of presence while denying the present.

Virtual reality can be thought of as a world of eternal recurrence and immanent repetition. This is because virtual reality is the language of Boolean logic and set-theory; a language of logical instructions. The infinite set of looping algorithms repeat continuously, devoid of meaning. This language gets translated into the language of higher level programming languages used by Information technology, such as Hyper Text Markup Language (HTML), from which all other interface languages have evolved. Truth in this formal system becomes stripped of

[381] Baudrillard, Jean, 'Symbolic Exchange and Death,' in *Jean Baudrillard: Selected Writings*, (ed.) Mark Poster. (Stanford: Stanford University Press, 1988), 146.

[382] Walter Benjamin, 'The Work of Art' , in The Work of Art in the Age of its Technological Reproducibility, translated by Rodney Livingstone, (New York: The Belknap Press of Harvard University Press, 2008), 23.

its “meaning,” i.e. of its content and intuition. The only meaning that exists is the one given by the formal rules of the system, with no reference to either intuitive truth or relation to reality. In other words, the axioms of formalism need not correspond to any fundamental, self-evident intuition. Truth, here remains wholly mechanistic and algorithmic, for mathematical operations become nothing but a sequence of operations deduced from given axioms, which appeal to nothing beyond themselves.

This notion of truth, so dominant in postmodernism, has been challenged by Badiou. In *Being and Event,* he masterfully works out the conditions under which the new occurs. He posits that novelty is contingent on truth. He draws a distinction between truth and knowledge. Truth is first and foremost something new. Knowledge on the other hand is what is transmitted or repeated, he calls this “encyclopedic” knowledge. Truth is about action, or “intervention”. One does not simply know or contemplate a truth, one acts on it as a “subject”. *Praxis* subsists in the truth procedures of science, artistic creations, emancipatory politics, and love. According to Badiou, truths are made, not as the effect of an order, but by rupturing with the order which supports truth. This is what he calls 'event'. Thus, truth is newness, and the emergence of truth is strictly incalculable. It is subject to chance, only named truth after the fact. The truth may never come to pass. And when it does emerge, it emerges as infinite—but it is made possible by finite subjects. Truth in general (as opposed to 'veridicity') is known only through retroaction, a 'will have been' that is the structure of an 'event.'

This position is similar to what Ó Murchadha calls *kairological* time, set in opposition to chronological time. *Kairologica*l time is a time of “initiation” and “intervention” in which the stability of the future is threatened and we are forced into a new situation in a moment of time. This can happen with the death of a loved one, a new political regime, or a new religious order. “In such an instance”, Ó Murchadha writes, “when the everyday certainty of continuity breaks down, the human being is placed in a totally new situation”.[383] Taking the “old *kairological* concept” of situation Ó Murchadha distinguishes it from location.[384] Situation here does not mean a position in any formal sense. In *kariological* time the site of the

[383] RT, 129.
[384] *Ibid*, 79.

situation is the temporality of human existence, which is both *praxial* and poetical, and thus constitutive of the possibility of change. Time itself is the agent of change: the agent of preservation, of decay and of generation. But in human terms, that agency takes on a historical character because human time is a complex interrelation of expectation and recollection, hope and despair, grief and celebration. The *event* is that which lies at the core of such temporal trajectories, interrupting, transforming, and recapitulating. Events are revolutionary almost by their very nature, once we hear the ambiguous sense of revolution as both destroying and instituting, *and* returning and repeating. Time emerges in and through the orders of doing (*praxis* or *kairos*) and making (*poiēsis* or *chronos*). Transformation happens both in the temporal plane of everyday actions and in the occurrences through which the history of being moves and means. Chronos and its measures are ontologically prior, but for Ó Murchadha it is the "between" moments that allow for "the *kairological* situation of revolutionary action" (15). He writes, "*Kairos* is not 'contained' in the future; rather it is the moment [*Augenblick*] between past and future; it is the temporal dimension of decision".[385]

Human beings are agents in and through time who disclose "the practical constitution of temporality".[386] Both Ó Murchadha and Badiou appeal to the Christ Event as a time of revolution, an example already used by Kant in *Religion within the Limits of Reason Alone*. There Kant argues that Christianity is not a mere continuation of the old. Instead it was the introduction of a new moral religion in place of the old worship, to which the people were all too well habituated. Christianity arose suddenly, though not unprepared for, from Judaism. Kant adds, this new teaching "effected a thoroughgoing revolution in doctrines of faith" (Kant, 1960 (1934), p. 118). However, while the Romans were provoked and awestruck at the revolution that was taking place, as is made clear by the persecution of the Christians, they failed to mention Christianity in their official public discourse. It was only after a lapse of a century that the Romans instituted inquiries into the nature of the change of faith, and "Christianity" as such is born. As Badiou teaches, the new situation is only named retroactively.

[385] See Note 5, 200.
[386] Ibid, 131/2.

The event constitutes and creates a subjectivity in which, and through which, the event is manifested as a universal singularity. St. Paul is an example of the "faithful subject" to the event, but it should be remembered that Badiou's subject is not the individual. The subject, for Badiou, it is not egological, psychical, substantial, nor conscious, and to participate in its constitution is an anonymous dispersal into the variations of a procedural beginning.[387] The task of St. Paul, as a creative inventor, was to choose fidelity to the situation and accept the consequence of a "judgment" or decision against the continuity of his old life. Or as Ó Murchadha argues, "Time as *kairos* is the 'point in time' in which that which has no worldly correlation comes to appearance…".[388] Christians and followers of Christ were faithful to the Christ Event. This has lasted for 2,000 years. But this does not have to be the case, and more recently Christianity has been replaced by Secularism.

In a similar way, subjects faithful to the new technologies of Boolean logic and consequently information technologies were forged from the logic of set theory, and it is this to which we turn to illustrate Badiou's fidelity to the *Cantor Event*. The idea of a formal system in mathematics is the move to an "axiomatic system divested of all appeals to intuition"[389]. Truth then, in the formal system, becomes stripped of its "meaning," i.e. of its content. Such a system, devoid of intuitive appeals to truth, remains wholly mechanistic and algorithmic. This is why Badiou thinks that technology is not a real concept, but is merely a journalistic debate. As such it is not a serious question for philosophy. The question of technology should only arise within the truth-procedure of the scientific or political problems. There are no technological problems *per se*, only techno–political problems. In determining the political, scientific, artist, or amorous questions, the technological question is exhausted.[390] But is Badiou correct?

In my view, Badiou's ontology provides a powerful account of computer technology, with its set-theoretical underpinnings, but cannot, on its own, ever

[387] *The Concept of Model: an Introduction to the Materialist Epistemology* of eds. Zachary Luke Fraser, I.i..

[388] RT, 14.

[389] Rebecca Goldstein, *Incompleteness: The Proof and Paradox of Kurt Gödel* (New York: W.W. Norton 2005) 129.

[390] Alain Badiou in an Open Lecture *On The Truth-Process,* August 2002.

truly escape the *status quo* of the state of its situation. Although modern technology admits of a community of subject's faithful to the event, while we live and remain in the situation (i.e., the Information Age), the very possibility of naming of the event is foreclosed. We do not know where the Information Age will lead. Indeed it is only now the true potential of the printed word is becoming evident where, using 3D printing techniques, designers are developing vital organs such as hearts and lungs, skin, and bone tissue. Thus, I agree with Badiou that information technology is not "revolutionary" insofar as naming an event can only be a retroactive process, and we do not yet have the temporal distance in this case to allow for the naming to occur. However, this does not mean we must leave technology to its purely formal mathematical origins and wait to assign value and make critical judgments until technology is absorbed into the meaning-making activities of science, politics, art, and love. Reality admits of more than one true description. Ihde is right, therefore, to think of science and technology as coexisting and mutually inter-twinning (technoscience), and Feenberg and Ihde are both right to insist on the way technologies have political agency. However, to hold onto the insights of Badiou about the nature of the event and the underpinnings of contemporary technologies in set-theory and to integrate them into a philosophy that takes technology seriously in its own right, we need a philosophy of time, such as Ó Murchadha's *kairology*. Ontology, for Ó Murchadha, must always be rooted in the practice of phenomenology, and thus the question of the event emerges as the coming of things into meaning. As such technology becomes more than merely an empty concept, it emerges within a horizon of meaningful relations. This does not mean an either/or binary. Rather the interweaving of the ontology of being *and* mathematics are critical in our understanding of technology today. Thus, I propose a philosophy that integrates both causal and speculative philosophy. In Chapter 5 we will take up the possibility of computer generated graphic art as a case study for this proposal.

Conclusion

Current technologies, such as information technology, biotechnologies, and nanotechnologies are grounded in a theory of absolute truth. They depend on a rationally ordered system encased within an algorithm of finite instructions. This type of metaphysics dominated the mid-Nineteenth century and continues to prevail in our current consciousness. Modern technology, specifically information technology, is a manifestation of the logicism of Cantor et al., and has contributed to the strand of epistemologically oriented philosophy that rejects the classical paradigm of a true essential reality that was grounded in causality, not as a means to an end, but as coextensive with being.

To make sense of these technological transformations, Ihde argues that we must make a methodological shift from the modernist phenomenological tradition to what he coins postphenomenology. Postphenomenology is "a nonfoundational and nontranscendental phenomenology which makes variational theory its most important methodological strategy".[391] Furthermore, Ihde argues that Heidegger's theory of truth [*alētheia*] is merely another way of talking about the theory of correspondence. I argue, however, that Heidegger does not fall into the category of the latter. In fact, the notion of multistability is already at play in the work of Heidegger. Art as a movement is not identified with essence, or stability, or indeed adequation. Rather, art as truth, constitutes a genuine active participation in the *making of* and *working out* of a culture. For Heidegger truth [*alētheia*] is the disclosure of the fourfold structure of reality. In contrast, a theory of correspondence suggests that a statement is true if its structure is isomorphic with the state of affairs. Heidegger's theory of truth is a tension that arises from the multistability of things ready-to-hand, within the context of the present-at-hand, history, and our involvement in the world as a state of progress and change that is always in conflict, or what Ó Murchadha calls *kairologica*l time.

Nevertheless, Ihde is correct in seeking to move beyond the questions of "whatness", "thatness", and "howness". For Ihde, the more pressing question regarding technology is the ethics of particular technologies. This thesis argues that while an ethical and democratic approach to technology is critical, it is the responsibility of the philosophy of technology to anticipate future technologies so

[391] Don Ihde, *Postphenomenology Essays in the Postmodern Context* (Evanston: Northwestern University Press, 1993), 7

that the ethics and policies are implicit in the production *prior* to its creation. Only then can we develop responsible technologies. And, as has been shown, this can only be understood in light of a serious reflection on the metaphysical consciousness of humanity, and not merely on immediate and discrete technologies.

What the proliferation of contemporary technologies reveals is not the reduction of meaning to the contingent materiality of multiple embodiments, but the timeless truth that meaning has always emerged in the space that humans create in distancing themselves from nature, i.e., in the hyper-world. In other words, hyperology is a first order distantiation from the world and as such is not subordinate to real reality. In such a case ethics and politics are already subsumed into technologies prior to their production. Responsibility, therefore, lies in our orientation to technology. Once we understand technology in its own terms as a movement of consciousness within the prevailing philosophical structures, we can predict with some degree of accuracy the consequences of developing certain technologies (such as drones). Today information technologies are pervasive in the world. Using hyperology to integrate speculative and ontological philosophy of technology, shows that they are based on, not merely logic and epistemology, but causally, and as such they affect change. The change, as I understand it, will come about with the artists of the information age. Graphic designers and political activists are already using information technology to create great works of art in 3D printing, which is the topic of the final chapter of this thesis.

5. Chapter Five: Graphic Art's Potential to Reveal Truth

> "The fundamental event of the modern age is the conquest of the world as picture".[392]

All forms of media depend on graphic design; it is a multi-billion dollar market with video gaming alone estimated at 100 billion annually. From diapers to coffins, from birth to death, graphic design shapes the way we think. Yet graphic design and the industry it fuels is rarely if ever questioned. Partly because an objection could be raised that graphic design in Information Computer Technologies (ICT's) are objects of utility and their aesthetic function is incidental. Thus, from the outset, there appears to be a clear distinction between graphic design and fine art; the former a practical art, the latter an aesthetic human experience. Yet, graphic design has an ambiguous nature. On the one hand it can be thought of as technical skill along with technical drawing, mechanical drawing, computer programming, etc., and is used as an interface for information technologies. On the other hand, it is described as art, with a deep affinity to the fine arts, such as drawings and paintings.

Graphic design is not a new concept; it was used by ancient cultures going right back to the cave drawings of Lascaux. Paradoxically an analysis of the drawings has been used to persuasively critique both graphic design and fine art. This paradox calls us to reconsider the distinction made between graphic art and fine art. Moreover, the drawings convey a particular truth about the collective community leading to a second distinction surrounding the public and private realms of art works. Public art refers to the shared values and convictions of a culture. By contrast, fine art focuses on subjective experiences where art is understood as an act of individual and autonomous expression. Drawing out the ambiguity of graphic art as both public and aesthetic might help to explain why a magnificent work of art, like the Greek drawings and sculptors of Athena, are altogether different to recent animated designs found in video games today. Thus this Chapter opens up the question, does graphic design radically transform the way we think? I will attempt to tackle the question by addressing the origins of

[392] AWP, 134.

graphic design and its affiliation with text as an expression of truth, thus opening up the more radical question, the question concerning the ontology of graphic art.

In a similar way that technology is a tension between logic and *poiēsis*, art is a tension between cognition and *poiēsis*. Heidegger calls this tension a leap (transcendence), but not transcendent in an extraneous way, rather internal to the life-world. This tension is elucidated by Dennis Schmidt in his book, *Between Word and Image* (Schmidt 2013) in the complex relationship between text [*logos*] and image (art). The movement Schmidt describes is a movement from the word to the image. Furthermore, Schmidt presents us with the possibility of art [*technē*] as political, and argues in light of Heidegger's ontology of art, that the image has the power to change its audience. Schmidt sees the crossing over of word and image particularly manifest through the works of Franz Marc and Paul Klee. Both artists exemplify the technology that this thesis has been concerned with, i.e., graphic art, a medium that is so suited for computer generated images. To extend Schmidt's thesis we will look at Jacques Taminiaux's book *Poetics, Speculation, Judgment* (1993) where he traces Heidegger's increasing realization that great art can function not only as the manipulation of objects present-to-hand, but as a the very "worlding" or cultural opening that allows for the presencing of beings in a particular way.

This chapter is concerned with the transformative power of graphic art and its ability to shape the way we think. It will argue that Schmidt's "ethnopoetic" event of art has the potential to change the way we understand the world. Thus this chapter will focus on the work of three graphic artists, Franz Marc, Paul Klee, and Colm Lally, and will argue that the difference between calculative *technē* and poetic *technē* fuse into a unity of pure presence, a moment where the truth of the technological world is revealed. However, if there is to be a determination of the character and achievement of the artwork, then it will need to be thought in relation to a genuine sense of history, a history that is one and the same as the nature of philosophy itself.

5.1. Philosophy, History, and Art

In his 1942 lecture course on Hölderlin's "*Der Ister*," Heidegger emphasizes the interwoven kinship of art, history, and philosophy. He turns to the image in order to criticize metaphysical conceptions of the image. Heidegger argues that only when we learn to see images independently of distinctions between sense and meaning, sense and the non-sensible, and form and matter, can we think the sensible freed from its subordination to the supersensible, such that "the essence of art stands and fall with the essence and the truth of metaphysics".[393] The turn away from representational thinking to works such as the Greek temple, pottery and poetry, is not arbitrary for Heidegger. Schmidt explains the significance of the Greek temple as

> Setting history in motion, as giving it a "jolt" and galvanizing possibilities, as gathering a people and a place into possibilities. This "power" of the artwork is decisive in the movement of history and in a very real sense "defines" the achievement of the work of art far more than any sense of the pleasure we might take in the beauty of such works.[394]

The question remains, "does modern art today reach into the movement of history itself?" Can a painter such as van Gogh still possesses the power of setting such relations into motion? Does the painting that hangs in the museum still preserve the founding power to gather a people together the modern age? In "The Origin of the Work of Art" Heidegger considered modern art an instance of the technologization of the world belonging to *Gestell*. For many years Hölderlin's poetry remained the exception to this rule. Until Heidegger's 1956 visit to Basel where he attended the Beyeler Foundations exhibition of Klee's works, modern art demonstrated the dominance of technology as a force closing down a space liberating history from metaphysics. After witnessing Klee's art works, Heidegger submitted to the idea that certain contemporary art can point beyond a future of aesthetics, thus open up the realm of possibility.

[393] Heidegger, *Hölderlin*, "Der Ister", 19.
[394] Schmidt, 77.

Heidegger was not alone in referring to Klee's work as an opening to truth. Gadamer, Benjamin, Merleau-Ponty, Deleuze, Adorno, and Bloch all wrote on the philosophical significance of his paintings and drawings, placing Klee as a central figure in the history of art. Working prior to World War II, Klee is considered a "classical" modern. Schmidt explains this as "art that had not yet confronted the unimaginable that happened and the radical turning point in his "Auschwitz".[395] However even then, Klee foreshadowed Heidegger's thesis that "Art does not repeat the visible, rather it renders visible".[396] In "The Origin of the Work of Art", Heidegger repeats this vision were art cannot be seen as a copy of something existing but needs to be thought as an origin, as calling into being something hitherto unseen.

This movement from non-being into being is thematic throughout Heidegger's works. But it is also a movement from talking about the work of art to the work of art itself. Klee calls it "the double life of the word and the image; each crossed into the other even while remaining itself".[397]For example, in his 1940 painting *Tod und Feuer* (Death and Fire), the word *Tod* is spelled out (Figure 2 below). The idea of words entering into the painting questions the relation between the word and the image. Klee's drive, according to Schmidt, was to reconcile these two opposites; he writes, "The urge to bring images and word into some sort of reconciliation drove Klee". But Klee understood the impossibility of this reconciliation. The reason for this is the temporal and spatial differences between the word and image. "This is due to the temporally distinct method, which are the only ones available to us, for conveying a clear spatial image [*Gebilde*] in such a form of representation [*Vorstellung*]. The reason for this is the deficiency of the temporal character of language".[398] The simultaneous multi-dimensionality of art, and even music, is lacking in the word. On the other hand, linguist didactical expression is only experienced sequentially.

However, Klee is careful to explain that modern abstract painting, in particular graphic painting, is not to be explained simply as a spatial overwriting

[395] *Ibid*, 81.

[396] This sentence was heavily underlined by Heidegger in his copy of Klee's writings and would be cited by Merleau-Ponty in "Eye and Mind".

[397] Schmidt, 83.

[398] Cf., Schmidt, 84.

of images. Graphic art is not a copying of nature, but a movement, that brings something into being. "This movement, out of which the natural world itself emerges and comes to be, that drives the growth, is what the artist needs to repeat and further. As such, art furthers life". The essence of the painting is not what is represented, since the finished form of nature is not what motivates the artist. The visible is not what is significant; rather art renders visible the life of nature: genesis itself.

In rendering visible, the artist creates new forms, but these forms are not viewed in isolation. They exist within a social and political context. By the 1940's the reconciliation of opposites, of word and image, that Klee sought, became the dominant mode of art and graphic design. Fueled by the politics of the propaganda machine of the war and television, graphic art became the language of our historical moment, i.e., an age of endless repetition and instantaneous presence. By the turn of the 21st century graphic art was the dominant form of art in information technology, but it still did not complete the task of Klee's vision, that is, to collapse the distinction between word and image. In a parallel way, Heidegger was seeking to collapse the distinction between the object and the subject to overcome modern subjectivity through art.

5.2. Distinction between Great *Technē* and Petty *Technē*

Taminiaux shows us that to understand this move we must begin with Heidegger's re-appropriation of Aristotle's *Nicomachean Ethics* particularly in the lecture courses on *Plato's Sophist* and *The Basic Concepts of Greek Philosophy*. Taminiaux begins by making a distinction between Aristotle's dianoetic virtues or intellectual capacities as determining the status of art as *technē* on two levels: on the lower level are the deliberative virtues, on the higher level are the epistemic virtues. *Technē,* art, is an intellectual virtue insofar as it discloses or uncovers some truth, *alētheia*. As we saw in Chapter 4, the characteristic name for truth, for the

Greeks is *alētheia* [unconcealedness].[399] The "a" is an a-privative.[400] Thus, the Greeks have a negative expression for something we understand positively. "Truth" has for them the same negative sense as has our privative words, such as imperfection. Heidegger writes, "That which we designate as imperfect does not have nothing at all to do with perfection; on the contrary, it is precisely oriented toward it: in relation to perfection it is not all that it could be".[401] This type of negation is often hidden in words and meanings: for example within the word blind or silent lies their correlatives, sight and sound, for only those who can see can be blind, and only those who can speak can be silent.

This showing through negation Heidegger links to his idea of truth as both a revealing and a concealing. The revealing that comes by way of *technē* is one of producing; it is the activity of *poiēsis*, that "setting-into-work [*energein*] of creation that is revealed by *technē*. For Aristotle, the origin of the work of art is *poiēsis* (i.e., the productive activity), but the productive activity has its origin in art, in *technē.* Thus when Heidegger says "the origin of the work of art is art" he is following Aristotle's theory of knowledge. As such, the essence of art, its *hypokeimenon*, is an activity; this activity or movement is the happening of truth. Truth, therefore, is not something that stands over against us; rather, truth is a deliberate process of the intellect that expresses itself ongoingly.[402]

However, Aristotle's *technē* and *poiēsis* as activities of production, are not self-sufficient, because the end or *telos* of the productive activity ruled by *technē* is not in the agent. Rather the telos but lies outside her in the intended use of the object by her patrons and customers. While the production process itself might be

[399] Alexander Gottlieb Baumgarten, *Metaphysica*, 7th ed. (Halle, 1779) §450, judged taste to express that which can be known by the senses as opposed to the intellect. He coined the term aesthetics in 1770. For an introduction to the history of the degeneration of "taste" from its important role in Classical and early modern philosophy, as the peak of a humanist education, to the "subjectivism" of today and thus its historical failure as a ground for aesthetics, see Gadamer, *Truth and Method*, where his treatment of taste forms the spine of his understanding of the history of ideas: 1.1 "The Significance of the Humanist Tradition for the Human Sciences; 1.2 "The Subjectivization of Aesthetics through the Kantian Critique"; and 1.3 "Retrieving the Question of Artistic Truth."

[400] PS, 10.

[401] *Ibid*.

[402] I use the non-standard English here advisedly for, in a significantly revealing way, the alternatives that are considered proper, "currently" and "continuously", do not carry the temporal connotations of presencing that Heidegger correctly identifies as truth.

internal to the artist, the end product lies outside the agent and is, therefore, deficient for Aristotle. According to Taminiaux,

> Such deficiency does not characterize the highest deliberative excellence, namely, *phronēsis*, a way of *alētheuein*, of unconcealing, that is adjusted to the activity that is no longer *poiēsis*, but *praxis*, action in the sense of the conduct by an individual of his life among, and in the presence of other individuals. *Phronēsis*, practical judgment, is the highest deliberative virtue insofar as neither its principle, its *archē*, nor its end, its *telos*, fall outside the agent himself. *Phronēsis* is a prior option of the agent for acting well, its end is the acting-well of the agent" (Taminiaux, T*he Shadow of the Work of Art from Kant to Phenomenology* 1993, 155).

As we can see here, *phronēsis*, *technē,* and *poiēsis* occupy the same realm of the intellect, the calculative, and are concerned with the temporal, finite structure of being, that part that shares in the *lēthe* of *alētheia*. That means that even if *phronēsis* is highest among the productive intellectual activities, it is not the highest excellence. While *technē* and *phronēsis* linger within the temporal structures of consciousness, they cannot participate in what is most true, infinite, and imperishable. That is the realm of contemplation, that of *epistemē* and *Sophia*, both are accessed through theory. They are higher than *poiēsis* and *praxis* and have nothing to do with the perishable, finite existence of humanity. *Epistemē* is concerned with unchangeable entities, like mathematics. *Sophia* on the other hand, is concerned with the being of beings. *Sophia*, of course, can never be known completely. However, we can remain *in* truth, even when that includes a privative, if we contemplate or speculate on the origins of existence.

> According to Aristotle, the contemplation of that immutable realm is for a mortal being the most authentic way of being. As long as such a contemplation lasts, the mortal spectator comes close to the

> divine. He reaches *eudaimonia*, or authenticity, in the sense of being himself with excellence.[403]

Taminiaux thus clearly explains the Aristotelian distinctions between a lower and higher forms of knowing: Frist, that between the contemplative and the calculative and within the calculative between *phronēsis* and *technē*. Heidegger re-appropriates Aristotle's distinction between *technē* as a mode of production that discovers truths and *phronēsis* as a mode of disclosing the conduct of human life. In other words, he agrees with Aristotle's distinction between art as production and *phronēsis* as *praxis*. The distinction is made in ontological terms between an everyday way of being – concerned with and preoccupied by ends to be attained by utensils and their readiness-to-hand as in the utility of graphic art by the advertising industry – on the one hand, and an authentic way of being that cares for the very being of Dasein's existence, as exemplified in Franz Marc's works, on the other. We will return to Dennis Schmidt's analysis of Marc's work below, but as a first approximation it is enough to compare Marc's "inner mystical construction" of the deer with the instrumental and externalized use of graphic design in advertising to convey the essence, not of the thing, but the use of the thing in branding.

With regard to the distinction between the contemplative and the calculative Heidegger reappropriates *theoria* as ontological, removing the more theological notion in which the meaning of being is limited to *ousia*, presence in the sense of [*Vorhandenheit*], presence-at-hand, a notion in which only one mode of time has been taken into account. Eternity of the prime mover is but a concept derived from everydayness, a situation from which our art constantly attempts to escape into permanence. This fascination for permanence "is nothing but a way of escaping our own being, a falling away from our own existence and its finite time".[404] In Plato, for example, behind the temporal embodiment of a work of art there is an absolute form of beauty that can only be known, if at all, by subjective intelligibility. In contrast, it is by taking into account our own finite time as originary – perdurant time – that fundamental ontology overcomes what remains indeterminate in the meaning of being, when the latter is limited to sheer

[403] Taminiaux, 1993, 156.
[404] Ibid, 157.

presence.[405] In this framework, we can see that art, for the early Heidegger, is in no way originary, although it is understood as a mode of unconcealment. "On the contrary art [*technē*], and the activity of setting-in-work ruled by it, are secondary; they are derived, they are in a position of fallenness with respect to what is our own; our existence and its finite time".[406]

Until 1933, then, *technē* was delegated to the lower faculty of the active life and imperfect realm of everydayness. Confirmation of this is seen in the 1927 lecture course, *The Basic Problems of Phenomenology*, where the poet, according to Heidegger, cannot be of the same rank as the thinker: the poet cannot go beyond an improper or imperfect understanding of existence, because while he has a presentiment of what existence is, he either projects existence upon things or projects upon existence the mode of being of thing. (Heidgger 1982, 289).[407] While graphic design is understood in this derivative way, it remains tied to the present-to-hand and will continue to be used by the industry as a form of petty *technē.* On the other hand, if *technē* gets elevated to the realm of contemplation, the force of its power to rule will be based on *phronēsis* and not the tyranny of a few, which arguably is the current status of the corporate world.

By 1933 and his *Rectoral Address*, Heidegger has made a break with this intellectualist condescension towards making, and *technē* becomes a part of the contemplative intellect. Contrary to our ordinary understanding of the origins of philosophy and our contemporary use of the word "theory", Heidegger believes that the Greeks conceived of *theoria* as the "implementation of the highest form of *praxis*".[408] Aristotle following Plato before him "conceived of *theoria* as a *bios* (life that is lived, that involves civic and ethical elements), a way of existing, a way of behaving, namely, a *praxis*". This is a reversal of Heidegger's earlier claim about the pre-eminence of *pure* philosophy. In *Being and Time* the knowledge of the being of beings is the highest knowledge; it is *theoria*. Now, "knowledge of the being of beings is both *theoria*, which is the highest form of *bios* or *praxis*, and *technē,* that is, to some setting-into-work over which it rules" *(Taminiaux, The*

[405] *Ibid.*
[406] *Ibid.*
[407] Compare *Being and Time* (GA: 162): "The communication of the existential possibilities of one's affectivity [*Befindlichkeit*] ... can become 'poetical' discourse's own aim".
[408] *Ibid*, 158.

Shadow of the Work of Art from Kant to Phenomenology 1993, 158). This does not mean that *technē* as everydayness disappears. Rather, Heidegger is setting up a distinction between two types of *technē.* There is a lower form of *technē* which is unable to overcome *Vorhandenheit* (or presence-at-hand). Taminaux calls this petty *technē* and argues that it is blind towards being and trapped within everydayness. Contrary to petty *technē* is great *technē,* which sets-into-work being itself as unconcealment. Great art discloses the truth about the world; it is revolutionary in its vision. Epochal manifestations of great *technē* might include the Parthenon, and Franz Marc's *The Deer in the Park* or Paul Klee's *Death and Fire*.

5.3. Petty Art and the Problem of Presence

In relation to great and petty art Marc's work *The Deer in the Park* (Fig. 1) is representative of great *technē* while *Athena,* in *The King of Fighters,* is of the lower petty *technē* art form. In Marc's work the geometric shapes that make up the form of the deer are carefully proportioned and simplified to represent the deer's features, while their rhythmic movement is echoed in the stylized shapes of the rocks and foliage of the background. The colors and lines symbolized an age of innocence, like Eden before the Fall, free from the materialism and corruption of in the wake of World War I. Animals in Marc's art are seldom painted in isolation. They are viewed as idealized creatures in perfect harmony with the natural world they inhabit. This is an idealistic view of nature - an image designed to lift its subject above the brutality of nature in its raw state. Marc represents the inner being of the subject as agility. In terms of truth, this is neither a copy [*Abbild*] nor a schematization of a concept in the Kantian sense. The hypokeimenon of the deer is inseparable from its environment, it is this deer as "being-in-the-forest" and presented as something existing. The presence of the deer's existence is *noticed* before it is known. The deer merges with its environment, what comes to light is a sense of movement and time.

FIGURE 1 DEER IN THE PARK[409]

In contrast, graphic art and images today are exploited for commercial use. They are created as distractions to dull the "collective mind"[410] in order to manipulate, exploit and control the mind. Schmidt descriptively analyses Adorno's impression of art in the modern world as

> the grotesque barbarisms of our age [from] the quiet seductions of the consumer and technological world, [this is an] age that is defined by a peculiar noise. We assault ourselves, we ravage our world, and we tacitly distract ourselves from the truth of our time. We are flooded with images, inundated with words, companioned with sounds.it does not require much reflection to see that in our times, it is increasingly difficult to be arrested by a work, to be silenced, to be brought to linger.[411]

Taking the example of *Athena*, Adorno's sentiments become clear. Athena, symbolic of the embodiment of truth, is transformed into the idealized embodiment of an early adolescent child in the SNK game, *The King of Fighters.* The Greek event of Athena in contrast to the "image" Athena is a difference between an artwork that is "alive" and one that is representational. The former dwells in the Parthenon as a deity where the public gather together and linger in her presence. The latter is a snapshot representation of the sexualization of young girls. Such sexualization of young girls exploit and excite the senses; these desires feed the

[409] Wikipedia contributors, "Franz Marc," *Wikipedia, The Free Encyclopaedia,* https://en.wikipedia.org/w/index.php?title=Franz_Marc&oldid=683345665 (accessed September 30, 2015).

[410] Marshall McLuhan, *The Mechanical Bride Folklore of Industrial Man* (Boston: Beacon Press, 1967), Preface.

[411] See Schmidt's description of Adorno's question about the possibility of art "after Auschwitz. 11.

lower part of the intellectual faculty. It does this by using an algorithm of continuously recurring moments, concealing truth behind a veil of appearances. The video game promises sexual intimacy with a child. However, the promise of the experience is constantly deferred until the next image appears. The initial novelty of subverting social norms by looking at such images of young girls becomes an ever recurring process until such time as the experience is other than novel. The hyperreal is transformed into real reality.

The shift of thinking about Athena from a goddess of truth to an erotic child, exemplifies the current consciousness of humanity set-in-place by representational thinking. The image is, as Adorno says, a grotesque barbarism of our age from the quiet seductions of the consumer and technological world. The move towards "the image" began in the mid-nineteenth century with the introduction of photography.[412] Media theorists argue that the image was not merely a supplement to language, it was meant to eclipse it. For the Greeks sameness defines the relation of word and image: Athena and truth are interwoven. In the modern image, there is no such intelligibility. The function of branding is to absorb or conceal the present, with no lingering elevation into the contemplative life. It absorbs us in the direct presence of mechanical (digital) time while denying any possibility for endurance or presence, grounded in our understanding of time and being.

But Schmidt argues that the work of art can rise above the nihilism of the age. He argues, in accordance with Heidegger, that art is an event where being perdures as *alētheia*. Gesture is the genesis of art, much like movement is the genesis of life. For Schmidt while the origin of the work is the artist, the origin of the truth of work, standing free and apart from the artist, is something that cannot be reduced to the subjectivity of either the creator or the "consumer", exemplified in Klee's work as the collapse of text and image.

[412] See Daniel J. Boorstin *The Image*, A Guide to Pseudo-Events in America, (New York: First Vintage Books, 1992), pp. 256-257. Neil Postman, *Amusing Ourselves to Death Public Discourse in the Age of Business* (London: Penguin Books, 2006), 74.

5.4. Klee: Death and Fire

What is apparent in talking about the origin of a work is the assertion that philosophy is not the only true principle of individuation. In the 1930's artists and philosophers were beginning to suspect that the power of the image would soon juxtapose and compromise the power of *logos*. In *Death and Fire* (Figure 2), one of the last works that he painted before his death in 1940, Klee blurs the distinction between word and image producing a work of graphic art that incorporates the word *Tod* [death] into the image. This blending reveals that the truth of the work is no longer a copy of an objective reality or, conversely, a subjective experience of nature. In this work, the *alētheic* is expressed as a tension between life and death, between existence and consciousness, between word and image. In "Creative Confession" (1920) Klee wrote, "Art does not repeat the visible, rather it renders visible". As Schmidt interprets this claim

> art, properly understood, cannot be thought as being a copy of something existing but needs to be thought as an origin, as calling into being something hitherto unseen. (Schmidt 2013, 81-82).

FIGURE 2 DEATH AND FIRE (1940)[413]

While this piece has been described as a skull of death, it might equally symbolize freedom from suffering. Taken as a source of life rather than death, the movement

[413] Wikipedia contributors, "Paul Klee," *Wikipedia, The Free Encyclopaedia,* https://en.wikipedia.org/w/index.php?title=Paul_Klee&oldid=682283372 (accessed September 30, 2015).

is a "state" of being of coming into life that is obstructed in the present age of reproduction and technological art. The state of being is the movement of disappearance, decay, and death, of the passage into darkness as well as into light. Schmidt writes, "death belongs to the movement of *physics* just as much as birth". In the same way, the birth of art from the outset begins with dots and lines, and remains so, for Schmidt. It is what perdures throughout the ages. He argues that gesture is the most elemental form of any image, it is the "the language of the image". Gesture is "movement, the movement of life itself, and thus temporal (Schmidt, 135). Just as Heidegger collapses the distinction between subject and object, Klee "bleeds the lines between form and matter".

Heidegger, however, felt the modernist project fundamentally fails because the non-objective character of modern art is really only the negation of the object, not the disappearance of the object in favor of the appearance of something else. When the artist paints from the perspective of the animal, even by entering into the animal, it is still merely an objectification of what the animal is experiencing, it is not necessarily the experience of the animal itself. In other words the painting is still tied to the object. Contemporary artists are trying to radicalize this notion by letting the work speak for itself. By letting a work struggle to be heard. As an example of how this can happen, we turn to contemporary artist, Colm Lally, where graphic art and philosophy merge, tearing down the stage in which contemplation moves, particularly in his 3D piece *Conquest of the World as Image*.

5.5. Lally: Conquest of the World as Image

In *Conquest of the World as Image*, contemporary graphic art perdures within the event of being. It uses both the rationale of computer technology with the careful crafting of the artist. Although it uses the tools of utility, novelty and efficiently, Lally has created a work that discloses the world in its dichotomous nature. His work displays the resistance of two elements (the material and atoms) occupying the same space. With close observation we can see the material struggling to remain in the shape or form assigned to it. This is a juxtaposition of Descartes' distinctive and defining notion of the nature of a line. For Descartes the line and

color are distinct just as much as form and content are different: the line determines the contour of a thing, which color then fills up. In the faculty of understanding this is not problematic; A few lines are sufficient for the prehistoric artist to show the voracity of the Bison towering above the figure of a man, presumably dead. Klee pushes these lines to their extremity. His work finds the origin of what the thing is. This shows that instead of it being a limit, a line can express the entire thing and paradoxically function as a "total part". But in this work it is precisely *blurring* of lines that conquers the word over image. The line entirely disappears into the space surrounding the work. Until we no long know if we are looking at the material or space. These 3-D printing technologies that have hitherto functioned as utility (specifically for graphic design) are inverted in this world.

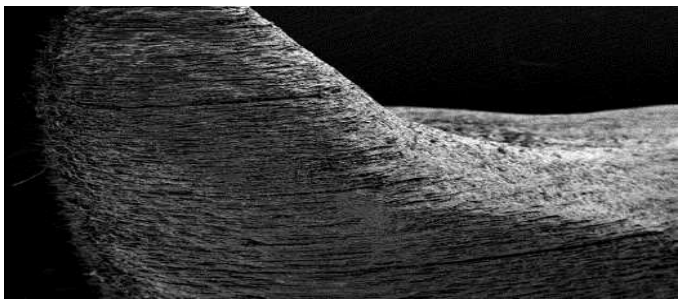

FIGURE 3 CONQUEST OF THE WORLD AS IMAGE (2013)

The strife between matter and form, text and image become palpable when we consider the impossible task of two heterogeneous forces (the material force of the paper and the material force of atoms) pushing together trying to occupy the same space. What Lally captures is the violent strife between world and earth, between being and non-being, between truth and untruth. Within *technē deinon* [violence] and its derivative *dikē* [overpowering] confront one another. The violent one (the creative one) compels the unhappened to happen and makes the unseen appear; she ventures to master being, although she may run the risk of in-stability and disorder. Being drives the artist to stabilize the work and so hold open the

essent as a whole. [414] The work of art, then, as an instance of bringing-forth from unconcealment, is not the presentation of a finished product with a determinate significance (that "the work means *this* and nothing else") [415] but an active bringing-forth, a process of unconcealment. Art as truth is *technē*; it opens a realm in which beings perdure but in such a way that is not the use of technical skill, tools, and materials. This work has the power to collapse the distinction between word and image. Contrary to its instrumental nature, graphic design is a disclosure of *alētheia*.

The strife between matter and form, text and image become palpable when we consider the impossible task of two heterogeneous forces pushing together trying to occupy the same space. The merging or bleeding of utility and aesthetics, word and image, petty *technē* and great t*echnē,* object and subject, culminates in this work. Accordingly, as *technē,* graphic design raises above its technical character. In so doing it can be thought of as at least speculatively, with a view to changing world views. In this way graphic art is public art. *Solar Plexus* was presented in Shanghai in 2012. Assembled from 3-D printing techniques, *Solar Plexus* is a disembodied larynx. At a time when China was asserting its policies on censorship, this piece clearly had political underpinnings.

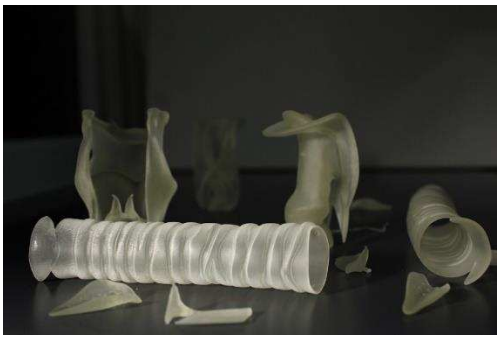

FIGURE 4 SOLAR PLEXUS (2012)

However, its truth cannot be reduced to some "allegorical meaning" that can be divested from the piece itself. The *poietic* projection of *technē* is in the art-work itself. Truth occurs only within the work, because truth cannot be purely abstract;

[414] IM, 163.
[415] *Ibid.*

it has to open a space for meaning for a particular people at a particular time. When *technē* is understood as art, we see its potential to escape the falling tendency of every day and petty *technē.* As an opening to truth, instead of being limited by the present-at-hand, it can be "the initial and persistent sight looking beyond what is directly given before the hand [*Vorhanden*]" towards a "manifesting implementation [*Er-Wirken*] of Being in beings" (*ibid*, 122). As Heidegger writes, "unconcealment occurs only when it is achieved by work: the work of the word in poetry, the work of stone in temple and statue, the work of polis as the historical place in which all this is grounded and preserved" (*ibid*, 146).

Conclusion

In reverse order, this thesis has been arguing that art is technology, technology is truth, truth is time, and time is being. Thus, to understand technology it was necessary to ground it in ontology, but equally we do not truly understand it until we see the full flowering of technology in art. In art we see the interweaving of truth as *technē,* truth as word, and truth as political. For art is a creation that has the potential to reveal truth, to change consciousness, and, therefore, to institute political change in a positive way. This chapter uses the analysis present in the works of Schmidt and Taminiaux to examine the ways that graphic art reveals the possibility for *technē* to either serve as a mere functionary in the current orientation toward objectification and instrumentalism, or as an opening onto an attentiveness to the emergence of things in their intelligibility and their being.

Following the lead of Heidegger's interpretation, behind the temporal embodiment of modern art there is an absolute form of beauty that can only be known, if at all, by subjective intelligibility. Art in this transcendental legacy no longer functions in society as a shining forth of a people, but rather as a private act of contemplation or as a merely instrumental technique for manipulating others within the context of branding. In either case art remains disconnected from the meaning of our world. Today graphic art remains the bastion of public art while denying the formal content demanded of fine art, exemplifying the current consciousness of humanity set-in-place by representational thinking. Graphic

artists can challenge this orientation to the world by tapping into the origins of their craft, by recognizing the cultural responsibility that public art demands, and by taking their place with great *technē*, building a way for a metaphysics beyond idealism and the subject towards, an integration of peoples and worlds.

Conclusion

We have looked at three stages in the development of the ontology of technology: production metaphysics, transcendental idealism, and pragmatism. Correspondingly technology can be understood causally, axiomatically, and instrumentally, consistent with three epochal movements, pre-modern, modern, and postmodern metaphysics. In doing so we have shown how technology developed in light of human being's understanding of existence (Chapters 1 and 2) and time (Chapter 3). As such, this thesis has argued that technology is neither continuous with ancient technology, nor is it radically new. Rather modern technology *perdures* or stretches between two states, being and non-being, in what Peirce calls *synechism* (Chapter 3). This leads us to the conclusion that appearance oscillates between two states; being and non-being (Chapter 3), potentiality and actuality (Chapter 2), truth and untruth (Chapter 4) confronting the ontological problem of non-being. We also said that these states can only be discovered in language (Chapter 1). As such we concluded that to understand technology required a hermeneutical phenomenology (Chapter 1).

If, as we have shown, being exists in the language of oppositions, potentiality versus actuality, being versus non-being, calculation versus crafting, truth versus untruth, great art versus petty art, they exist in the opposition of mathematical and artist states of being also. In a unique way, this thesis has offered 3D printing art, modeled on the mathematics of modern information technology, as a way to bridge the divide between Continental and Analytical philosophy. Thus, truth emerges within the context of both the language of opposition and of validity. The possibility of information technology revealing truth through art could not be possible without the turn to positivism in the mid-nineteenth century and the world of information technology that emerged 200 years later. Correspondingly, without the turn to the life-world with its emphasis on the *alētheic* notion of truth, the new paradigmatic art could not have been accomplished. Given the results of graphic art in its ability to produce great works of art such as *Conquest of the World as Image*, this thesis has shown how the mathematical orientation to the world has absorbed the poetic outlook (Chapter 5). They work together engendering a new worldview, a worldview that is both poetic and epistemic. Such intermingling of

both analytical and substantive methodologies collapses the distinction between ancient art as representation and modern art as aesthetic. Rather, art now functions as a cultural and political commentary on society. As such, we have extended the Heideggerian notion of truth as *alētheia* to include logic as a criteria for expressing great art, today.

To defend this thesis we explored the history of technology through the lens of Heidegger in 'The Question Concerning Technology'. Ordinarily technology is thought of in terms of its instrumentality, as a means to efficiency and novelty with the promise presence. The drive towards novelty is never fulfilled, however, since the nature of information technology is to repeat a given set of instructions in an eternal recurrence, such as video games. Algorithms work on the bases of a particulars within a whole, for example any new moves a player makes in the video game *Athena* has already been predefined. In other words, the player can never experience the new. The next play, no matter how novel it may seem, is only a repeated set of instructions. This kind of time has its roots in the logics of Cantor and Peirce (Chapter 3).

However, this is not the end of the story. While it is true that video games are on an ever ending loop of algorithms and so deny any access to novelty, modern technology is also a site where truth can emerge as shown in Chapter 5. In this way we have argued that technology is a particular way in which we comport ourselves to the world. In short, technology is a state of being, and as such is a type of consciousness. The ontological character of technology as *legein*, brings together the potentiality of being and non-being in the *alētheic* character of art as perduring within the technological consciousness of humanity.

In our investigation we have argued that Heidegger is correct in saying that technology is nothing technological. Technology is a state of being and as such is inseparable from the question of time and truth. Because truth stands in relation to becoming, it no longer is tied to the fixed notion of truth as adequation, correctness, or to correspondence. Truth is the gathering into appearance of a horizon of being. Thus, to understand technology requires a philosophical reflection into the nature of truth and time. We ordinarily think of truth as *veritas* and associate it Aristotle's theory of correspondence. Heidegger refutes this claim and locates the origin of

instrumental thinking in Plato, with its full flourishing in the Scholastic definition of truth as *adaequatio rei/rerum et intellectus*, "conformity of things(s) and intellect". [416] Heidegger argues this on two grounds: What "agrees" with reality must be understood as a ready-to-hand thing distinct from what the entity or thing is. When talking about an illness, my mind is on the patient; the symptoms, what the patient is saying (and not saying) and the possible cures (none of which are visible). Secondly, there are no eternal propositions concerning an illness apart from a particular interpretation. Words do not have any fixed meaning except for how they are taken up in the particular situation. Technical expertise requires an apprenticeship; the craft is not merely knowing (epistemic), it involves the practice of medicine in care of the patient. Therefore, truth for Aristotle, according to Heidegger, is a dialectical encounter with the world. This necessarily led to the question of truth, which over time becomes reason and logic over and against Aristotle's theory of causality and categories.

Following Heidegger we argued that Aristotle's theory of causality and categories were misinterpreted. As a result the theory of truth becomes a representative theory of perception, most specifically with Kant, where mental, logical and purely sensory entities intervene between the subjectum and reality. The implications of subjective time are far reaching: while Kant's "Copernican Revolution" simultaneously brings the question of time back to the domain of human experience, in so doing the external world can only exist in relation to humans as the perceiving subjects. His critical philosophy calls attention to the ways that the finite human structures of knowing are involved in cognition, and his rhetorical appeal to the new heliocentric advance in astronomy is powerful. But because Kant's theory depends on the classic logic of Aristotle, Euclidean geometry and Newtonian physics its validity, as the ground for science, comes under attack in the 19th and 20th century, specifically with the positivists. This occurs with the introduction of Boolean logic and non-Euclidean geometry. Technology to emerge from this type of metaphysics is information (computer) technology. Reality becomes present-at-hand severed from its connections with other entities within the world. Heidegger sees this as a "de-worlding" where the

[416] Albertus Magnus, *Summa Theologiae*, 1, 25, 2; Aquinas, *de Veritate*, 1.1.

present-at-hand is severed from the ready-to-hand. The object is sundered from its environment.

Although Heidegger understands himself as engaged in the same project as Kant, that is, showing up how finite being is the ontological structure of being rendering objective experience possible, he calls us to rethink our usual reading of categories as constructs of the mind. Heidegger uncovers the possibility of a real engagement with the world in Kant's transcendental imagination, but finds that because Kant did not clarify the subjectivity of the subject, he remains with the old metaphysics of presence. By reappropriating the essence of Aristotle's categories and causality as *legein*, Heidegger recovers a hermeneutical ontology between subject and object, which, he argues, is more primordial than one of "knowing", a direct confrontation with what Kant considers to be "the science that exhaustively presents and strictly proves nothing but the formal rules of all thinking"(CPR, Bix).

This turn away from idealism to pragmatism marks a shift of thinking away from epistemology towards an engagement with the world. The turn clears the way for thinking about world history and non-epistemic acts such as projection, thrownness, and concernful engagement, as ways of escaping the cage of subjectivity. What Heidegger takes from both Aristotle and Kant is the notion of continuity but not in the "vulgar" form of successive nows. He turns to Kant's notion of an occurrence that is not merely transcendental but is the fundamental meaning (*Sinn*) of the being of Dasein. However, for Heidegger, both Aristotle's realism and Kant's idealism fail to account for the ontological interpretation of the being of consciousness. Heidegger conflates intuition and cognition, thus retrieves simultaneity as an ontological extension of being. He calls this perdurance. Because perdurance allows for simultaneity which is not reducible to identity, the multiplicity of things within an event maintain their own integrity while at the same time belong to a unified whole or singularity.

To perdure is to belong. Belonging means to participate, but not in an identical way (Plato) nor as a whole of continuous discreet moments. Rather each moment is stretched between two boundaries conditions. In this way he bridges the gap between external and internal time in much the same way as Pierce, without reducing difference to a distinction. Time, in other words, perdures. Perdurance is

the tension or the *difference* between the ontic and the ontological. Being and beings are always already present, by virtue of and within the difference. This difference is not an empty concept but is the space in which being and beings *as* beings come face-face. To perdure means to sustain and endure, though not in a conflictual way. I am both myself and part of my family, where being and beings are the same while at the same time maintain difference. This is both a receiving and a giving. The receiving is not merely a passive call, it is also a forming. Between the event of birth and death, Dasein forms itself, but never as discrete moments. Thus, simultaneity as potential and active faculty is other than the Kantian synthesis of intuition with the object. It refers to both what is simultaneous and also contemporaneous. As such human beings are not merely individual instances of subjects; humanity is an event, as such we create within the event of being.

Heidegger makes the phenomenological observation that we master nature because we respond to nature's call to requisition it, even when we are not openly trying to master nature. In this sense, we cannot be held accountable for modern technology, since this is something that happens in the context of Western culture. This has given rise to strong criticism from North American continental thinkers, who argue that Heidegger's analysis of technology is dystopic in so far as there is little that can be done to change the direction of technological progress, which they argue leads to a totalizing social and political system. I have argued, on the contrary, that implicit in Heidegger's critique is a radical shift away from a totalizing system. Heidegger's break with the neo-Kantians and radically shifts the conversation away from the "iron cage" of rationality towards an inclusive world experience, not as world-forming (Cassirer et al.), but as an interplay of forming and being informed. In this way his essay on Kant is one of the most significant essays for this thesis because it shows how, using the analysis of time, we can stretch the subjective discrete moments into an event of being.

This leads to another criticism which argues that Heidegger conflates ancient and modern technology, and in so doing reifies particular technologies into one *idea* of Technology. We argued that contrary to this, Heidegger's critique of Kant's spontaneity maintains the integrity of the "idea" technology without each particular technology losing its identity. Truth is not tautological, rather it is a

dialectical process. For Heidegger, truth reveals itself in the surrounding world as it appears to consciousness. In contrast, for the moderns truth is imposed on the world. These two opposing ways of interpreting truth correspond to the development of technology as *disclosive* and *rational,* or crafting and calculative. Both of these present themselves to perception in contrasting ways: the disclosure of beings is the phenomenological experience of the thing as it gives itself to perception; it is how the world appears to us. The thing presents itself as it is, here and now, with each new aspect. In contrast, calculative thinking does not admit of a firsthand experience of the world. On the contrary, it collapses distinctions altogether. Contrary to its promise, therefore, modern technology denies any room for novelty and the possibility of reaching certain indubitable truths.

By looking at the danger of ordering as standing reserve, as Heidegger would have it, we embarked on a philosophical reflection into human beings as technological-beings. Accepting the embodiment theory, I proposed that human beings develop these technologies arising from the ability to project onto a future, a creative and rational imagination. The inner movement of reason and *poiēsis* is the condition of the possibility of such innovations. As such technology is a state of consciousness. The ontological character of technology as *legein,* brings together the potentiality of being and non-being in the *alētheic* character of art as perduring within the technological consciousness of humanity. Given the results of 3D printing art, where the mathematical outlook has indeed absorbed the poetic outlook, we can see that they work together engendering a new worldview, a worldview that is both poetic and epistemic.

Abbreviations

AWP: "The Age of the World Picture". In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt, 115–154. New York: Harper & Row.

BDT: "Building Dwelling Thinking". In *Poetry, Language, Thought*. Translated by Albert Hofstadter, 145–161. New York: Harper and Row, 1975. (Also in *Basic Writings*, rev. and expanded ed., edited by David Farrell Krell, 343–63. San

BP*: Basic Problems of Phenomenology: Winter Semester 1919/20*. Translated by Scott M. Campbell. London: Bloomsbury, 2013.

BT: *Being and Time: A Translation of Sein und Zeit*. Translated by Joan Stambaugh, revised by Dennis J. Schmidt. Albany. New York: State University of New York Press, 2010.

CP: *Contributions to Philosophy: Of the Event*. Translated by Richard Rojcewicz and Daniela Vallega-Neu. Bloomington: Indiana University Press, 2012.

ECT: "On the Essence and Concept of Φύσις in Aristotle's *Physics* B, 1 (1939)". Translated by Thomas Sheehan, 183–230.

ET: *The Essence of Truth: On Plato's Cave Allegory and the Theaetetus*. Translated by Ted Sadler. London: Bloomsbury (Continuum), 2002.

HCT: *Prolegomena zur Geschichte des Zeitbegriffs*. Edited by Petra Jaeger, 1979; lecture course, Summer 1925. *History of the Concept of Time: Prolegomena*. Translated by Theodore Kisiel. Bloomington, Indiana: Indiana University Press, 1985.

IM*: Introduction to Metaphysics*. Translated by Gregory Fried and Richard Polt. New Haven, CT: Yale University Press, 2000; 2nd revised and expanded edition, 2014.

KPM*: Kant and the Problem of Metaphysics*, 5th, enlarged ed. Translated by Richard Taft. Bloomington: Indiana University Press, 1997.

LL: "*Logos* and Language". Translated by Jerome Veith. In *The Heidegger Reader*, edited by Günter Figal, 239–252. Bloomington: Indiana University Press, 2009.

OWA: "The Origin of the Work of Art," translated by David Farrell Krell, In

Basic Writings: From Being and Time (1927) to The Task of Thinking (1964), rev. and exp. ed., edited by David Farrell Krell, 143–212. San Francisco: HarperSanFrancisco, 1992.

P: *Parmenides*. Edited by Manfred S. Frings, 1982; lecture course, Winter, 1942–43.

PDT: "Plato's Doctrine of Truth (1931/32, 1940)". Translated by Thomas Sheehan, 155–182

PI: Phenomenological Interpretations with Respect to Aristotle: Indication of the Hermeneutical Situation," edited and translated by Theodore Kisiel, B*ecoming Heidegger*, edited by Theodore Kisiel and Thomas Sheehan. Evanston, IL: Northwestern University Press, 2007, 155–174.

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TB*: On Time and Being*. Translated by Joan Stambaugh, Chicago: University of Chicago Press, 2002; originally New York: Harper & Row, 1972.

WT: *What Is a Thing?* Translated by W. B. Barton and Vera Deutsch. Chicago: Henry Regnery, 1967.

WM: "What Is Metaphysics?" Translated by David Farrell Krell, 82–96.

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GA 3: *Kant und das Problem der Metaphysik*. Edited by Friedrich-Wilhelm von Herrmann, 1991; first edition 1929. *Kant and the Problem of Metaphysics*, 5th, enlarged ed. Translated by Richard Taft. Bloomington: Indiana University Press, 1997.

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GA 5: 75–113, "Die Zeit des Weltbildes (1938)" = "The Age of the World

Picture". In *The Question Concerning Technology and Other Essays*, edited and translated by William Lovitt, 115–154. New York: Harper & Row. [Earlier: "The Age of the World View". Translated by Marjorie Grene, *Measure: A Critical Journal* 2 (1951): 269–284.]

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