PHENOMENOLOGICAL HERMENEUTICS OF TECHNOLOGICAL PRAXIS: A CONCEPTUAL INVESTIGATION

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TO
MY FAMILY

...AND TO JNU.

DECLARATION

I, **Ashwin Jayanti**, declare that the thesis entitled, **Phenomenological Hermeneutics of Technological Praxis: A Conceptual Investigation**, submitted by me for the award of the degree of Doctor of Philosophy is my own original work. This thesis has not been submitted so far in part or in full, for the award of any other degree in this or in any other university.

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CERTIFICATE

This is to certify that the thesis titled "**Phenomenological Hermeneutics of Technological Praxis: A Conceptual Investigation**," submitted by Ashwin Jayanti in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy, is an original work and has not been submitted either in part or in full in this or other university.

We recommend this dissertation be placed before the examiners for evaluation.

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CONTENTS

Introduction

We live in a world saturated with technological artifacts. Wherever we look around us, there is a technical artefact present to serve a function in our lives. From the simple wind-up alarm clock to the highly complex configuration of electronic circuits that makes up our laptop or tablet or smart phone, our lives are constantly interwoven with technologies. Our constant and ubiquitous engagement with technologies characterizes life in the contemporary world. Hovering above these everyday ubiquitous technological artefacts is the technological system—the architecture that enables the production and use of our everyday artefacts—the power generation and transmission systems, water supply and drainage systems, the Internet, transportation system, etc. These artefacts form the nexus of most of our interactions, be they with technologies themselves or with our fellow beings.[1] And yet we tend to take our engagements with artifacts for granted. This stems from the notion that such artifacts are just neutral means to an end. It is ultimately us humans, who as autonomous and intentional beings, put them to work for better or worse purposes.

Moreover, we tend to use the term 'Technology' (with-a-capital-'T') as an umbrella term for all technologies, thereby conceiving of it as an overarching structure that encapsulates all technological artifacts. This often leads to idealistic prophecies that project our preoccupation with technology as either leading to a utopian dream or to a dystopian nightmare. These views can be characterized as being technologically deterministic in the sense that they treat technology as a structure that is autonomous (out of our control) and endowed with a teleology of its own (either utopian or dystopian). Such grand narratives on technology fail to account for the myriad ways in which we interact and engage with technologies and prove incapable of devising methods to understand the subtle ways in which technologies shape our praxis.

Since the mid-19th century, philosophers such as Ernst Kapp, Karl Marx, Edmund Husserl, Friedrich Dessauer and others had inaugurated various understandings of technological and scientific progress and its implications for society. It could be said that philosophy of technology started out as a necessary response to the widespread

1 Throughout the thesis, I shall be referring to technical artefacts by the use of the term 'artefact,' unless otherwise mentioned.

devastation caused by the scientific and technological manipulation and exploitation of nature by man. The notion that scientific and technological progress would cure all ills of society had to be re-evaluated from a critical perspective. Commenting on the influence of scientific−technical rationality on culture in modern societies emerging out of the European Enlightenment, Andrew Feenberg notes that "philosophy of technology belongs to the self-awareness of a society like ours. It teaches us to reflect on what we take for granted, specifically, rational modernity."[2] It is in this context that technology begins to be a subject of philosophical reflection in itself. Such reflections have resulted in a shift away from the conventional view of technology (the view that technological advancement is intrinsically linked to human progress) and towards a more critical appraisal of its effects on society.

Given the intellectual history of thinking through technology and its philosophical significance, philosophy of technology has taken relatively longer to mature and congeal into a distinct domain of philosophy. This is especially the case when compared to philosophy of science, with which it bears the closest family resemblance. As Don Ihde keenly observes, philosophical reflections on technology, although numerous since the advent of the Industrial Revolution, had limited themselves to commentaries on the social and political *implications* of technologies. This has come at the cost of neglecting to "make technology a foreground phenomenon and...reflectively analyze in such a way as to illuminate the *phenomenon of technology itself.*"[3] According to Ihde, this marks the distinction between 'philosophy *and* technology' and 'philosophy *of* technology.' The latter is marked by a turn to technology itself as a phenomenon worth investigating into. For Ihde, the two exemplars of this line of thought are Martin Heidegger and John Dewey, both of whom were praxis philosophers who emphasized on knowledge associated with practices and action and related "this kind of knowledge to technology and a technological way of doing or seeing...."[4] Philosophy *of* technology emerges from praxis philosophies such as phenomenology, pragmatism, neo-Marxism, and political traditions.

2 Andrew Feenberg, "What is Philosophy of Technology?" (lecture, The University of Tokyo, Komaba, Japan, June 2003). https://www.sfu.ca/~andrewf/books/What_is_Philosophy_of_Technology.pdf.
3 Don Ihde, *Philosophy of Technology: An Introduction* (London: Paragon House, 1998), 38.
4 Ibid., 39.

Historical reasons aside, a significant obstacle to a philosophy of technology as a domain of study in itself has had to do with the dominant conception of technology as applied science. Such a narrow conception of technology has restricted any deep philosophical engagement with technology as an independent category with its own ontological existence. It is with the schism within philosophy of science inaugurated by Kuhn and followed up by Ian Hacking's pragmatist reinterpretation of scientific praxis (as involved in an intervention into rather than an objective representation of the world out there) that increasing attention has been paid to the technological embodiment of science. This has been taken up with great fervor by offshoots of philosophy of science, such as science and technology studies (STS), which conceives of science and technology as inseparable, captured by the hybrid called 'technoscience.' This context has had a crucial significance for contemporary philosophy of technology, which is characterized by what is called the 'empirical turn,' and which captures the shift towards an empirical approach towards concrete technological artefacts as opposed to the previous monolithic and transcendental approach that tended to make grand generalizations about 'Technology-with-a-capital-T.' Therefore, contemporary philosophy of technology marks a shift from grand reflections on 'Technology' to a more detailed and concrete analysis of 'technical/technological artefacts.'[5]

The contemporary empirical turn in the philosophy of technology has led to some very interesting insights into the ontology and normativity of technical artefacts. It has also led to a cross-pollination of theories and concepts between philosophy, engineering, and design. Some of the most significant contributions to contemporary philosophy of technology have come from philosophers belonging to the tradition of phenomenology such as Hubert Dreyfus, Don Ihde, Albert Borgmann, Peter-Paul Verbeek, Luciano Floridi and others. Don Ihde, an exemplar of this tradition, goes beyond the Heideggerian notion of the technological enframing of being by adopting a perspective that is 'post'-phenomenological—in the sense that it fuses phenomenology with pragmatism. Postphenomenology is a move away from the Husserlian project of transcendental phenomenology, which according to Ihde was doomed to be interpreted as a subjectivist endeavor of inferring the conditions of possibility of conscious experience. In moving beyond phenomenology, Ihde borrows

5 Throughout the thesis, 'technologies' and 'technical artefacts' interchangeably.

from Husserl, Heidegger, and Merleau-Ponty the rigorous analysis of experience through variational analysis and the concepts of embodiment and lifeworld. On the other hand, in moving beyond Deweyan pragmatism, Ihde proposes to address our experience of technology materially by carrying out a material hermeneutics of our technological praxis.

This thesis is a conceptual investigation of postphenomenology's core concepts and influences. Postphenomenology is a dominant approach within philosophy of technology that aims to analyze the ways in which technologies mediate our existence and the philosophical significance of the consequences that arise therefrom. It provides a phenomenological framework that enables to look into concrete everyday artefacts and discern the invariant features that structure the various relationships that we have with our technologies and the world they present us with. It starts with the premise that the technologies that surround us are not neutral means to ends; rather, they mediate our perceptions, actions, and choices. To understand and unconceal these mediations is the task of postphenomenology. It goes by the name of 'postphenomenology' rather than 'phenomenology' since it follows in the wake of pragmatist and postmodern critiques of essentialism. The 'post' captures this school's anti-foundationalism. Although there are many postphenomenologists who do postphenomenological research into concrete technologies such as cellphones, computers, and obstetric ultrasound, there is comparatively less work that questions the philosophical foundations and implicit assumptions underlying its method. The aim of this investigation is to expose some of the latent tendencies and implicit assumptions that color its approach to technologies and the ways in which we engage with them.

Postphenomenology has become a thriving research program since Don Ihde, and there are many names associated with it, such as Evan Selinger, Robert Crease, Robert Rosenberger, Peter-Paul Verbeek, Kyle Powys White, etc. It is now a well-established school of thought in philosophy of technology both in North America as well as in The Netherlands, which is a hotbed for philosophical reflections on contemporary technologies. The present conceptual investigation is restricted to postphenomenology as conceived by Don Ihde and later modified by Peter-Paul Verbeek since this affords to trace the normative turn within this school of thought. Verbeek's modification of

postphenomenology and the subsequent normative framework of design ethics enables a commensurable juxtaposition of postphenomenology with yet another dominant school of thought which is organized around the 'dual nature of technical artefacts' program. The latter school, being analytically oriented, offers an interesting counterpoint against which to evaluate postphenomenology's ontological and normative conceptions of technological artefacts.

According to postphenomenology technologies are not neutral intermediaries but rather active mediators between humans and the world, and in so mediating, they transform the way humans and the world are co-constituted. The objective of this investigation is to trace postphenomenology's influences from phenomenology, hermeneutics, and pragmatism and to scrutinize its assumptions in conceiving of technologies as mediations between humans and the world. The method employed in this thesis involves a conceptual investigation as well as a phenomenological analysis into technological praxis. It is a conceptual *investigation* rather than a mere *analysis* since it involves inquiring into the connections between different concepts across different domains of philosophical thought rather than taking a concept apart and scrutinizing its constituent parts. This investigation is guided by a phenomenological analysis of human–artefact engagement. This enables to see connections between the design, ontology, and normativity of artefacts, on the one hand, and the perceptions, reasons, and engagements of users, on the other. In this, the present investigation is motivated by the philosophical quest to "understand how things hang together" with respect to human–artefact engagement.[6]

The thesis consists of four chapters. In Chapter 1, I provide an overview of philosophy of technology by way of a historical backdrop for the emergence of contemporary philosophy of technology from its classical counterpart. This would enable to situate postphenomenology and its ambivalent relationship to Heidegger's philosophy of technology. Highly representative of this ambivalent relationship are Don Ihde and Peter-Paul Verbeek's postphenomenological readings of Heidegger's

6 Wilfrid Sellars formulates this view of the philosophical quest in his celebrated essay, "Philosophy and the Scientific Image of Man," where he writes: "The aim of philosophy, abstractly formulated, is to understand how things in the broadest possible sense of the term hang together in the broadest possible sense of the term." See Wilfrid Sellars, "Philosophy and the Scientific Image of Man," in *In the Space of Reasons: Selected Essays of Wilfrid Sellars,* ed. Kevin Scharp and Robert B. Brandom (Cambridge: Harvard University Press, 2007), 369.

reflections on technology—both before and after the so-called *Kehre*. After providing an overview of Ihde and Verbeek's characteristically postphenomenological interpretations of Heidegger's philosophy of technology, I conclude the chapter by providing my own phenomenological–normative reading of Heidegger's tool-analysis. This would inform my investigations into postphenomenology in the subsequent chapters.

In Chapter 2, I trace the varied and eclectic philosophical influences of Don Ihde's postphenomenology in Husserlian phenomenology, Heideggerian phenomenological hermeneutics, Deweyan pragmatism, and post-Kuhnian philosophies of science. This illustrates some of the more dominant influences on Ihde and his philosophy of technology, of which hermeneutics forms a major component. With the philosophical background in place, I move on to Ihde's postphenomenological approach to technologies, characterized by the detailed phenomenological hermeneutics of human–machine relations and the core concept of multistability that ensues from it. Ihde's purely descriptivist approach to the phenomenology of technologies raises the crucial question of normativity of technological artefacts. If technologies are inherently normative in shaping our experiences, choices, and actions, then postphenomenology as a philosophy of human–technology relationships cannot evade this normative aspect in technologies. The Dutch postphenomenologist, Peter-Paul Verbeek extends Ihde's mediation theory in order to address the normative dimensions of technologies. In Chapter 3, I trace how the normative turn is brought about in Verbeek's theory of mediation and the subsequent turn to design ethics. I provide an exposition of Verbeek's contributions to postphenomenology which involves a synthesis of Ihde's postphenomenology and Bruno Latour's actor–network theory. Verbeek's normative interpretation of mediation leads him to conceive of artefact design as an ethical activity. I evaluate design ethics in the light of certain concerns raised against mediation theory and follow it up with an investigation into the relationship of mediation with ontology, in terms of the structure and function of technical artefacts.

Chapter 4 provides a critical investigation and evaluation of some of the main concepts of postphenomenology by way of an analysis into the relationship between mediation, moral status, normativity, and ontology of technical artefacts. For this

purpose, I juxtapose Verbeek's notion of moral mediation with metaethical discussions of normativity, such as those of Judith Jarvis Thomson and Peter Kroes, both of whom pay close attention to the normativity of technical artefacts. I then discuss the limitations and challenges that arise from a turn to design ethics and point to certain basic problems within postphenomenology. I suggest a turn to value-sensitive use or user-engagement ethics as an alternative to design ethics. I conclude the thesis by providing an alternative phenomenological hermeneutics of technological praxis, one that is sensitive to the different ways in which users engage with artefacts and the moral significance that follows therefrom.

Chapter 1: Philosophy of Technology at the Turn of 20th Century

1.1 Philosophy of Technology: Classical and Contemporary

It could be fairly said that any history of philosophy of technology is a record of a series of shifts from techne to technology, from a teleological worldview to a mechanistic worldview, from purpose as discovered to purpose as created, from thinking in wholes (holistic worldview) to thinking in parts (analytic worldview). It could also be said that there has been an implicit philosophy of technology in the works of a number of philosophers starting from the ancient Greeks, and that philosophy of technology developed through making explicit this implicit current running through their works. In doing so, it illuminates how an understanding of the technological interacts with the practical and social and vice versa. The series of shifts in the history of technology are a result of changes over time between these poles of interaction. In highlighting the role of the technological in the social, philosophy of technology aims to restore due philosophical importance to the material, embodied, praxical, and normative dimensions of technologies.

It is not until the late 19th century that technology explicitly becomes the subject of philosophical reflection. This can be attributed to the significant transformation brought about by advances in science and technology and the consequent social changes ushered in by the industrial revolution. The German philosopher, Ernst Kapp (1808−1896) is acknowledged to be the first to coin the phrase 'philosophie der technik,' German for 'philosophy of technology'.[1] While Kapp directed his philosophical reflection on the new science of mechanical engineering, it is, however, with his contemporary, Karl Marx (1808−1883), that technology is shown to have a very significant impact on social transformation. Keeping these two divergent analyses in view, Carl Mitcham, one of the foremost historians of philosophy of technology, has classified philosophy of technology into two camps: engineering philosophy of technology and humanities philosophy of technology. The former is historically prior to the latter in the explicit use of the phrase 'philosophy of technology', and it is "an attempt by technologists or engineers to elaborate a

1 Carl Mitcham, *Thinking Through Technology: The Path Between Engineering and Philosophy* (Chicago: The University of Chicago Press, 1994), 20.

technological philosophy." The latter, on the other hand, "refers to an effort by scholars from the humanities, especially philosophers, to take technology seriously as a theme for disciplined reflection."[2]

Mitcham traces the origins of engineering philosophy of technology to "mechanical philosophy," i.e., to a philosophy that explains the world through the principles of mechanics resulting from the experiments carried out by natural philosophers such as Isaac Newton, George Berkeley, and Robert Boyle. It is thus an internalist and technical conception of technology. Mitcham goes on to list the key representatives of this camp to include (mostly) engineers and technocrats such as Ernst Kapp, Peter Engelmeier (1855−1941), Eberhard Zschimmer (1873−1940), Friedrich Dessauer (1881−1963), Alfred Espinas (1844−1922), Jacques Lafitte (1884−1966), Gilbert Simondon(1923−1989), Hendrik van Riessen (1911−2000),Egbert Schuurman (1937−) Juan David Garcia Bacca (1901−1992), Mario Bunge (1919−), and Buckminster Fuller (1895−1983).[3]

As opposed to engineering philosophy of technology's internalist (technical) conception of technology, the humanities philosophy of technology conforms to an externalist (social) conception of technology. Mitcham defines it as "the attempt of religion, poetry, and philosophy to bring non- or transtechnological perspectives to bear on interpreting the meaning of technology."[4] In general, philosophical discourse, therefore, has emphasized on the humanities philosophy of technology over its engineering counterpart. [This, as shall be shown later, has come at a cost.] In the face of modern technological and scientific progress, humanities philosophy of technology developed "as a series of rear-guard attempts to defend the fundamental idea of the primacy of the non-technical."[5] Taking their cue from the Romantics' critique of Enlightenment, humanities philosophers of technology have preoccupied themselves with critiquing the social ills brought about by modern technology. Key representatives of this camp include philosophers such as Karl Jaspers (1883−1969), Gabriel Marcel (1889−1973), Lewis Mumford (1895−1988), Jose Ortega y Gasset (1883−1955), Martin Heidegger (1889−1976), and Jacques Ellul (1889−1976).

2 Ibid., 17.
3 Ibid., 19−38.
4 Ibid., 39
5 Ibid. 39

The engineering camp's technocratic conception of technology has been largely incommensurate with the humanities camp's romantic conception of technology. Mitcham notes that the tension between the two camps arises out of conflicting judgments: Engineering philosophy of technology seeks to explain the world—both human and non-human—in technological terms, whereas humanities philosophy of technology seeks to understand technology from a nontechnological point of view; while the former is technological, the latter is hermeneutic and aimed at a self-understanding of our technological lifeworld from an anthropological and historical perspective;[6] where the former views technology as instrumental in realizing a utopia where machines would enable us greater freedom, the latter aims to forestall a technocratic dystopia where human agency has been handed over to machines. In other words, whereas the former celebrates modernity, the latter questions its very basic assumptions. As Andrew Feenberg notes, it is the difference between traditional and modern societies that "will prove an Archimedean point for an original reflection on technology."[7]

The contemporary philosophers of technology emerge out of this background. Looking back critically at their predecessors, these philosophers of technology—especially those belonging to the phenomenological school of thought—have discerned certain common features in their views on technology. Owing to these family resemblances, their predecessors have been retrospectively and pejoratively classified as belonging to "classical philosophy of technology."[8] Philosophers who are brought under this banner include Martin Heidegger, Lewis Mumford, Jacques Ellul, Hans Jonas, Hannah Arendt, and Ivan Illich, among others. It must be pointed out, with reference to the aforementioned discussion, that the predecessors and founding-fathers of the contemporary philosophers of technology are mostly those belonging to the humanities philosophy of technology camp.

There have been various ways in which classical philosophers of technology have

6 Ibid. 63

7 Andrew Feenberg, "What is Philosophy of Technology?," Lecture for the Komaba undergraduates, (June 2003): 1, https://www.sfu.ca/~andrewf/books/What_is_Philosophy_of_Technology.pdf. Accessed 12 April, 2015.

8 Hans Achterhuis, ed., *American Philosophy of Technology: The Empirical Turn*, trans. Robert P. Crease (Bloomington: Indiana University Press, 2001), 3.

been characterized by their contemporary counterparts. Most of the contemporary works on philosophy of technology begin by showing how their predecessors fall into one or more of certain pejorative categories that close-off other dimensions of human−technology relationships. These characterizations are carried out mainly in order to show the limitations of their predecessors and to show how their own philosophy goes beyond these limitations and offers a more concrete analysis of our technological lifeworld. The contemporary philosophers of technology referred to in the present study read their predecessors in terms of the attention (or the lack thereof) they have directed toward the concrete and empirical manifestations of technologies. They accuse their predecessors of making grand generalizations in talking about technology-with-a-capital-T. This turn to the empirical and concrete analysis of technologies is what separates these philosophers from their predecessors, marking a genealogical shift which has come to be known as the "empirical turn" in the philosophy of technology.

Within the scope of this study, the term 'contemporary philosophers of technology' refers to those whose work is guided by the empirical approach of turning attention to concrete technologies and their effects on how we experience our lifeworld. These philosophers include (but not limited to) Carl Mitcham, Don Ihde, Albert Borgmann, Hubert Dreyfus, Peter-Paul Verbeek, Andrew Feenberg, Donna Haraway, etc., and they draw their major influences from the phenomenological analyses of Edmund Husserl, Martin Heidegger, and Maurice Merleau-Ponty. Most contemporary work on philosophy of technology begins with a characterology—almost always cautionary—of classical philosophy of technology. For example, Carl Mitcham, in his historico-philosophical studies on the phenomenon of technology not only demarcates between engineering and humanities philosophies of technology but also calls attention to three ways in which the relationship between our technical engagements and the way the world is disclosed to us has been understood. These are ancient skepticism (suspicious of technology), Enlightenment optimism (promotion of technology), and Romantic uneasiness (ambiguous about technology).[9]

Don Ihde classifies the history of philosophy of technology into three waves. The first

9 Carl Mitcham, "Three Ways of Being-With Technology," in *Philosophy of Technology: The Technological Condition, An Anthology*, eds. Robert C. Sharff and Val Dusek (West Sussex: Wiley Blackwell, 2014).

wave is characterized as treating "technology as an overall phenomenon...tended towards dystopian assessments; and most usually saw technology as a threat to the older, traditional forms of culture." This included Ernst Kapp, Karl Marx, Martin Heidegger, Friedrich Dessauer, Ortega y Gassett, Karl Jaspers, Nicolas Berdyaev, Lewis Mumford, and John Dewey. The second wave comprised of "technology critical philosophers who tended to view technology as a political and cultural threat... [in] an era in which extremes of utopian and dystopian views of technology often prevailed." This included Theodor Adorno, Herbert Marcuse, Max Horkheimer, Jurgen Habermas (making up the Frankfurt School), Jacques Ellul, Ivan Illich, and Hans Jonas. In contrast to the first two waves, the third wave is characterized as being "less dystopian, more pragmatic, pro-democratic...and [taking] an 'empirical turn' or a turn to the analyses of concrete technologies...a high sense of careful analysis and thus more concrete than the often abstract and high-altitude metaphysics of the past."[10]

Philip Brey characterizes classical philosophy of technology as dominant between 1920 and 1990, formed by philosophers and humanists belonging to phenomenology, existentialism, hermeneutics, critical theory, theology, and related areas. It included philosophers like Martin Heidegger, Herbert Marcuse, Jacques Ellul, Ivan Illich, Arnold Gehlen, Hans Jonas, Lewis Mumford, and others who critically responded to the technological optimism characterizing the Enlightenment idea of progress. Enlightenment thinkers such as Rene Descartes, Francis Bacon, Thomas Hobbes, and Gottfried Leibniz held on to an optimistic view of technology envisioning that it "would bring humanity control over nature, individual freedom, well-being and affluence."[11] However, this optimistic view caved under the "negative and destructive nature of technology" owing to the destruction caused by the two World Wars, dropping of the atomic bombs on Hiroshima and Nagasaki, threat of nuclear obliteration, and alienation of monotonous factory work. This gave way to classical philosophy of technology's critique of Enlightenment optimism, instead laying emphasis on the negative and destructive nature of technology as an overpowering force leading to subservience and loss of all traditional values.

Hans Achterhuis follows a similar characterization and calls the first-generation

10 Don Ihde, Foreword to *New Waves in Philosophy of Technology*, eds. Jan Kyrre Berg Olsen, Evan Selinger, and Soren Riis (Hampshire: Palgrave Macmillan, 2009), xi.

11 Philip Brey, "Philosophy of Technology after the Empirical Turn," *Techne* 14, no. 1 (2010): 37.

philosophers of technology as the classical philosophers of technology. These include thinkers such as Martin Heidegger, Hans Jonas, Jacques Ellul, Lewis Mumford, Hannah Arendt, and Ivan Illich, among others. These classical philosophers of technology "occupied themselves more with the historical and transcendental conditions that made modern technology possible."[12] Noting the influence of the classical philosophers of technology on the contemporary, empirically oriented philosophy of technology, Achterhuis credits them as being philosophical pioneers who inverted the traditional and dominant view of technology as applied science and as a merely neutral and instrumental means to an end. He goes on to add that "[t]he most important discovery of classical philosophy of technology is undoubtedly the absolute novelty, within the history of humanity, of the technological approach to reality."[13] Following Ihde's distinction, it can thus be said that the classical philosophers of technology were responsible for ushering in a shift away from philosophy and technology towards a philosophy of technology.

However, classical philosophy of technology, in its preoccupation with adopting a transcendental approach that focuses on the conditions of possibility of technology, failed to look at technologies from a concrete, experiential perspective. This accounts for its generalizations (talking of technology-with-a-capital-T) and symptomatic dystopianism. Peter-Paul Verbeek also characterizes classical philosophy of technology along the same lines. He accuses these philosophers of painting an "excessively gloomy picture of the role of technology in contemporary culture," making "too abstract and sweeping judgments," and failing "to connect with concrete technological practice."[14] Verbeek traces the philosophical roots of classical philosophy of technology to transcendental philosophy of Immanuel Kant wherein the subject of analysis is looked at from the perspective of its conditions of possibility, i.e., that which must be supposed in order for it to be possible. Thus, classical philosophy of technology understood technology on the basis of its conditions of possibility, and in doing so, "[i]t thought backwards...from the actual presence of concrete technological objects in our society to what made them possible."[15] Verbeek refers to such a philosophy of technology arising out of the works of Karl Jaspers and

12 Hans Achterhuis, Inroduction to *American Philosophy of Technology*, 3.
13 Ibid., 3.
14 Peter-Paul Verbeek, *What Things Do: Philosophical Reflections on Technology, Agency, and Design*, trans. Robert P. Crease (Pennsylvania: The Pennsylvania State University Press, 2005), 4.
15 Ibid., 7

Martin Heidegger. While the existential phenomenological approach of Jaspers condemns technology for resulting in a loss of authenticity, Heideggers hermeneutic phenomenology understands modern technology as a mode of being in which everything in the world is disclosed as a standing reserve, as a raw material for consumption.

From the abovementioned characterizations of classical philosophy of technology, one can discern certain family resemblances between the various philosophers who are said to belong to this camp. In classical philosophy of technology, technology was seen from a transcendental perspective, i.e., from the point of view of the conditions that made it possible, be they historical, scientific, ontological, or material. Most analyses therefore abstracted out of concrete technologies and conceived of them as 'Technology-with-a-capital-T.' The differences between different technologies disappeared beneath the fog of transcendental generalizations and 'technology' came to be used as a monolithic, blanket term that included within its cusp everything, from life-saving medical technology to life-annihilating nuclear technology. Since it had its genesis in the critique of Enlightenment optimism, classical philosophy of technology shared a largely dystopian bias. It was thus value-laden in its presuppositions and evaluations of the impacts of technology. There was strong contrast held between tradition and modernity, between nature and culture, and between the natural and the artificial, and technology was seen as an autonomous and deterministic force that seemed to overpower and subjugate the traditional to the modern, the natural to the cultural, and the artificial to the natural.

In this context, Martin Heidegger can be seen as an exemplary philosopher of technology in whose writings can be found the tendency for a classical philosophy and at the same time the roots for a contemporary phenomenological and empirical approach to the study of technologies. Here, I shall provide an overview of Martin Heidegger's philosophy of technology in order to illustrate its influence and reception by contemporary philosophers of technology who have adopted a phenomenological approach. Heidegger is exemplary in that his philosophy contains the root as well as the caveat for the contemporary, postphenomenological approach to technology. After providing an overview of his philosophy of technology implicit in Being and Time and explicit in his later essays, I shall offer how postphenomenologists have received

Heidegger. Postphenomenologists, especcially Don Ihde and Peter-Paul Verbeek, offer us a critical and contemporary engagement with Heidegger's philosophy of technology.

1.2 Heidegger's Philosophy of Technology

1.2.1 Heidegger's Existential–Phenomenological Analysis of equipment

Martin Heidegger's magnum opus *Being and Time* (1927) offers an existential–phenomenological analysis of the meaning of Being. Hedeigger notes the importance of clarifying the meaning of Being for any ontology if it has to maintain its status as being more primordial over the ontical enquiry of the empirical sciences. He uses the word *Dasein* to distinguish our way of being from the being of non-human entities. According to Heidegger, what makes *Dasein* ontically distinctive is that it *is* ontological, i.e. *Dasein's* "Being-ontological" refers to the condition that in its being, it has an understanding of Being.[16] Heidegger calls *existence* that kind of Being towards which *Dasein* comports itself in its being. Existence refers to the possibilities through which *Dasein* understands itself. Heidegger states that "*fundamental ontology*, from which alone all other ontologies can take their rise, must be sought in the *existential analytic of Dasein*."[17]

Heidegger's philosophy of technology comes to the fore in Chapter III (*The Worldhood of the World)*, of Division 1 (*Preparatory Fundamental Analysis of Dasein*), Part 1 (*The Interpretation of Dasein in Terms of Temporality, and the Explication of Time as the Trascendental Horizon for the Question of Being*). In Chapter 1, Heidegger differentiates between ontological problematics and ontical research and problematizes the 'natural conception of the world' as it is presupposed by the former, which is representative of the positive sciences.[18] Ontology for Heidegger has a very significant role to play, but only indirectly, in the advancement of the positive sciences since "the question of Being is the spur for all scientific thinking." Therefore, it is necessary to gain an insight into "*Dasein's* basic stuctures in

16 Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (Oxford: Blackwell Publishers, 2001), 32; author's italics.
17 Ibid., 34; author's italics
18 Ibid., 76.

order to treat the world-phenomenon conceptually."[19] This is the task set out for an existential analytic of *Dasein*. I shall limit my focus to Section A of Chapter III (*Analysis of Environmentality and Worldhood in General*) since it is the most relevant to our discussion of Heidegger's phenomenological analysis of technological praxis.

After pointing out the fundamental structure of *Dasein* as Being-in-the-world in Chapter II, Heidegger, in this chapter, introduces the notion of the 'worldhood of the world'.[20] 'The world' for Heidegger must be analyzed phenomenologically, which means to see what the 'entities' within the world reveal to us. In order to do so, the world must be analyzed as a phenomenon, and Heidegger draws considerable attention to the ontological concept of 'worldhood' and characterizes it as an *existentiale*, i.e., as one that "stands for the structure of one of the constitutive items of Being-in-the-world."[21] Heidegger illustrates four interconnected ways in which the word 'world' is frequently used and the corresponding phenomena signified by each: one, world as totality of entities present-at-hand (ontical); two, a term for any realm that encomapsses a multiplicity of entities (ontological); three, that wherein *Dasein* can be said to 'live,' the lived world of the *Dasein* (pre-ontological existentiell); and four, world as designating worldhood (ontologico-existential). The goal of reaching the ontologico-existential structure of the world must be achieved via discerning the structures that constitute *Dasein's* lived world, i.e., its closest environment. And it is within Daein's everydayness that the world as environment is most closest to it. This proximity is granted to *Dasein* through entities that populate its environment. We must therefore turn to an ontological interpretation of the entitites encountered by *Dasein* in its everyday Being-in-the-world.

In the next section, Heidegger inaugurates his famous "tool-analysis." Herein lies the roots of Heidegger's phenomenology of technological praxis. Heidegger is interested in the Being of those entities that are most proximally encountered by *Dasein*. The closest mode of encountering entities is not through perceptual or theoretical cognition but through our concernful dealing with our world. This involves manipulating things and putting them to use.[22] The pragmatic dealing with the world

19 Ibid., 77.
20 Ibid., 114.
21 Ibid., 92.
22 Ibid., 95.

is more primordial and proximal than a theoretical, contemplative, and reflective understanding of the world. Heidegger notes

> ...the kind of Being which belongs to such concernful dealings is not one into which we need to put ourselves first. This is the way in which everyday *Dasein* always *is*: when I open the door, for instance, I use the latch.[23]

Heidegger's quest is to discern the Being of such entities that are encountered by everyday *Dasein*: What is their ontological status? After rejecting the notions of such entities as 'proximally given Things,' 'Things invested with value,' things with 'substantiality, materiality, extendedess, side-by-side-ness,' and the Greek *pragmata*, etc., Heidegger uses the term "equipment" to characterize these entities.[24] This term captures the interrelationality of entities. There is thus "no such thing as *an* equipment. To the Being of any equipment there always belongs a totality of equipment, in which it can be this equipment that it is."[25] All equipment has the structure of 'in-order-to' which constitutes the 'assignment' or 'reference' of something to something. The crucial objective of Heidegger's phenomenological analysis is to uncover the ontological basis of the assignment through which an entity attains the Being of equipmnent.

Herein begins the most interesting description of praxis afforded by Heidegger's existential phenomenology. Ilustrating his analysis through the example of hammering, Heidegger notes that it is in putting something to use, i.e., through and in the process of hammering, that the equipmental structure of the hammer comes to light. In using the hammer for the purpose it is designed for, in "dealings cut to its own measure", in subordinating our concern to the 'in-order-to' of the equipment, in seizing hold of the hammer rather than stating at the hammer-Thing, the equipmental character of the hammer reveals itself to us and thereby our relation to it attains a primordial status. It is here that he introduces the concept of '*readiness-to-hand*' (*zuhandenheit*) as the kind of Being that equipment possesses. This is to be distinguished from 'just looking' and theoretically trying to grasp the equipment. In

23 Ibid., 96.
24 Ibid.
25 Ibid., 97.

contrast, to 'deal' with it is to unveil the readiness-to-hand of equipment. Such a concernful dealing with equipment is guided by its own kind of sight, which Heidegger calls '*circumspection.'*

> Dealings with equipment subordinate themselves to the manifold assignments of the 'in-order-to.' And the sight which they thus accommodate themselves is circumspection.[26]

Thus Heidegger points to the phenomenological difference between theoretical and practical engagement. While the former involves following the rules governed by the method, the latter involves circumspection. The 'method' is to theoretical behavior what 'circumspection' is to practical behavior. Now what is peculiar to the ready-to-hand is that the tool as equipment withraws and gives way to the work itself. That is, the work done is the "towards-which" of the equipment. It is not so much the equipment but the work being done through the equipment that is our primary concern everyday. Much like the in-order-to structure of equipment, the towards-which structure of work has its assignment as well. The work produced is for some purpose, e.g., the clock is for telling the time, the shoe is for wearing, etc. Therefore, the work to be produced has the same kind of Being as that of equipment.

What Heidegger is getting at is that it is the work—and the use of equipment in it—that enables us to encounter Nature itself as something ready-to-hand. Since the work involves the use of equipment, which in turn refers to the material that constitutes it, the final reference is to Nature as the ultimate source of all that enables the production of work. Similarly, on the other hand, the work that is produced also refers to the ends to which it is to be put, that is, to its purpose that is embodied in the person who is to consume the product of work. Heidegger notes:

> Thus along with the world, we encounter not only entities ready-to-hand but also entities with *Dasein's* kind of Being—entities for which, in their concern, the product becomes ready-to-hand; and together with these we encounter the world in which wearers and users live, which is at the same

26 Ibid., 98.

time ours.[27]

It is thus that the concernful dealing with work has the function of discovering the world which comprises producers, consumers, ready-to-hand equipment and the materials which make them up. It thus makes accessible the "public world" and the "evironing Nature." As beings-in-world, we find ourselves in a world in which all that is produced is produced in taking account of common concerns shared by other beings-in-the-world, such as shelter, lighting, temporality, etc., which refers to Nature as having a certain definite direction. Our being-in-the-world is founded upon our *familiarity* with the entities that make up the world. It is this notion of familiarity that is crucial to understanding the Being of *Dasein*. This explains why Heidegger lays emphasis on the ready-to-hand as the primordial mode of being-in-the-world, upon which is founded the present-at-hand mode of being that is embodied in our *cognition* of entities rather than our concernful dealings with those entities.

> Being-in-the-world, according to our Interpretation hithero, amounts to a non-thematic circumspective absorption in references or assignmnets constitutive for the readiness-to-hand of a totality of equipment. Any concern is already as it is, because of some familiarity with the world. In this familiarity, *Dasein* can lose itself in what it encounters within-the-world and be fascinated with it...[T]he worldly character of what is within-the-world [can] be lit up [since] [t]he presence-at-hand of entities is thrust to the fore by the possible breaks in that referential totality in which circumspection 'operates'.[28]

Heidegger's aim is to show that the worldhood of the world constitutes the references or assignments of the in-order-to structure of the ready-to-hand. It is to show that the worldhood of the world is founded on the phenomenological understanding of entities of the world which have the character of either being ready-to-hand or present-at-hand. An integral part of this phenomenological understanding is the grasping of the phenomenon of *reference* or *assignment*. To refer to something is to assign a role to something as something in-order-to. Heidegger here attempts what could be called a

27 Ibid., 100.
28 Ibid., 107.

phenomenological hermeneutics of our engagement with entities in the world. What he means when he says that the ready-to-hand has the structure of assignment/reference is that "it has in itself the character of *having been assigned or referred*."[29]

Heidegger here is making the case against a substantivist ontology of entities in the world as substances with properties. Rather, he is pointing to the ready-to-hand characteristic of entities whereby they are experienced as either appropriate or inappropriate for the purposes of our existence. That is, our phenomenological experience of entities within the world is not that of objects with properties such as mass, color, shape etc., rather we experience them as being assigned or referred to as being appropriate for certain ends. It is the worldhood of the world then that becomes the overarching structure within which we 'discover' entities. Moreover, for an entity to be ready-to-hand is for it to be *involved* in something. This involvement is defined by its assignment/reference which in turn is related to our practices. Here is another crucial difference between the ready-to-hand and the present-at-hand. While the former has the character of involvement and hence of familiarity, the latter is less practical and a more theoretical mode that is independent of our engagement with our everyday praxis in the world. Our primordial engagement with the world is constituted by familiarity with the assigned/referred to in-order-to structures of entities. What this means is that as beings-in-the-world, we, in our everyday praxical work, encounter objects that have been brought into existence for our purposes and practices. And to be familiar with the world is to grasp these purposes and assignments of entities, i.e., their uses for and in our everyday activities. Heidegger calls this *significance* and notes that our familiarity entails grasping the signifacnce of the entities in the world.

Heidegger can be seen to be breaking away from the Husserlian phenomenology of the cogito where the world is as it appears to consciousness. Heidegger's existential phenomenology, in contrast, is throwing light on the existential fact that the relation that we, as beings-in-the-world, have to the world is one of familiarity, one where the entities within the world matter to us and have a significance to our praxical and existential engagement. We are primordially beings entagled into the significance of

29 Ibid., 115.

the world rather than Cartesian subjects who have a disengaged, objective. and theoretical mode of grasping the world about us. It is here that Heidegger's radicalism in relation to the phenomenology of Husserl—with its Kantian and Cartesian perspective—can be located. He is hereby inaugurating existential and hermeneutic phenomenology whereby the emphasis in on the experience of a being who is always already engaged and familiar with the entities of the world.[30]

This section of *Being and Time* could be said to form a significant influence in the 'phenomenology' of postphenomenology. It is to this text that postphenomenologists such as Don Ihde and Peter-Paul Verbeek turn to in support of their 'empirical turn,' whilst shunning the later Heidegger for moving away from the phenomenological everyday to the trascendental realm wherein lies the 'essence' of technology in his later works. I shall now therefore turn to the later Heidegger's philosophy of technology which becomes an explicit investigation into the ontological significance of technology. Juxtaposing the early Heidegger's (implicit) analyses of technological artefacts with the later Heidegger's (explicit) ontological analyses of technology shall enable us to understand the ambivalent influence of Heidegger on postphenomenology.

1.2.2 Heidegger's Questioning Concerning Technology

Heidegger's Question Concerning Technology is by far the first, most explicit phenomenological analysis of technology in the 20th century. Herein, he aims to open "human existence to the essence of technology."[31] In arguing that "the essence of technology is by no means anything technological," Heidegger is contesting the instrumental and anthropological conception of technology that views it as a human activity that is simply a neutral means to an end. Such a conception may be correct, but not true. There is a crucial difference between the two for Heidegger: "...the merely correct is not yet the true. Only the true brings us into a free relationship with that which concerns us from out of its essence. Accordingly, the correct instrumental definition of technology still does not show us technology's essence."[32]

30 William Blattner, *Heidegger's Being and Time: A Reader's Guide* (London: Continuum, 2006), 42.
31 Martin Heidegger, "The Question Concerning Technology," in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (New York: Garland, 1977), 3.
32 Ibid., 6.

It is thus Heidegger's aim to "seek the true by way of the correct." In this search for the *true*, Heidegger begins with the claim that causality is an intimate aspect of instrumentality and goes on to critically examine the notion of causality beginning with the traditional Aristotelian account of the four causes: material cause, formal cause, final cause, and efficient cause. There are two kinds of activities that involve *revealing*, i.e., the bringing-forth of things out of concealment into unconcealment. Human activity such as craft, art, and poetry is one kind of bringing-forth, termed *poiésis*; whereas natural activity such as the blossoming of a flower, the reproduction of bacteria, etc. is of another kind, termed *physis*. Heidegger notes that "[*p*]*hysis* is indeed *poiésis* in the highest sense."[33] That is, it is a bringing-forth that happens all by itself, without necessitating an efficient cause. It is this revealing--which in Greek is translated as *alétheia* and in Roman as *veritas*--that forms the ground for Heidegger's conception of truth and thus the essence of technology: "the essence of technology... [and] [t]he possibility of all productive manufacturing lies in revealing."[34]

Heidegger thus views technology as a mode of revealing. Moreover, he inverts the traditional relationship between science and technology, which sees technology as applied science. In contrast to the traditional view, Heidegger directs attention toward scinence as technologically embodied in its use of technical apparatuses. Heidegger thus expresses the ontological priority of technology over science, which would later resonate with much of contemporary philosophy of technology. However, it is clear that Heidegger seems to abstract all modern technologies as 'Technology,' which in turn he sees as a mode of revealing. There is thus a dissolution of all differences between technologies, and all technology is seen as a revealing that challenges-forth nature as *bestand*, i.e., a standing reserve for energy. This is explicitly articulated thus:

> The fact that now, wherever we try to point to modern technology as the challenging revealing, the words "setting-upon," "ordering," "standing-reserve," obtrude and accumulate in a dry, monotonous, and therefore oppressive way, has its basis in what is now coming to utterance.[35]

33 Ibid., 10.
34 Ibid., 12.
35 Ibid., 17.

For Heidegger, as a result of such abstraction, the earth becomes revealed as a coal mining district, soil as a mineral deposit, agriculture as the mechanized food industry, the river is revealed as a source of hydroelectric power, even man himself is revealed as a human resource, etc. The logics of energy maximization and efficiency drive all modern technology. Although Heidegger confers that it is man who drives technology forward, he cautions that the unconcealment that characterizes modern technology is not man's handiwork. The unconcealment is thus beyond the agency of man, it is a mode of revealing that he finds himself in. This is what Heidegger terms as the gestell, translated as e*nframing*. Heidegger defines *enframing* as

> the gathering together of that setting-upon which sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as standing-reserve. Enframing means that way of revealing which holds sway in the essence of modern technology and which is itself nothing technological.[36]

Heidegger, in saying so, demarcates between *enframing* and technological activity. Noting that the technological components that make up an assembly and the assembly itself belong to the realm of technological activity, Heidegger posits that the former "always merely responds to the challenge of Enframing, but it never comprises Enframing itself or brings it about."[37] It is here that Heidegger can be seen to subordinate the technological to something beyond it, to *enframing* as a mode of revealing. Furthermore, Heidegger sees modern physics as the initial manifestation of the challenging-forth resulting from such *enframing*. In physics, nature is conceived of as "a calculable coherence of forces" and "orderable as a system of information." It is this conception of nature that leads physics into the realm of experimental physics and summons forth for technological apparatuses at its disposal. Thus Heidegger states that "[t]he modern physical theory of nature prepares the way first not simply for technology but for the *essence* of modern technology"[38] (emphasis mine).

Heidegger is thus charged with putting forth a transcendental philosophy of technology in the sense that it looks at the conditions that make modern technology

36 Ibid., 20.
37 Ibid., 21.
38 Ibid., 22.

possible, without much regard for the differences between concrete technologies themselves. Moreover, he situates the source of the essence of technology in *destining*, a way of revealing that determines the essence of all history.[39] This suggests a deterministic and autonomous conception of technology. The essence of technology is beyond man and acts through him as a force that challenges-forth to reveal nature as a standing reserve of energy. It must however be noted that Heidegger differentiates between *destining* and *fate*, stating that "destining is never a fate that compels."[40] He leaves scope for freedom in situating freedom in the revealing of destining, in the unconcealment of the concealed, which in this case, is the essence of technology. Heidegger's solution therefore to the question concerning technology is to pay heed to the essence, the coming to presence, of technology, which would lead us to "experience Enframing as a destining of revealing."[41] It is apparent how Heidegger makes the shift away from the materiality of technological and rather emphasizes on its essence.

Heidegger notes toward the end of the essay of the "ambiguous essence of technology," in the sense that the essence of technology holds within itself both the danger as well as the saving power. It is through looking into this danger (which the essay is a manifestation of in itself) that brings us closer to the saving power. Heidegger notes how in ancient Greece, art was also thought of as a *poiésis* and referred to as *techné*. In this sense, art was not limited to the aesthetic and cultural activity, as it is regarded in contemporary times. Those were the times when the technological was not separated from the artistic, since both belonged within the realm of *poiésis*. Art is therefore, for Heidegger, as for the Greeks, the revealing of the poetical, which "thoroughly pervades every art, every revealing of coming to presence into the beautiful."[42] Since the realm of art is both akin to the essence of technology and yet fundamentally different from it, Heidegger locates the realm of art as that within which the questioning of technology must be carried out. He closes the essay with the following poetic lines:

> The closer we come to the danger, the more brightly do the ways into the

39 Ibid., 24.
40 Ibid., 25.
41 Ibid., 25.
42 Ibid., 34.

> saving power begin to shine and the more questioning we become. For questioning is the piety of thought.

These lines are characteristic of Heidegger's subordination of technology to the poetic, and thus to the linguistic. In situating the realm of questioning technology in the realm of the linguistic, Heidegger emphasizes the linguistic over the material. Heidegger is thus accused of abstracting away from the material and in favor of turning toward the ontological realm of being granted by the *Gestell* that holds sway in a particular epoch. Heidegger is therefore vulnerable to the accusations of treating technology as a way of being that is universally and monolithically granted to us as a condition of the epoch in which we have found ourselves to be. In this context, Heidegger could be fairly said to be an ontological determinist in that the *Gestell* that holds sway in an epoch determines language in terms of the meaning it unconceals and the particular essence it picks out in that epoch. In the contemporary epoch, everything is unconcealed to us as a standing reserve, of which modern technology is the ultimate manifestation. In such an ontologically determinist account of technology, the essential differences between technologies are blurred and so are the differences that exist between the proliferation of technologies across cultures. In not taking these factors into account, Heidegger's account of technology is therefore monolithic, transcendental, abstract, and inadequate for a proper understanding of the more concrete implications of our technologically textured lifeworld.

With this as our introductory background, I shall in the next section illustrate how the contemporary philosophers of technology have read Heidegger ambivalently, both as their source of phenomenological insight into technologies as well as the progenitor of a transcendental and abstract (mis)understanding of technologies as technology-with-a-capital-T.

1.3 Postphenomenological Readings of Heidegger's Philosophy of Technology

1.3.1 Don Ihde's 'Critical' Reading of Heidegger's Philosophy of Technology

Don Ihde could well be said to be one of the pioneers in developing a

phenomenologically oriented philosophy of technology. At the core of his phenomenology lies a critical re-interpretation of Heidegger's writings on technology. An entire book is devoted to this purpose—aptly called *Heidegger's Technologies*—which is a book "about, and in response to, Martin Heidegger's *philosophy of technology*" (author's italics).[43] Ihde's reading could be said to be a *variational analysis*—in the Husserlian sense—of Heidegger's analyses of technology where he attempts to discern what remains constant and what changes between the early and later periods of Heidegger's work. From the perspective of a philosophy of technology, Heidegger has a lot going for him, according to Ihde. He hails the German philosopher as being a pioneer in taking technology seriously within philosophy as a "genuine ontological issue" and praises his philosophy of technology as being "the most penetrating to date."[44] Ihde thus presents Heidegger as a force to reckon with within the domain of philosophy of technology, for although Ihde acknowlwedges Karl Marx and Ernst Kapp as being at the forefront in bringing about a shift in perspective toward materiality and machines, it is Heidegger who makes technology a primarily philosophical question in lifting technology out of its subjectivist and merely instrumentalist interpretations.[45]

At the same time, Ihde illustrates the "implicit limitations in the Heideggerian program."[46] Absent from his ontological analyses of technology is any empirical study of actual technology. In favoring the ontological over the ontical, the differences between different technologies are undermined and technology-with-a-capital-T gets to be used as a blanket term that covers all technologies, thus "essentializing" technologies to have something about them that they all share in equal measure. However, as Ihde notes, with developments in the 1970s and 80s in the field of Science and Technology Studies and the turn towards analyses of particular, concrete technologies in their specific cultural contexts, there has come about an '*empirical turn'* in philosophy of technology. In Heideggerian terms, one could might as well call this the '*ontic turn'* that seeks to avoid any "metaphysical high-altitude take on Technology." Ihde and other empirically oriented philosophers of technology, especially those favouring a phenomenological approach, find Heidegger's take on

43 Don Ihde, *Heidegger's Technologies*: *Postphenomenological Perspectives* (New York: Fordham University Press, 2010), 1.
44 Ibid., 29.
45 Ibid., 28.
46 Ibid., 28.

technology to be transcendental, metaphysical, and from a high-altitude. Ihde finds this as an invariant feature that applies equally to both Heidegger's early and later writings on technology that all modern technologies "fall under the sign of the *same*" (author's italics).[47] These evaluations remain at the core of the *empirical turn* and what Ihde christens as '*postphenomenology*.'

In his reinterpretation of Heidegger along these themes, Ihde focuses his attention solely on Heidegger's phenomenological analyses of everyday equipmental activity as outlined in *Being and Time* and his later 1954 lecture devoted entirely to technology: 'The Question Concerning Technology.' His intentions are focused "primarily upon the origins and shapings of contemporary philosophy of technology and Heidegger's role therein."[48] He lays emphasis on the coming of the Industrial Revolution and the rapid and unprecedented transformation of Germany from "an economy based on agricultural to one dominated by industry."[49] It was therefore the Industrial Revolution that was to be "the alarm that finally awakened philosophers from their contemplative slumbers."[50] Following Michael Zimmerman's work on Heidegger's political activity and its role in his philosophy, Ihde situates Heidegger's philosophy of technology as a response to his times.[51] He brings out intellectual association that came to be between Heidegger and Ernst Junger in pre-WWII Germany which was caught beteen the industrial capitalism of Britian and America and the Soviet Communism of Russia. Both were seen as a threat to the values that were held dear by the German *Volk*. Heidegger shared with Junger and the National Socialists the techno-romantic idea "to hybridize romanticism with technologization and to procalaim this as a unique response to technological modernism."[52]

Although Ihde acknowledges the contributions of other philosophers who have addressed the problem of technology during Heidegger's time, it is Heidegger who for Ihde *survives* "the gradual dwindling of early-twentieth-century 'European dystopianism."[53] He provides evidence in the form of the various contemporary

47 Ibid., 21.
48 Ibid., 1.
49 Ibid., 8.
50 Ibid., 2.
51 Refer to Michael E. Zimmerman, *Heidegger's confrontation with Modernity: Technology, Politics, and Art* (Bloomington: Indiana University Press, 1990).
52 Ihde, *Heidegger's Technologies*, 12.
53 Ibid., 12.

philosophers of technology who still cite Heidegger extensively in their works. However, for Ihde himself, Heidegger's early, techno-romantic and reactionary modernist philosophy of technology was already antiquated in the interwar period, thanks to new developments in military technologies that caused a dissonance in the conception of war as a glorified struggle by a masculine army for the Fatherland and the reality of artillery warfare that brought about a change in the role of the soldier. Citing this historical development in warfare, Ihde argues that "the interwar period, precisely the period of Heidegger's and the reactionary modernists' philosophy of technology, was already antiquated. And, indeed, this form of early philosophy of technology did not successfully propagate itself."[54]

Having said this, Ihde points out that it would be unfair to reduce Heidegger to the techno-romanticism of the interwar period, for this also happens to be the period in which "his most brilliant insights into what was to become his philosophy of technology took shape."[55] Ihde is here referring to Heidegger's analysis of everyday equipmental activity and tool-analysis in his magnum opus of 1927, *Being and Time*. This work shall come to be recognized by the contemporary philosophers of technology as the foundation for a phenomenologically oriented approach to concrete technologies, in short for the empirical turn.

However, it is to be after the war and the Holocaust, and subsequent to his denazification that Heidegger focuses his writings on the theme of technology. Ihde, in his interpretation, makes the case that there is a difference in tone in Heidegger's philosophy of technology between his early and later writings, that is between *Being and Time* and 'The Question Concerning Technology.'[56] In order to prove his case, Ihde problematizes three of the claims made by Heidegger: first, the non-neutrality and non-anthropocentricity of technology; second, distinguishing modern technology and traditional or handiwork technologies; and third, technology as a metaphysical perspective. Ihde notes how the first claim has become a universally accepted notion in philosophy of technology, but due in fact to concrete analyses of *technologies* rather than due to general speculations about common perceptions of technology-with-a-capital-T. Morevoer, the second claim that modern technology is significantly

54 Ibid., 15.
55 Ibid., 15.
56 Ibid., 17.

different from craft-based technologies in that the former is much more complex and more integrated into a system does not hold water; and so too does the third claim which makes the grossly generalized statement that *all* Technology (with-a-capital-T) is a way of revealing nature as a standing reserve of energy that is to be exploited at all costs. This forms a major theme for the postphenomenological critique of Heidegger's philosophy of technology "by which *all* technologies become, ultimately, subject to the *same high altitude analysis*" (author's italics).[57]

The postphenomenological reading of Heidegger can be characterized by a hermeneutics that is informed by the empirical turn in philosophy of technology, studies in the history of technologies, literature from science and technology studies, and sociology of scientific practice. The strategy employed herein is a bottom-up, phenomenological perspective as opposed to a top-down, metaphysical one. Such a strategy thereby brings about the difference in tone between Heidegger's early and later philosophy of technology—from a phenomenological analysis of tools in *Being and Time* to a metaphysical analysis of technology-with-a-capital-T in 'The Question Concerning Technology.' From such a hermeneutic method, Ihde notes the following points with reference to what changes and what remains: What remains constant is Heidegger's negative evaluation of modern technology. There is however a shift in his earlier *volkisch* themes toward a romanticization of handcraft tools (in *Being and Time*) which would ultimately lead to an aestheticization of *techne* as involving a poetic production as in a work of art. This, for Ihde, brings out in Heidegger the false dichotomy between modern and handcraft technologies. He argues that

> this aestheticist move, which, here using more contemporary terms, perceived through Heidegger's use of *techne* (a poetic production process which he claimes from the Greeks), applies both to technologies and to works of art. However, "modern" technologies come our looking "bad" while works of art look "good"....Yet both technologies and art works are material artifacts that phenomenologically belong to their respective contexts.[58]

57 Ibid., 19.
58 Ibid 21.

Ihde reads this as another significant characteristic of the *Kehre* (the turning) that has become a major theme in Heidegger scholarship. Herein, it is the change from the early phenomenological tool-analysis that focuses on particular concrete tools to the later metaphysical turn to technology as an all-enframing revealing that subsumes all particularity into a transcendental category.

It has thus come to be that what Ihde calls postphenomenology takes from Heidegger only those themes that could be compatible with studies in the allied disciplines in the history and sociology of technology and science. Ihde therefore, sets aside all that is problematic in Heidegger's philosophy of technology—his romanticism, his neglect of the historicity of technological development, and his ontological approach to technology. Instead, he incorporates the following Heideggerian themes into his 'postphenomenological' framework : the world as technologically textured with *Dasein* as being saturated with technologies that increasingly mediate perceptions and actions; the non-neutrality and non-anthropocentricity of technologies; the existential —phenomenological analysis of engagements with particular technologies; the ontological priority of technology over science leading to the notion of 'technoscience'; and more importantly the emphasis on practical engagement over theoretical reflection.

Here, I shall outline in brief the main themes that are representative of Ihde's hermeneutic engagement with Heidegger's philosophy of technology. Ihde offers us a 'retrospective reading' of Heidegger's two major works on technology whereby he illustrates how the analyses of the later work (The Question Concerning Technology) are anticipated by and are a reflection his earlier work (*Being and Time*). It must be noted, however, that Heidegger does not concern explicitly with a discourse on 'technology' in *Being and Time;* in fact, the term hardly makes an appearance in the text.[59] Ihde, however, reads a philosophy of technology into the text. Ihde's strategy is to highlight the variants and the invariants, in particular, what is *isomorphic* between

59 See Heidegger, *Being and Time*, 50. The term "technical devices" is mentioned once in the Introduction in quotation marks wherein Heidegger is making the case for phenomenology as a methodological conception. He notes in this context, "The more genuinely a methodological concept is worked out...all the more primordially is it rooted in the way we come to terms with the the things themselves, and the farther is it removed from what we call 'technical devices', though there are many such devices even in the theoretical disciplines."

the two and what are the *anomalies* encountered in juxtaposing the later lecture with the earlier text.[60]

Ihde finds the following themes in *Being and Time* as being isomorphic to the technological conception in the later essay. First, he points out to the isomorphicity between the earlier conception of ready-to-hand and the later conception of 'technology'. Both are modes of disclosure whereby 'Nature' is revealed as such and such. Heidegger's notion of technology as *aletheia* in the essay captures the unconcealing, revelatory character of truth. Second, in both the texts there is a reference to the world as a totality, a whole, which is what is disclosed and unconcealed in engaging with entities in the world. The third isomorphic theme between the two is that *Dasein* is always-already in-the-world. That there is no way in which one can dissociate oneself from the worldhood of the world, which in the later essay is contrued as being the *destining* that determines the mode of revealing that holds sway in a particular epoch—which for us moderns is that of the technological.

In addition to these isomorphisms between the two texts, Ihde's critical, retrospective reading offers further interesting insights into Heidegger's philosophy of technology by looking into the *anomalies* that stand out from such a reading. The first anomaly, according to Ihde, has to do with the contrasting conception of the relationship between science and technology between the two texts. Ihde accuses Heidegger of being "highly selective" with respect to the artifacts that are subjected to his tool-analysis. Ihde notes how

> Heidegger chooses as examples equipment that is used "in hand," technologies that are directly employed in work projects, technologies that extend human capacities often in terms of *handiwork*. This selectivity colors the entire analysis and is one element of a certain Heideggerian inadequacy of interpretation regarding technics.[61]

Such a selectivity disables Heidegger from an early discovery of the intrinsically interdependent relation between contemporary science and technology. Heidegger's

60 Ihde, *Heidegger's Technologies*, 50.
61 Ibid., 51.

conception of science in *Being and Time* is primitive in that it is not seen in terms of its dependency on technology. Whereas in the later technology essay Heidegger insightfully points to the ontological priority of technology over science and hence the technological embodiment of science, Heidegger has not yet come to see this intertwining of science and technology by the time he was writing his magnum opus. One can therefore discern a certain positive take on the ready-to-hand which stands in contrast to the negative characterization of the present-at-hand. The later Heidegger is therefore acknowledged by the contemporary philosophers of technology for having been "prescient concerning technoscience,"[62] and this is a major theme that runs through postphenomenology. Technoscience is taken to be characteristic of modern science whereby there can no longer be a boundary drawn between 'science' and 'technology." Each is co-dependent on the other, and contemporary science can move no further if not for advances in technological instrumentation which has come to mediate all empirical observations. Thus, for Ihde, although

> *Being and Time* does not specifically raise the question of technology...it may easily be seen that the praxical dimension of the ready-to-hand could become interpreted as the condition of the possibility for technology. What is missing in an explicit sense in *Being and Time* is the specific characterization of world taken as standing-reserve.[63]

The second anomaly has to do with what Ihde calls "the disappearance of the object." Ihde offers us a very interesting and crucial (for the purposes of our research) reading, for it is here that Ihde provides a *technoscienctific* reading of the shift in Heidegger's philosophy of technology. In doing so he traces the shifting conceptions of the science—technology relationship from the earlier text to the later essay. This has come to play a central role in Ihde's philosophy of technology. Ihde could be said to be offering us a Hegelian—dialectical reading whereby the later Heidegger's conception of *technology* is to be read as a synthesis of elements from each side of the contrast offered in *Being and Time* between the ready-to-hand and the present-at-hand. Such a hermeneutic strategy brings the two writings in confrontation with each other rather

62 This is the dominant theme running throughout *Heidegger's Technologies*. Chapter 4 of his book offers an in-depth analysis of this topic.

63 Ihde, *Heidegger's Technologies*, 50.

than viewing them as writings belonging simply to different periods of time and to contrasting views on technology.[64]

Ihde lucidly illustrates this point by recalling the distinction between the ready-to-hand and the present-at-hand in *Being and Time*. The present-at-hand is a deficient mode of concern wherein an object is stripped of its praxical dimension and is seen as 'just there,' as a bare entitiy with properties—this is the object for theoretical and reductionist science. On the other hand, the ready-to-hand is our primordial mode of engagement with artifacts in the world. It is such a mode of concern with equipment that reveals the world to us. As mentioned before, the main objective of *Being and Time* is to restore the ready-to-hand mode of concern to its level of significance as against the Cartesian—scientific thematicization of artifacts as substances with properties. *Dasein* for Heidegger is therefore a being-in-the-world who has an essentially praxical engagement with the world.

However, in the later essay on technology, Ihde notes that this present-at-hand object of science has also disappeared:

> By the time of the technology lecture, however, the object has also disappeared from science...[u]nder the concept of the standing-reserve....Here objects *and equipment* are, in effect, absorbed into the new totality. Nature, already noted as taken into technology as standing-reserve, is now accompanied by tools as well. The technological world is one in which the noematic correlate is simply standing-reserve and the noetically normative response is that of ordering this reserve.[65]

It is important to note herein the explicitly *phenomenological* reading of Ihde in his use of the noesis—noema structure of experience. What emerges with this disappearance, however, is the concept of '*technology*,' which, for Heidegger, is an essentially scientific technology; being so therefore, it is a synthesis of specific aspects of both the present-at-hand and the ready-to-hand. It is ready-to-hand in that it is *praxical*, it *reveals* the world as a standing-reserve, and it is characterized by a

64 Ibid., 52.
65 Ibid., 52; author's italics.

totality; it is present-at-hand in that it involves a *thematic perception* of nature as a standing-reserve. There is thus a synthesis into the concept of technology both the positive aspects of the ready-to-hand as well as the negative aspects of the present-at-hand (the positive and negative aspects, however, do not nullify each other thereby neutralizing technology). Such a synthesis renders technology overly dangerous in that one cannot separate out the praxical from the thematic, the scientific from the technological. There can neither be a purely contemplative science nor a purely praxical and instrumental technology. Contemporary, modern technology—as opposed to traditional handiwork technology—is scientific technology, or what Ihde calls *technoscience*.

> Technology, then, becomes the combined powers of what was earlier both readiness-to-hand and presence-at-hand. Humanity is effected essentially because science itself is technological in its contemporary sense and operates in the praxical dimention.[66]

This makes for a justified case for turning to art in order to find the 'saving power' against technology. Ihde notes the *strategic reasons* for Heidegger to turn to art. This stems from the idea that art is related to technology in that it "is a technics,"[67] it involves a *techne*, in the Greek sense of the term. Every art has a *techne* that presribes how one who practices the art must go about in doing so. At the same time, art is theoretical in the sense that it is contemplative—it is not an instrumental means to an end. Ihde's meticulous reading discerns a contrast now in the later lecture: "between the now combined ready-to-hand-present-at-hand existential intentionality and the poetic being-towards-th-world of Heidegger's 'poetic dwelling.'"[68] However, with all its similarities to technics, art is also strategically different in that it belongs to a realm that is fundamentally different from it; it is therefore non-reductive and opens up endless possibilites. Ihde closes his reading by noting that "artful praxis...is the stategic counterbalance to what Heidegger fears is the threat of closure. There is thus an internal need for the turn to poetics...as a response to the age of technology as the current epoch of Being."[69]

66 Ibid., 55.
67 Ibid.
68 Ibid.
69 Ibid.

Ihde's isomorphic—anomalous reading of Heidegger enables one to see the crests and troughs of the peaks with greater clarity. The basic points of such a phenomenological reading have come to be central points of reference to the postphenomenological approach to philosophy of technology. One can similarly perform such a reading of Ihde himself. This shall bring to light the ambiguities that characterize his hermeneutics. While he notes how the early Heidegger's thoughts on technology are different from his later ones, he simultaneously notes how there is a continuity in preoccupation with certain common themes between the two texts. Alternatively, he notes how his phenomenological method, which gives priority to the praxical dimension of human experience, continues to carry its significance to the later essay.[70] I shall take up this problematic for a later time.[71] For now, however, I shall restrict myself to illustrating the ambiguous relationship between Heidegger and his postphenomenologist interpreters. I shall turn next to Peter-Paul Verbeek, who like Ihde, offers us with another interesting interpretion from within the 'empirical turn.'

1.3.2 Peter-Paul Verbeek's Artefactual Reading of Heidegger's Philosophy of Technology

Peter-Paul Verbeek falls neatly in line next to Don Ihde in the turn toward a philosophy of technology that looks to concrete technological artifacts. Not only is he an ardent collaborator of Ihde's postphenomenological approach, he also offers an alternate critical reading of Heidegger. While Ihde's *technoscientific* reading situates Heidegger in the context of science—technology relationship, Verbeek's reading investigates Heidegger's philosophy of technology in line with the 'turn to artifacts.' Verbeek is more explicit in reconfiguring and transforming 'philosophy of technology' to 'philosophy of technological artifacts.' Verbeek's critique of classical philosophy of technology is along similar lines of Ihde and other contemporary philosophers of technology. He points out how the gloomy and bleak diagnosis presented by an abstract and sweeping philosophy of technology left "no room for

70 Ibid., 28.

71 It should also be noted that Ihde offers us with many more such readings of Heidegger's philosophy of technology with reference to different problematics. For our purposes here, I have restricted myself only to the one which focuses on Heidegger's philosophy of technology in *Being and Time* and in his later essay, "The Question Concerning Technology."

different kinds of descriptions of different kinds of technologies."[72] At the same time, however, he contends that it is not entirely obsolete—the questions posed by the classical philosophers of technology are still relevant, and we need to answer these anew but without reducing technologies to their conditions of possibility—a residue of the transcendental tradition inaugurated by Kant. It is Verbeek's project therefore to answer the Husserlian call of getting back "to the things themselves."[73] This would involve starting with concrete technological artifacts and analyzing the roles they play in our lifeworld and the relations they make possible between us and the world.

In the light of this objective, Verbeek provides us with an *artifactual* reading of Heidegger. This involves a "critical analysis...in order to make Heidegger's hermeneutic philosophy of technology relevant to a 'turn toward the artifact' in the philosophy of technology."[74] Verbeek's strategy lies in exposing Heidegger's transcendentalism in order to avoid it. He interestingly reads the so-called *kehre*—the turn in Heidegger's thought—as a turn away from phenomenology of everyday existential engagement to a transcendental manner of thinking:

> My examination of the course of Heidegger's approach to artifacts reveals how a transcendental manner of thinking gradually crept into his philosophy, culminating during the period of its so-called turn or *Kehre*. But exposing this transcendentalism, in turn, makes it possible to see how it can be avoided. This will create the possibility of seeking new answers to the questions, of undiminished importance, that Heidegger poses about technology: What is the significance of technology for the way human beings encounter reality; and how does it affect the manner in which they interpret the world?[75]

Verbeek offers us a detailed reading of 'The Question Concerning Technology' and 'The Memoroial Address,' which he notes as "the two texts most commonly cited in dealing with Heidegger's philosophy of technology, and the ones that discuss the issue

72 Peter-Paul Verbeek, *What Things Do: Philosophical Reflections on Technology, Agency, and Design*, trans. Robert P. Crease (Pennsylvania: The Pennsylvania State University Press, 2005), 4.
73 Ibid., 12.
74 Ibid., 48.
75 Ibid., 49.

most explicitly."[76] While Ihde had offered us an *isomorphic—anomalous* reading of Heidegger's philosophy of technology, Verbeek offers us a *compatible—incompatible* analysis of the same. He reads Heidegger from the perspective of those elements which are compatible and those which are not with his own turn to a philosophy of technological artifacts. Verbeek elaborates Heidegger's philosophy of technology as a stage-wise answer to three crucial questions that technology poses. He, in a sense, discerns the implicit '*as-structure'* latent within Heidegger's later essay on technology. Herein, for Verbeek, Heidegger conceptualizes technology *as-revealing*, *as-enframing*, and *as-the greatest danger*. Each of these conceptualizations is an answer, respectively, to the question, why is technology not a simple means to an end? Why is technology not a human activity? Why it is a question of much significance to philosophy? The core of Verbeek's reading, however, lies in the notion that any serious critique of Heidegger's philosophy of technology must be internal to his analysis rather than to his conclusions (which has been the more dominant tendency). In this context he notes appealingly

> A serious critique of Heidegger's philosophy of technology cannot rest content with the claim that his picture of technology is monolithic, abstract, and nostalgic, but needs to show that this picture is *inadequate*.... A true crutique cannot be based on the *consequences* of an approach, but must rather be directed at the *approach itself*.[77]

Verbeek thus provides us with a careful and detailed analysis of Heidegger's philosophy of technology. The result of such an analysis is to be the excavation of a number of internal discrepancies and unjustified prejudices. Verbeek provides ample evidence of the inadequacy that plagues Heidegger's analysis of technology. His most original contribution to an analysis of Heidegger's philosophy involves exposing the charge that there exists a double standard in his evaluation of traditional and modern technology. Verbeek's penetrating reading illustrates how Heidegger "selectively navigates between two different approaches, one historical and one ahistorical."[78] Heidegger's philosophy of technology is therefore nostalgically prejudiced since he uses an ahistorical perspective for analyzing traditional artifacts, while on the other

76 Ibid., 48.
77 Ibid., 60, 62. (my italics).
78 Ibid., 60.

hand he uses a historical perspective for analyzing modern technologies. These two perspectives are related to the two poles of 'being'. On the one hand there is the historical being which is historical and is an interpretation of "what it means to be," while on the other hand is the ahistorical being which denotes the event of coming into being or the event of revealing.[79]

Verbeek acknoweldeges that this perspectival dualism does not pose a problem *within* Heidegger's own framework since "being is intrinsically (or ahistorically) a happening or event that can only show itself in (historically) contingent ways."[80] However, it is in the realm of Heidegger's philosophy of technology that this dualism contorts into a double standard. As a consequence of this, Heidegger measures tradition and modernity with very different scales. In reserving an ahistorical perspective for traditional artifacts, he sees them as *objects* that are outside of their historical context; in reserving a historical perspective for modern technologies, he sees them as products of the *Gestell* or the mode of revealing dominant in that particular historical epoch. This is the root cause of which Heidegger's nostalgic bias toward traditional artifacts is a symptom. Following Ihde, Verbeek too discerns two problems in Heidegger's hermeneutic philosophy of technology which are to be overcome for a philosophy of technology that takes into account the way specific technologies disclose reality. First, Heidegger's approach is abstract and monolithic in that specific technological artifacts are reduced to being products of a history of being that develops beyond human control. Second, he has a nostalgic bias for traditional artifacts and he uses different perspectives—one historical and the other ahistorical—for his analysis of modern and traditional technologies.[81]

At the same time, however, Verbeek duly notes that "[i]f ever there was a philosopher who could not be accused of thinking too little about "things," it is surely Heidegger."[82] He notes how Heidegger's early writings which were concerned with the phenomenological hermeneutics of everyday engagement with tools provide the necessary point of departure for developing an approach that takes the materiality of things seriously and looks into the ways in which artifacts mediate and make possible

79 Ibid., 73.
80 Ibid., 74.
81 Ibid., 75.
82 Ibid., 76.

new relations between users and the world. Verbeek therefore ironically moves *backward* to Heidegger's early magnum opus *Being and Time* in order to unearth a philosophy of technology that is *forward-looking*. Drawing a sharp contrast in the early and later views of Heidegger on technology, Verbeek characterizes Heidegger's early view as offering

> an extensive analysis of the role of equipment in the relation between human beings and their world, which contrasts sharply with his later analysis...the earlier Heidegger, instead of reducing the relation between human and world, technological artifacts generate specific forms of access to the world for human beings.[83]

Crucial to Verbeek's reading of Heidegger's philosophy of technology is his interpretation of *Kehre* or the turn in Heidegger's philosophy, which has become a topic of central importance to Heidegger scholarship. Verbeek's original contribution, however, is his insightful reading of Heidegger's *Kehre* within the context of a philosophy of technology. Verbeek notes that as Heidegger's work progressed through the years, "a transcendental manner of thinking gradually crept into his philosophy, culminating during the period of its so-called turn or *Kehre*."[84] Verbeek points to the *Kehre* as being the point of departure between Heidegger's early and later approaches to technology. He notes how this turn was linked to a change in approach to the question of being. While the pre-*Kehre* Heidegger (i.e., the Heidegger of *Being and Time*) sought to approach the question of being via a phenomenological interpretation of the existence of *Dasein*, who always already had an understanding of what it meant *to be*, the post-*Kehre* Heidegger (i.e., the Heidegger of 'The Question Concerning Technology' and 'The Memorial Address') approached the question of being from the point of view of the history of being itself, thereby abstracting away from any reference to the ontic. Verbeek therefore holds the *Kehre* responsible for bringing about the transcendentalism that would characterize his later philosophy of technology wherein the artifact would be *reduced* to a greater extent to being, thereby losing sight of any specific technologies. Although his later works carry references to specific technologies such as the hydroelectric plant, nuclear energy, etc., they do so

83 Ibid.
84 Ibid., 49.

only in so far as they are seen as manifestations of a sending of being characteristic of a particular epoch rather than as technological artifacts that shape the human—world relationship.

Whereas post-*Kehre*, Heidegger *ontologizes* technology as a mode of being and reduces it to its conditions of possibility, the Heidegger of *Being and Time* provides penetrating phenomenological analyses of the way the world is encountered in our everyday engagement with tools. Therefore, following Ihde, Verbeek too reads Heidegger's *Kehre* as being the reductionist—transcendentalist turn from the concrete, material *thing* to the trascendental condition of possibility of the thing in the form of *being*. Verbeek reads Hedeigger's magnum opus against the backdrop of an implicit philosophy of technology and notes how the early Heidegger conceives of technology in terms of artifacts, as testified by his phenomenological analysis of equipment which leads him through to the 'worldhood of the world'. Verbeek therefore provides a reading of the key texts of Heidegger concerned with his 'thinking about things'.

Verbeek traces the chronological evolution in Heidegger's thinking about things through six texts: *Being and Time* (1927), "The Origin of the Work of Art" (1935); "The Thing" (1950); "Building, Dwelling, Thinking" (1951); "The Question Concerning Technology" (1953); and "The Memorial Address" (1955). Starting off with the tool-analysis in *Being and Time*, Verbeek illustrates Heidegger's initial fixation with technological artifacts such as tools and equipment, which mediate our relation to the world in *revealing* it to us rather than *reducing* our access to it. This for Verbeek is a more satisfactory approach to a philosophy of technology as opposed to reducing concrete artifacts to their conditions of possibility. This approach, for Verbeek, culminates with the the turn in Heidegger's thinking, whose beginning is cautiously marked by the essay, "The Origin of the Work of Art," wherein Heidegger discerns the differences between equipment and artworks and mere things. While mere things are self-contained in that they are not made by the human hand, equipments are useful artifacts that are made by humans for specific purposes. On the other hand, although artworks are produced by the human hand, they have are characterized by a self-sufficient presence in that they are not engaged with as in the case of equipment. Verbeek reads this as a turn in Heidegger's thinking about

equipment. There is an ontological move from conceiving of equipment in relation to humans who engage with it to conceiving of equipment in relation to other objects such as mere things and artworks.

Whereas equipments *reveal* the world as having a certain direction, artworks *gather* the world. Whereas the being of equipment rests on its use, the artwork, in its self-contained presence, "bring[s] beings into unconcealment to disclose a world."[85] Citing the example of Van Gogh's painting, 'A Pair of Shoes' (1886), Heidegger notes how the artwork discloses to the audience what the shoes are in truth. The artwork thus belongs to the domain of truth as *aletheia*. Verbeek endorses reading the essay as the turn in Heidegger's thought from thinking of the world as being revealed through the use of equipment to thinking of "the event by which beings come to presence."[86] Art is ontologically prior to equipment in that it is that dimension of the coming to presence of beings which precedes the disclosure of beings brought about through the use of equipment. Whereas in the production of equipment, the earth, i.e., the material cause, is *used up*, in the creation of an artwork, there is an opening up of the world, an unconcealing of that out of which it is made. The artwork unconceals and discloses whereas equipment withdraws into the background during its use. Verbeek reads these distinctions as Heidegger's turn toward being.[87] With this turn comes a change in concern. While the Heidegger of *Being and Time* was concerned with the phenomenological significance of tools and equipment, the Heidegger of the present essay takes the initial steps toward transcendentalism by giving in to the "Orphic temptation of looking backward" into the conditions that make possible the coming into being of the world and the objects therein.[88]

Regardless of its transcendentalism, Verbeek regards "The Origin of the Work of Art" as a transitional work. It is still imbued with references to specific technologies and the part they play in the coming into being of the world. One can still find in the essay residual traces of his earlier perspective on equipment. This perspective however is abandoned as Heidegger writes his post-WWII essays, "Building, Dwelling, Thinking" and "The Thing." Verbeek points to how he subsumes all differences

85 Ibid., 85.
86 Ibid., 86.
87 Ibid., 88.
88 Ibid., 8.

between artworks and artifacts into the single category of 'the thing.' One can note a clear change in Heidegger's metaphysical outlook when he introduces the quasi-mystical notion of the 'fourfold.' A thing for Heidegger is plainly 'that which things,' and this means that it gathers a fourfold. Citing examples of a bridge and a jug, Heidegger illustrates how the fourfold

> is the world as it is gathered by "earth and sky, divinities and mortals" (Heidegger 1971b, 153). These four components form the dimensions that open up the realm in which human beings experience their world. They are made visible by things, which refer to the *earth* from which they are made, the *sky* under which they rest, the *mortals* who concern themselves with them, and the *gods* who can be thanked for them.[89]

In subsuming all objects under 'the thing,' Heidegger abandons his phenomenological perspective to an abstract and monolithic one where all things gather the world in terms of the fourfold. Verbeek notes how "despite the title of the work, in "The Thing" Heidegger begins to lose sight of things themselves."[90] There is therefore an ontological shift in perspective from 'the things themselves' to the "way in which being can show itself."[91]

The essay dedicated to technology, however, is the culmination in Heidegger's reduction of artifacts to being merely elements in the history of being. There is now a historicist turn whereby the coming into being of the world is but a product of the epoch of being to which it belongs. This for Verbeek implies a reduction of things "to the way of unconcealment that prevails in a particular historical epoch."[92] The identity of all things is therefore subsumed to their belonging to a particular epoch of being, and the contemporary epoch which is characterized by ordering nature as a standing-reserve is responsible for the technological sending of being that poses a grave threat to the way conceptualize nature and our role in it. The essence of technology is no longer anything technological, and technology is no longer to be understood as technological artifacts but as a historical epoch of being. In "The Memorial Address,"

89 Ibid., 69; my italics.
90 Ibid., 90.
91 Ibid., 91.
92 Ibid., 92.

Heidegger appeals to a mode of comportment that he calls "releasement" which enables us to have a free relation to the otherwise enchaining and binding rule of technological devices. Verbeek notes how Heidegger's later philosophy of technology is inadequate since although Heidegger considers the specific ways in which technological devices disclose reality, his perspective is no longer one which turns to specific technologies but rather one whose vantage point is the history of being. The inadequacy also lies in not paying sufficient heed to the contextual nature of the way in which technologies disclose reality—they may not always disclose reality as a standing-reserve.

Through such an artifactual reading of Heidegger's early and later philosophies of technology, Verbeek takes the later Heidegger to task for not staying true to his phenomenological hermeneutics of technological praxis. He concludes that one must therefore turn to the early Heidegger in order to come up with a hermeneutical philosophy of technology that can be compatible with the contemporary, empirical turn in the philosophy of technology. Considering the early Heidegger's phenomenology of equipmental praxis as exemplary of a philosophy of technological artifacts that looks at how artifacts *reveal* the world rather than *reduce* it, it is Verbeek's project therefore to develop a framework for a phenomenological hermeneutics for interpreting the mediating role that technologies play in our relation with the world. He thereby incorporates Ihde's postphenomenological approach to technologies and develops a framework for a philosophy of technological artifacts. Both Verbeek's and Ihde's readings of Heidegger are exemplary of the empirical turn in the philosophy of technology. These readings shall also offer us inroads into the postphenomenological approach to philosophy of technology, which shall be the focus of our following chapters.

1.4 Towards a Phenomenological—Normative Reading of Heidegger's Philosophy of Technology

Now that we have laid out Heidegger's philosophy of technology and its influence on contemporary phenomenologically oriented philosophy of technology in the previous sections, we can proceed toward an alternate reading of Heidegger that shall set the tone for the problematics that would be of central concern to the current work. For

this purpose, I shall make an initial attempt at a phenomenologically normative reading of Heidegger's philosophy of technology from the perspective of discerning an ontological bias within Heidegger's phenomenological hermeneutics of technological praxis. As we have seen, Don Ihde and Peter-Paul Verbeek make a strong case for taking a counter-turn against Heidegger's *Kehre* and heading toward the early Heidegger in order to develop a philosophy of technological artifacts that takes the mediating role of technologies seriously. While the early Heidegger does afford a more nuanced analyses of technological praxis, there is a certain bias that colors his ontology. Exposing this bias shall enable us to enter into an investigation into the various modes of engagement with technological artifacts.

1.4.1 Heidegger and the Two Modes of Engagement

Starting with Heidegger's notion of equipment it is striking to note that for Heidegger there is no such thing as *an* equipment—there always is only a totality of equipment.[93] Moreover, we encounter equipment as a totality, an arrangement. It is this arrangement that gives meaning to any single piece of equipment. From this, it can be discerned that according to Heidegger, we, in our everyday engagement with technological artifacts, find ourselves in the midst of an arrangement of tools, each specifically designed for a particular purpose. This implies that primordially we have access to all those equipment that are designed for the purpose of getting done whatever work we are involved with. Presupposed herein is a neatly arranged, tailor-made world where each activity is associated with a standardized set of equipment, and corollarily, to be involved in an activity is to possess these standardized set of equipment. It can however be contended as to whether this is actually the case. It seems more to be an exception than the rule, except in those rare cases wherein a workshop or garage has been purchased or inherited *in toto*. The world in which *Dasein* is a being is not one in which equipment is equally and evenly distributed. One may use a plier as a hammer but that does not mean that they are any less skillful in the art of carpentry than an amateur with a carpentry toolkit. Heidegger seems to take equipment as the benchmark for an activity. Although in another context—having to do with priority of readiness-to-hand over presence-at-hand—Gail Soffer critiques

93 Heidegger, *Being and Time*, 97.

Heidegger for starting his analyses from "the full-fledged world of mature *Dasein*."[94] Marion Reddan argues that "Heidegger fails to address the question as to when an individual becomes *Dasein*."[95] In a similar vein, I contend that Heidegger's ontology of artefacts is grounded upon the full-fledged world of standardized equipment, with no account given as to when and how an artefact becomes part of equipment. He simply states the following in *Basic Problems of Phenomenology*

> The specific *thisness* of a piece of equipment, its *individuation*...is not determined primarily by space and time in the sense that it appears in a determinate space-and-time position. Instead, what determines a piece of equipment as an individual is its equipmental character and equipmental nexus....What and how it is as this entitiy, its *whatness* and *howness*, is constituted by this in-order-to as such, by its involvement.[96]

Hubert Dreyfus invokes an interesting example to illustrate the contrast between the substance ontology inherent in Artificial Intelligence (AI) research and Heidegger's own wholistic ontology. He cites the 1980s movie *The Gods Must be Crazy* and notes how in the movie a Coke bottle—which for us is part of an equipmental totality—is encountered as merely a substance by the Bushmen of Africa when it falls in their midst as it gets thrown out of a glider. What for us is a Coke bottle—i.e., that which belongs to the equipmental context of glass or PET bottles containing carbonated liquids, which are opened using bottle openers and are kept refrigerated for optimum pleasure—is but a mere thing for the Bushmen. And since they don't know what to make of it they appropriate it into their lifeworld by using it for various purposes such as a musical instrument, a rawhide roller, a plaything, etc.

> Its just a substance, and so they try to fit it into their world by using it to roll tortilla like things or to hit each other over the head with as a weapon and so forth...but it is certainly not a Coke bottle. There is no way for it to be a Coke bottle in that world of those people. The whole idea for Heidegger is that you can view a Coke bottle as a hard greenish

94 As quoted in Marion Reddan, "Heidegger and the Mystery of Being" (PhD thesis, University of Wollongong, 2009), 137, http://ro.uow.edu.au/theses/825/.
95 Ibid.
96 As quoted in Hubert Dreyfus, *Being-in-the-world: A commentary on Heidegger's Being and Time, Division I* (Cambridge: The MIT Press, 1995), 63.

> transparent substance, but then you miss what it is to be a Coke bottle. Same with hammers, you can regard a hammer as a wooden shank with a metal blob on the end but that doesn't get it for what it is to be a hammer. It's got to have a place in the practices of the culture in which it is related to a lot of other equipment and to the goals and skills of people. The hammer has an in-order-to and a towards-which, a final towards-which, and a for-the-sake-of-which.[97]

This is an illustrative example since it highlights the artifactuality of a tool that happens to be casted out of its equipmental context. And once this happens, it is no longer part of an equipmental whole but 'just a substance.' Moreover, according to Dreyfus, it is this aspect—the casting out of the tool from its equipmental context—that enables the Bushmen to put it to various other uses. It shall be my contention, however, that in our everyday concernful dealings with the world, there exists various modes with which we engage with the artefacts around us. In the absence of standard equipment we cope skillfully by appropriating and tinkering with artifacts such that they serve the desired purpose. Heidegger's ontology, in characterizing readiness-to-hand and familiarity as the primordial mode of engagement with equipment, exposes its bias in favour of only one of these modes of engagements. It therefore seems imperative to classify the different modes of engagement with artifacts in order to develop a more nuanced and inclusive ontology for a philosophy of technological artifacts. Although not limited to two, I shall herein only introduce two main modes of engagement with artifacts. The mode of engagement with artifacts in which its use is subordinated to its in-order-to structure may be called a '*submissive*' mode of engagement and the mode of engagement with artifacts in which its use is subversive of the in-order-to structure (by decontextulaizing the artifact from one equipmental nexus and recontextualizing it into another) may be called a '*subversive'* mode of engagement. It is my contention that Heidegger's ontology is grounded and biased toward the submissive mode of engagement with equipment whereby *Dasein*, in his everyday concernful dealing with the world, has access to the requisite equipmental totality that forms the *towards-which* of the work that is to be carried out.

97 Hubert Dreyfus, "Lecture 1," (Philosophy 185 Heidegger, University of California, Berkeley, Fall 2007). https://archive.org/details/Philosophy_185_Fall_2007_UC_Berkeley.

In this context, it is instructive to read Hubert Dreyfus' translation of Heidegger's terms in his commentary on *Being and Time*. Dreyfus translates *zuhandenheit* or the ready-to-hand as *availableness* and *vorhandenheit* or the present-at-hand as *occurrentness*.[98] Although Dreyfus has come to regret such translation, it does reveal an interesting aspect of equipment that is of relevance herein. Understanding the ready-to-hand as *availableness* reveals that aspect of artefacts that gets concealed when speaking of them in terms of their belonging to an equipmental totality. What is revealed, crucially, is that the *zuhandenheit* only captures equipment that is readymade and readily available. Dreyfus' translation of the ready-to-hand and present-at-hand as available and occurrent, respectively, can be appropriated to the present context by reconceptualizing the available and the occurrent as artefacts that one has 'to hand' (in the spatial sense of possessing and having access to them) and 'not to hand' (in the sense of being deprived of them), respectively. One limitation of Heidegger's ontology in *Being and Time* is that it is restricted to a Dasein for which the requisite equipment for work is always already available and hence there is an adherence to the normative in-order-to structure of equipment in going about one's work. However, it must be noted that the subversive mode of engagement is just as significant to technological praxis as is the submissive mode. This is especially the case wherein the lack of availability of the requisite tools and materials is overcome skillfully by subverting the normative in-order-to structure of equipment through the appropriation of an artifact for a purpose other than that which it has been designed for. In common parlance this is referred to as 'tinkering', 'hacking', 'D.I.Y', 'grassroot innovation', etc. In fact, it is quite prevalant among the margins in the informal economy of developing countries, and each region has a term that refers to such activity; for example, in India it is coloquially referred to as 'jugaad.'. It therefore seems necessary to take the subversive mode of engagement into account for developing a philosophy of technological artifacts.

Heidegger's notion of work also stands as a testament to this bias. Work for Heidegger is the *product* achieved by working rather than the *process* of working as such. In reference to work, Heidegger points out that

98 See Chapter 4 of Hubert Dreyfus, *Being-in-the-world: A commentary on Heidegger's Being and Time, Division I* (Cambridge: The MIT Press, 1995).

> ...that with which we concern ourselves primarily is the work...and this is accordingly ready-to-hand too. The work bears with it that referential totality within which the equipment is encountered. The work to be produced, as the "*towards-which*" of such things as the hammer, the plane, and the needle, likewise has the kind of Being that belongs to equipment....The work which we chiefly encounter in our concernful dealings...has a usability which belongs to it essentially; in this usability it lets us encounter already the "towards-which" for which *it* is usable. A work that someone has ordered is only by reason of its use and the assignment-context of entities which is discovered in using it.[99]

Work for Heidegger is analogous to equipment in that it, too, is ready-to-hand and is constituted by an in-order-to structure, that is, its usability. It too is 'cut to figure' and has a constitutive assignment. Heidegger's world is not only a relational world but a world in which work and tools fit hand-in-glove. While work is in-order-to produce usable products, these products are, in turn, in-order-to perform work. In using normative terms such as "genuinely," "primordially," "authentically," Heidegger is reinforcing his ontological bias toward an authentic *Dasein* as one who has a submissive mode of engagement with artifacts—one who puts equipment to use only for those purposes that have been assigned to it in producing it.

This begs the question as to whether such a Dasein is essential to Heidegger's phenomenology of the worldhood of the world. It does seem to be so. Although we can only speculate on this, it can be pointed out that Heidegger's world is a world cut to figure through various assignments of the in-order-to which fit neatly into one another. Heidegger's 'world' can be read as an efficient organism in which each organ has a specific place and purpose, and the overall purpose of the organism is "for the sake of providing shelter for Dasein...for the sake of a possibility of Daseins Being."[100] Dreyfus gives us a convincing argument countering against interpreting the 'for-the-sake-of-which' as "an instinctual necessity built into the organism by nature," and offers a more sympathetic interpretation of shelter as a "*possibility* of Dasein's *being.*" Be that as it may, the question still persists as to whether assigning oneself to

99 Heidegger, *Being and Time*, 99.
100 Ibid., 116.

a for-the-sake-of-which necessitates dwelling in the equipmental totality that has been assigned for the realization of that particular possibility. All equipment is constituted by an in-order-to structure, and it is this structure that in turn explains the existence of all equipment. Similarly, *Dasein* is constituted by inolvement in a for-the-sake-of-which, which in turn explains the being of *Dasein*. What is problematic about this co-constitutive relationship between equipment and equipmental totality, on the one hand, and *Dasein* and its involvement in work, on the other, is its circularity, which allows little room for change in either equipment or practices.

If the submissive mode of engagement can be said to be characterized by this co-constitutive relationship, the subversive mode of engagement, on the other hand, seems to fall outside the realm of this relationship. In not submitting oneself to the in-order-to structure of equipment the totality of the equipment loses its significance and gives way to the singularity of the artefact. When one does not have access to the requisite equipment, the artefacts that are in the vicinity are tinkered with, their assignments are situationally altered, and they are thereby appropriated for the purpose at hand. One crucial consequence of this mode of engagement is that the artefact does not withdraw into the background. It lacks that character of the ready-to-hand which makes it transparent during use. Therefore, breakdown plays out differently than it does in the case of the submissive mode of engagement, since the artefact exists in a realm somewhere in-between the conspicuous and the inconspicuous. As already noted, in this mode, there is no constitutive relationship between equipment and practices, and the same artefact can be appropriated for different practices and new artefacts can evolve out of a particular practice. Such a mode broadens the scope for change and novelty. The equipment is not so much 'discovered' as Heidegger would have us believe, but it is rather put together, tinkered out, assembled, or hacked into a novel artefact.

1.4.2 Consequences for Breakdown and Ontology of Artefacts

The subversive mode of engagement with artefacts has significant implications for Heidegger's breakdown analysis. Heidegger introduces his phenomenology of equipment breakdown in *Being and Time* when he addresses the question as to how the worldly character of the environment announces itself in entities within-the-world.

In this regard, he posits that

> the world itself is not an entity within-the-world; and yet it is so determinative for such entities that only in so far as 'there is' a world can they be encontered and show themselves, in their Being, as entities which have been discovered.[101]

His next move is to illustrate how it is that the world announces itself when equipment breaks down. His taxonomy of breakdown involves three situations whereby the ready-to-hand lose their readiness-to-hand and reveal their presence-at-hand. These include *conspicuousness*, *obtrusiveness*, and *obstinacy*. Conspicuousness occurs when a tool malfunctions. It is no longer usable for the purpose, and there is a break in its assignment or in-order-to structure. The conspicuous tool can however be restored to its readiness-to-hand through repair. Obtrusiveness occurs when things are missing, that is, not 'to hand.' In this mode of concern, we stand helplessly in our encounter with unreadiness-to-hand. This mode, for Heidegger, reveals the 'being-just-present-at-hand-and-no-more' of something ready-to-hand. In obstinacy, the third mode of concern, the unready-to-hand is encountered neither as unusable nor as missing, but as that "which 'stands in the way' of our concern." It refers to that to which our concern refuses to turn, that for which it has no time. Such unreadiness-to-hand is disturbing to us and prompts us to attend to it. For Heidegger, the function of these three modes of concern is to bring forth a reversal of the foreground and the background. The withdrawal of the ready-to-hand into the background is reversed such that the equipment becomes present-at-hand since it can no longer be used. However, the ready-to-hand is not threreby just observed and stared at as something present-at-hand; the presence-at-hand which makes itself known is still bound up in the readiness-to-hand of equipment."[102]

The second mode of concern is distinct from the other two in that while in conspicuousness and obstinacy the presence-at-hand which makes itself known is still bound up in the readiness-to-hand of equipment, in obtrusiveness, the equipment is encountered as 'just-present-at-hand and no more.' In the conspicuousness of the

101 Ibid., 102.
102 Ibid., 104; fn. 1.

unusable, the readiness-to-hand does not vanish but it still lingers, and it is through this that the worldy character of the ready-to-hand reveals itself. It must be noted here that inconspicuousness, unobtrusiveness, and non-obstinacy are positive phenomena with negative prefixes whereas conspicuousness, obtrusiveness, and obstinacy are negative phenomena with positive prefixes. The negative prefixes are there to denote that character of the ready-to-hand which enables it to 'hold itself in.' Heidegger refers to this as the being-in-itself of something. All functioning equipment has the character of holding itself in. But when it malfunctions—when its assignment is disturbed—the assignment becomes explicit and circumspectively aroused. Heidegger notes that in such instances

> we catch sight of the "towards-this" itself, and along with it everything connected with the work—the whole 'workshop'—as that wherein concern always dwells. The context of equipment is lit up, not as something never seen before, but as a totality constantly sighted beforehand in circumspection. With this totality, however, the world announces itself.[103]

From this we can discern the crucial function that equipmental totality plays in Heidegger's ontology. It is because all equipment is equipment only within an equipmental totality that a break in the assignment of a tool can let the world as a totality, which is over and above the equipmental totality, announce itself. As an aside, it is interesting to note that the translator's dependence on hyphenations to translate Heidegger's German neologisms into English conveys something interesting. Reading the hyphen figuratively and metaphorically, hyphenated categories—such as the 'in-order-to', 'ready-to-hand', 'towards-this', and 'for-the-sake-of-which'—connote an interconnected whole, a continuous chain of being, wherein the *Dasein*, equipment, workshop, world, enviroment, and nature are linked together in place by their respective assignments which constitute their being.

If we must give the subversive mode of engagement its due, then its consequences for breakdown must be examined. Sticking to Heidegger's terminology, the mode of concern of obtrusiveness could be understood as one wherein the equipment is not

103 Ibid., 105.

seen merely as something missing but as something that is not accessible—in the sense that one's toolbox is not equipped with this piece of equipment. And in such a context, the *Dasein* does not encounter that which is ready-to-hand as obtrusive but as having multiple assignments or uses. The required artefact is hacked or tinkered out of artefacts that are available in order to serve the desired purpose. A tinkered or hacked artefact is therefore never fully ready-to-hand or present-at-hand, never fully backgrounded or foregrounded, never fully withdrawn or explicit. It seems to exist in a state of *bracketed inconspicuousness*, if it may be called so. The world for such a *Dasein* is never fully familiar as it can be said to be for the *Dasein* engaged in a submissive mode. I shall therefore argue that this quasi-familiarity with artefacts and the world at large enables us to not just *discover* equipment but to uncover further dimensions of assignments for the same artefact. In the subversive mode of engagement, the being of what is ready-to-hand is not determined by references or assignments. This calls to question the ontology and normativity of artifacts.

Concluding Remarks

As discerned from the phenomneological–normative reading carried out herein, it is necessary to develop an ontology of artefacts that is sensitive to the different modes of engagement with artefacts and to analyze the norms that contribute to how artefacts are put to use in our everyday technological praxis. This shall provide us the context within which we shall read postphenomenology as an attempt to develop a philosophy of technological artifacts that is grounded in the empirical study of concrete technologies. It overcomes the abovementioned limitations of Heidegger's ontology of technical artefacts by conceiving them as being multistable, i.e., having multiple dimensions of use rather than a fixed, assigned purpose. In the next chapter, we shall turn to postphenomenology as a school of thought in contemporary philosophy of technology which aims to conceptualize the mediating role of technological artifacts and its implications for our being in the world.

Chapter 2: Postphenomenology and Philosophy of Technology

After having outlined the influence and departure of contemporary philosophy of technology from its classical counterparts, I shall now explicate on the contemporary approach known as postphenomenology. As laid out in the previous chapter, postphenomenology comes to being in the backdrop of the *empirical turn* in the philosophy of technology. It is an approach that takes the empirical turn to analyze concrete technological artefacts and the way they mediate our engagement with our lifeworld. Don Ihde, who is the progenitor of this approach, gathers his influences from both phenomenologists—such as Husserl, Heidegger, and Merleau-Ponty—as well as from pragmatists—such as John Dewey. Acknowledging his eclectic influence of post-Kuhnian philosophy of science, postmodernist philosophy, pragmatist turn to praxis, and non-foundational phenomenological analysis of experiential structures, Don Ihde developed postphenomenology as a unique approach to technological artefacts and to technologically embodied science that takes a morally ambivalent stance towards technologies and their social effects, whilst emphasizing on a descriptively rigorous analyses of the invariant structures involved in our engagement with those artefacts.

2.1 Non-foundational Phenomenology

Postphenomenology is now an established method in STS (Science and Technology Studies) and philosophy of technology. It is well suited for post-empirical-turn philosophy of technology owing to its non-foundational, anti-Cartesian, and anti-essentialist approach toward particular technologies. As a research program, postphenomenology affords a method for case studies into concrete technologies and precludes any transcendentalist approach that abstracts from particular technologies to technology-with-a-capital-T. Owing to postphenomenology's contemporary prominence and also to the problematic philosophical import of its prefix, there has been constant question begging with reference to this neologism: Why postphenomenology? It is therefore instructive to undertake a historico–philosophical inquiry into the emergence of postphenomenology as a method. In this section, I shall attempt to reconstruct the philosophical lineage of postphenomenology from Ihde's works. This shall enable to situate this method in the larger philosophical context.

It should be noted at first that the neologism 'postphenomenology' had not appeared in Ihde's work until the 1990s.[1] To trace its emergence is to trace the academic and philosophical antecedents that preceded it.[2] Although there is a certain continuity in Ihde's work prior to and after the appearance of the neologism, this neologism captures a shift in emphasis in Ihde's philosophy. After having been dissatisfied with the mainstream North American philosophy, which had been predominantly analytic in orientation, Ihde had turned to the then recent import into North America of existentialism, phenomenology, and hermeneutics. It should be noted that Ihde's first book had been based on his dissertation on Paul Ricoeur's hermeneutic phenomenology. If his initial foray can be characterized as writing *about* phenomenology, his subsequence works have all tended toward following the Husserlian imperative of *doing or practicing* phenomenology. From an expository mode of engaging with hermeneutic phenomenology, one can see a clear shift in emphasis toward an appropriation of phenomenology, first starting with a "phenomenology of work."[3] This could be viewed as the originary moment for Ihde's subsequent forays into philosophy of technology. Ihde outlines the problematic of this project thus:

> What do we do when we are actively engaged with some project? What emerged was a growing recognition that from the most ordinary and even trivial activity, we engage with technologies....This exercise grew into my early attempts to phenomenologically account for a variety of human–technology relations.[4]

Ihde's work at this moment in time can be characterized as a '*phenomenology of technics'* involving the experiential analyses of human–technology relations. Tracing the shift from an exposition of Paul Ricoeur's hermeneutic phenomenology to practicing a phenomenology of technics, one can clearly see a move from an

1 The neologism seems to have made its debut in Ihde's work of the same name in 1993. See Don Ihde, *Postphenomenology: Essays in the Postmodern Context* (Evanston: Northwestern University Press, 1993). See also Don Ihde, Preface to the Second Edition, *Experimental Phenomenology: Multistabilities*, 2nd ed., (Albany: State University of New York Press, 2012), xv.

2 For example, refer to Don Ihde, preface to *Husserl's Missing Technologies* (New York: Fordham University Press, 2016).

3 Ihde, *Husserl's Missing Technologies*, xiv.

4 Ibid., p. xiv.

expository mode of engagement with phenomenology to a praxis-oriented engagement. In fact, Ihde characterizes his "style of philosophizing" as "problem-oriented" and dismisses any claim of being a "philological scholar."[5] This problem-oriented, pragmatic spirit would eventually lead to the appropriation of pragmatism into phenomenology that would come to be characterized as *postphenomenology*. This appropriation works to eliminate the residual foundationalism of classical, Husserlian phenomenology, which borrowed its transcendental character owing to Husserl's philosophical debts to Descartes, Kant, and William James. This residual transcendentalism had led to a series of modifications of phenomenology by Husserl followers themselves—with Heidegger, Gadamer, and Ricoeur taking it in a hermeneutic direction, and with Maurice Merleau-Ponty injecting into it an embodied, existential, and situated perspective. Postphenomenology could be read as Ihde's contribution to these series of modifications through time of Husserlian phenomenology.

Furthermore, Ihde acknowledges Richard Rorty as having a major philosophical influence on his development of postphenomenology. Ihde could be read as doing with phenomenology what Rorty had done with pragmatism. One cannot overlook the echo in Ihde's *Consequences of Phenomenology* (1986) of Rorty's *Consequences of Pragmatism* (1982). Ihde's contribution to phenomenology is to lay bare its non-foundationalism to those critics who claim that it is a subjectivistic philosophy and find its anti-scientific and anti-technological stance quite problematic. Ihde's modification is therefore to address such skepticisms about phenomenology by showing how close it comes to pragmatism and how one can build a non-foundational phenomenology by bringing the two in contact. *Consequences of Phenomenology* is Ihde's response to Rorty, who, in endorsing Heidegger over Husserl, overlooks both the non-foundationalism of Husserl as well as the phenomenological roots of Heidegger. Ihde attempts to bring Dewey and Husserl in dialogue in order to expose how close the two contemporaries from across the continents came to be. It is to Rorty, however, that Ihde owes his approach to phenomenology. He notes,

> what Rorty had succeeded in doing for me was to help me see that while both Dewey and Husserl had similar anti-Cartesian programs, similar philosophies

5 Ibid., p. xvi.

> based upon human experience, and both produced what can be called inter-relational ontologies, the pragmatist program succeeded in avoiding precisely the "subjectivist" cast which Husserl's too-close use of subjectivity, philosophy of consciousness, and subject/object language could not avoid. And while Husserl's *ego–cogito–cogitatum* version of intentionality was clearly an inter-relational ontology, Dewey's adaptation of a (creative-imaginative) organism-environment model also succeeded in not appearing to be either subjectivist or anti-scientific. Pragmatism had much to offer to phenomenology in just this sense.[6]

Ihde's non-foundational phenomenology therefore owes its debt equally between Deweyan pragmatism and Husserlian phenomenology. If pragmatism enabled phenomenology in eliminating its foundationalism, essentialism, and subjectivism, Ihde envisions phenomenology as "enriching pragmatism" through the techniques that it could bring to any analysis of experience.[7] According to Ihde, phenomenology could enrich pragmatism by contributing the following concepts and techniques: experience, variational theory, multistability, embodiment, and critical hermeneutics. Each of these concepts are reinterpreted by Ihde along a pragmatic vein in order to synthesize a non-foundational "pragmatic phenomenology" that shall eventually pave the way to postphenomenology. In the hands of Ihde, the notion of experience retains its intentional character—which it inherits from classical phenomenology—while at the same time taken to be a contextual and relational category—owing to its roots in Dewey's pragmatist conception of experience as being situated within the organism–environment relation. This notion of experience avoids the subjectivistic and Cartesian residues that had plagued classical Husserlian phenomenology.

Variational theory plays a significant role in the non-foundationalism inherent to Ihde's phenomenology. Ihde borrows this phenomenological practice from Husserl's notion of fantasy variations as outlined in his *Ideas I.*[8] For Husserl, fantasy variations are integral to the phenomenological method in that they lead us to the essence of an object of experience. Husserl is laying emphasis on imagination and fiction for getting to the *eidos*, the essence of any experience. Ihde incorporates this method of analysis

6 Don Ihde, "Introduction: Postphenomenological Research," *Human Studies* 31, no. 1 (2008): 3.
7 Ihde, *Husserl's Missing Technologies*, 111.
8 See David Woodruff Smith, *Husserl*, 2nd ed., (Oxon: Routledge, 2013), 312.

as indispensable to his phenomenology. However, a major distinction between Ihde and Husserl must be noted. The variational method for Husserl led to the invariant and the essential. On the other hand, for Ihde, the variational method leads to the anti-essentialist result of objects as being *multistable*. This concept occupies a central role in Ihde's philosophy of technology and is the main method adopted for *doing as well as teaching* phenomenology in his book *Experimental Phenomenology* (1977; first edition). Keeping in line with anti-essentialism, Ihde's method of variational analysis, when applied to concrete technological artefacts, guards against any form of technological determinism. In the case of artefacts, the variational analysis proceeds from the structurally given physical artefact and results in the recognition of what Ihde calls *multistructures*.[9] One can also find this method employed in Ihde's phenomenological investigations into scientific praxis, a major part of which involves the interpretation of technologically mediated digital images.

The two other features that Ihde infuses into his phenomenology have to do with embodiment and hermeneutics. Ihde endorses the modifications brought in to classical Husserlian phenomenology first by Heidegger and then by Merleau-Ponty. Whereas the former infused the necessary turn to the historical, cultural, and practical aspects of being into a phenomenological hermeneutic ontology, Merleau-Ponty stressed the essential role of the body and embodiment in perception and thus phenomenology. Finally, Ihde acknowledges the contributions of Heidegger, Paul Ricoeur and Has-Georg Gadamer in the transformation of phenomenology into a phenomenological hermeneutics, whereby the essentially hermeneutic character of perception is brought to bear on ontology as well as epistemology. These features have come to characterize and pervade through all of Ihde's philosophical investigations. It is imperative however to take note of one major influence on Ihde before we can explicate his philosophy.

Although Ihde confesses to coining 'postphenomenology' as a much simpler alternative to 'non-foundational phenomenology', one could clearly see Ihde as coming under the sway of postmodernism and the then predominant fixation toward the prefix "post."[10] The emergence of STS and feminist philosophies of science in the

9 Ihde, "Introduction: Postphenomenological Research," 6.

10 In the introduction to the book *Postphenomenology: Essays in the Postmodern Context*, Ihde writes, "Today we live amidst the 'posts.' It is a post-industrial era, a postnuclear period, and there

wake of post-Kuhnian philosophy of science have contributed significantly to Ihde's postphenomenology. This contribution has been cashed out in terms of considering the social, political, situated, cultural, embodied, and historical aspects of any subject of inquiry. Tracing the trajectory of Ihde's philosophical investigations, one can see a continuity between his early phase involving a phenomenology of technics to the middle phase of developing postphenomenology as a method of analysis and then moving to the later phase of expanding hermeneutics to include the study of scientific praxis. Regardless of its postmodern influences, the method of postphenomenology should be seen in contrast to the "textism" that pervades much continental thought. Ihde vociferously reminds his readers to take note of that this method is "recognizably 'Husserlian' in spirit, in the sense that it is 'to the things themselves' that the researcher turns and with a new sense of *doing* science."[11]

2.2 Postphenomenology

2.2.1 Postphenomenology as Fusion of Pragmatism and Phenomenology

Don Ihde offers insightful and idiosyncratic readings of both pragmatism and phenomenology whereby he proposes to look at the heritages of both pragmatism and phenomenology with the aim of discerning those concerns which they share mutually with the aim to integrate them into *postphenomenology*.[12] He notes at the outset that both pragmatism and phenomenology began as "philosophies of experience." Ihde distinguishes between two kinds of heritage—*scholarly* and *praxical*. While the former is more interpretative, expository, and historiological, the latter is more praxical, adaptive, and evolving. He cites examples of analytic philosophers such as William Van Orman Quine, Donald Davidson, Wilfrid Sellars, and Hillary Putnam, who "rather than *doing* Dewey *scholarship*, took Deweyan *practices* into their own work."[13] This adaptation of pragmatism into analytic philosophy resulted in an

is postfeminism, postanalytic philosophy, and above all, postmodernism—so why not postphenomenology? All these 'posts' are, perhaps, something like a technological society's substitute for previous metaphorical forests, within which one could get lost. What all the postmodern captures is the sense of transition, of a proliferating pluralism, and—for the nostalgic—a 'loss of the centers' or 'foundations.'" Don Ihde, 1993, *Postphenomenology: Essays in the Postmodern Context*, Northwestern University Press: Illinois.

11 Ihde, "Introduction: Postphenomenological Research," 9.

12 Ihde, *Experimental Phenomenology*, 115.

13 Ibid., 116 (my italics).

analytic pragmatism that was "nonfoundational, nontranscendental, anti-Cartesian, and, although now situated in a style of philosophy that centered itself on logic and linguistics, was pragmatic." Noting this, Ihde prefers to call the analytic pragmatists as *postpragmatists* (this is not surprising, given his fixation for all things *post*-).[14] A preference for the praxical over the scholarly, the adaptive over the historiological, and the prescriptive over the expository can be seen as illuminating Ihde's entire project of postphenomenology. This explains on the one hand postphenomenology's eclectic approach while at the same time it also points to its lack of ontological commitment.

Ihde's point of departure in bringing about a consensual intercourse between phenomenology and pragmatism is the notion that there exist themes in Husserl which come very close to those in pragmatism.[15] These themes include: (a) historical-cultural origins, (b) focus upon praxis, and (c) role of instruments. Ihde turns to two of Husserl's salient works—*The Crisis of European Sciences and Transcendental Phenomenology* (1936; hereafter referred to as *Crisis*) and *The Origin of Geometry* (1962)—and characterizes them as follows:

> ...[I]t is in these works that hints of how close he comes to pragmatism—even to a possible nonfoundationalism that would be open to what I am calling "postphenomenology."[16]

What Ihde means when he refers to the historical element of phenomenology is Husserl's backward inquiry into the *origins* of geometry which shall eventually lead Husserl to an inquiry into the measuring practices that were necessitated by the lifeworld of early Egyptians, which involved repeated reestablishment of the boundaries of their rice fields after the annual flooding of the Nile. It is this backward questioning which connects phenomenology with historical, cultural, and traditional practices that Ihde is looking for in his reading of Husserlian phenomenology. And he finds this shift in Husserl's thought from the transcendental and foundational to the

14 Ibid., 116. This includes postphenomenology, postpragmatism, postmodernism, post-Kuhnian philosophy of science, post-analytic philosophy, etc.

15 It must also be noted that in another article, Ihde focuses on the extent to which Husserl differed from the pragmatists. See Don Ihde, "Husserl's Galileo Needed a Telescope!," *Philosophy & Technology* 24 (2011): 69–82.

16 Ihde, *Experimental Phenomenology*, 118.

historical and antirepresentational to "echo Heidegger's destruction of the history of metaphysics."[17]

Moving on to the next theme, Ihde notes that this backward questioning is in and of itself an examination of the practices out of which origins occur. Therefore, Husserl, in situating the origins of geometry in the lifeworld practices (measuring practices, in the case of geometry) of ancient Egypt is providing a phenomenological testament to the pragmatist claim that practices precede theory and technologies precede science. Ihde calls out to the following characterizations of pragmatist philosophy: a shift from a representationalist belief epistemology to an actional or practice-oriented analysis; beliefs as habits of action—located in historical and social processes—than as representations of reality; anti-essentialism with respect to notions of truth, knowledge, language, and morality; shift from beliefs and representations to the recognition of practices within human culture and society; emphasis on practice rather than theory and on action rather than contemplation.[18] In parallel, he notes how while the earlier Husserlian phenomenology, owing to its Cartesian and Kantian roots, was a weakened idealism, the historical and praxical analysis by the later Husserl in the *Crisis* and *The Origin of Geometry* reflects a closer affiliation of phenomenology with pragmatism.

The third—and also the most crucial—element in the link that connects Husserl with pragmatism is the recognition and emphasis of the role of technologies or instruments in all praxis, and more importantly, in scientific practice. Ihde finds in the later Husserl a sensitivity to the role of technologies and practices in the generation of scientific knowledge. This is in contrast to the early Husserl's *classical* phenomenology in which technologies rarely, if ever, are taken into consideration. Comparing the early Cartesian Husserl with Heidegger, Ihde notes of Husserl's world as being one which is

> ...primarily that in which an ego comes in contact with objects, "out there, passively received objects." Husserl, in this sense, remains in strong contrast to Heidegger's claim that we first encounter "tools" in praxical contexts and that

17 Ibid., 119.
18 Ibid., 117.

objects in the above sense, appear only after a rupture or breakdown in our everyday practices.[19]

The later Husserl, however, makes a move against his own earlier Cartesianism by recognizing the role of technologies (albeit from a more traditional perspective) in our lifeworld. Ihde characterizes this Husserl as the "late *Crisis* and 'Origins' Husserl."[20] This 'postclassical' Husserl is the Husserl of 'genetic phenomenology' as opposed to the earlier Husserl of 'static phenomenology,' and Ihde is much more sympathetic to the former over latter.[21] It is herein that one finds a more practice-oriented and actional phenomenology. Ihde's strategy of reading Husserl is therefore to discern and appropriate those features of Husserlian phenomenology which are amenable to the inherently technological character of praxis in our contemporary lifeworld and discard those elements which are infused with a vestigial transcendentalism owing to Husserl's Kantian and Cartesian inheritance. In this he endorses Donn Welton's reading of Husserl which places the "standard interpretation" of static phenomenology in start contrast with the genetic phenomenology that emerges from the later writings and lectures of Husserl.[22] Ihde finds in the later Husserl dispersed but underdeveloped notions of qualitative changes in experience brought about by mediation through technologies and instruments.

Ihde reads the later Husserl both in terms of his views on science as well as technology. Although he finds that Husserl has a lot to say about science, he finds a major oversight that leads him to draw an essential distinction between our lifeworld —with all its plenary richness—and the world of science—with its theoretical, abstract, ideal, and derivative entities.[23] What Husserl overlooks is the essentially instrumental—and hence embodied, material, and technological—character of science. It is largely due in order to our theory-biased philosophies and histories of science that we have been presented with a Platonic and disembodied science. Ihde's

19 Ibid., 121.
20 Ibid., 121.
21 Ihde notes: "His [Husserl's] own uses of Descartes and Kant, although reflecting off each, effectively inverted each and I would contend ended up in the actional-focused genetic phenomenology, which my colleague Donn Welton has argued for in *The Other Husserl*." Ibid., 117.
22 See Donn Welton, *The Other Husserl: The Horizons of Transcendental Phenomenology* (Bloomington: Indiana University Press, 2000).
23 Don Ihde, *Instrumental Realism: The Interface between Philosophy of Science and Philosophy of Technology* (Bloomington: Indiana University Press, 1991), 103.

instrumental realism therefore aims at drawing attention to an increasing consensus toward a *new* philosophy of science that sees science as a praxiological, embodied, historical, and perceptual aspects of science.[24] Within the worldview of this new philosophy of science, the Husserlian distinction between our lifeworld and the world of science can no longer hold water since science is just as much phenomenological and technologically embodied as is our everyday world of technological praxis. Ihde thus argues for a philosophy of technoscience whereby understanding science entails understanding technology.[25]

The larger methodological point that Ihde takes from pragmatism and the later Husserl is to emphasize that all praxis involves human—material interaction. Echoing Dewey, "there is no difference in logical principle between the method of science and the method pursued in technologies."[26] Echoing Husserl and Heidegger, the subject is not an ego in isolation but is rather a being-in-the-word who is always already correlated with and directed to the object. The subject—object and human—artefact interaction is an open-ended process that results in novel appropriations of both the human as well as the artefactual. To understand technology is therefore to understand it in relation to the human user, i.e., in terms of the human—artefact relationship. Just as the subject and object are co-constituted, so is the human and the technological artefact. Neither can be understood in isolation if one aims to be unbiased. The objective of Ihde's postphenomenology is therefore to develop a method that enables to understand this co-constitutive relationship, always already as correlated to one another. Ihde's method is therefore a phenomenological analysis of human—artefact relationships. One of the characteristic features of postphenomenology arising out of its own method is a suspension of any ethical characterization of the social ills brought about by technologies. This as we shall see shall pose a serious challenge to postphenomenology as a philosophy of technology.

2.2.2 Phenomenology as Phenomenological Hermeneutics

In the above discussion, we have explicated Ihde's formula for

24 Ibid., p. 11.

25 I am not so sure whether Ihde would concede to the addition of the 'vice versa' clause at the end of the sentence. Would understanding technology necessitate understanding science? This is an open question to Ihde.

26 As quoted in Ihde, *Experimental Phenomenology*, 121.

postphenomenology as pragmatism + phenomenology. By expanding phenomenology as phenomenological hermeneutics, this formula can be further expanded as pragmatism + phenomenology + hermeneutics. In order to understand postphenomenology, it is imperative to understand the influence of the hermeneutic method on Ihde's postphenomenology. Following Heidegger's transformation of Husserlian phenomenology, phenomenology for Ihde is essentially hermeneutic phenomenology. In fact, it is instructive to note that Ihde's doctoral dissertation is on Paul Ricoeur, and his first published book is titled *Hermeneutic Phenomenology: The Philosophy of Paul Ricoeur*.[27] There is much that can be said of the influence of hermeneutics on Ihde's philosophy of technology. I shall reserve for later the argument that Ihde's hermeneutic inheritance imposes limitations on our understanding of technology. For now it shall be imperative to illustrate Heidegger's transformation of Husserlian phenomenology into a hermeneutic phenomenology.

2.2.2.1 Heidegger and Hermeneutic Phenomenology

Heidegger's departure from Husserlian phenomenology is inaugurated when he points to the essentially hermeneutic or interpretative character of phenomena. As opposed to Husserlian transcendental phenomenology that treats phenomena as having "essences" that can be reached at through the application of the phenomenological reduction, Heidegger turns his ontological gaze back to the Greeks in order to unearth an existential and hermeneutic phenomenology that can enable a much more comprehensive 'understanding of Being.' For this purpose, Heidegger turns to Aristotle, in whose work he finds the phenomenological groundwork for formulating that much-forgotten question of Being.[27] Heidegger's phenomenological reading of Aristotle forms the groundwork for the existential analytic of Dasein in *Being and Time.* In fact, Sheehan notes how "Aristotle appears directly or indirectly on virtually every page (of *Being and Time*); the nature of the influence is concealed behind the language of *lebensphilosophie."*[28]

It is also in such a phenomenological reading of Aristotle that hermeneutics

27 Don Ihde, "Self-Presentation," in *American Phenomenology: Origins and Developments*, Analecta Husserliana, vol. 26 (Dordrecht: Kluwer Academic Publishers, 1989), 222.

27 See Thomas J. Sheehan, "Heidegger, Aristotle, and Phenomenology," *Philosophy Today*, Summer 1975, 87.

28 Ibid.

necessarily enters into the picture. This is how this line of thought could be traced. Firstly, Heidegger's reverence for the Greeks is due to the fact that they "were the first to experience being (*to on*) as *phainomenon*, that which of itself shows itself, that which appears...brings itself to radiant self-manifestation...and 'is' precisely insofar as it shows itself in that self-manifestation."[29] Now in appearing, a being always appears "as" something—as something meaningful. This as-character of beings "bespeaks the arrival of meaning...and occurs only with the arrival of man."[30] Now whereas an ontic inquiry directs itself to the being that is revealed in this as-character (that is, as a being within such a modality), an ontological inquiry, according to Heidegger, is an inquiry into the question of their "appearing-as as such." That is into the a priori horizon that grants this as-character to beings. And following Aristotle, Heidegger situates this horizon in *Logos*, whose essential character is *aletheuein* or unconcealment. All this culminates to the argument that in order to do first philosophy, that is in order to get to do ontology, the method *has to be* phenomenological. In other words, "only as phenomenology is ontology possible."[31]

This begs the question as to what kind of a phenomenological method must be employed for such an understanding of Being? For Heidegger, the answer is clear. It *has to be necessarily* hermeneutic. Heidegger's answer to question-begging Husserlians would be something along these lines. The uniqueness of Dasein lies in that aspect which the Greeks characterized as *zooon logon echon*, that is, as a living being that has *logos*. Dasein is the locus of meaning and therefore "has access to beings only in terms of some modality of their appearance-as in *logos*."[32] There are therefore no interpretation-free facts or essences that we can have access to, as Husserl would want us to believe. Rather, the task of the ontologically inclined phenomenologist is to *interpret* phenomena that she encounters within her everyday activities wherein she dwells. It is here that entities attain the meaning and significance that they hold. Thus it comes to be that for *Dasein*, *to on* is *legomenon*, that is, "read" beings—beings articulated according to the multiplicity of modes of meaningful presence that are expressed in the implicit "as" or the explicit "is" of apophantic discourse.[33]

29 Ibid., 89.
30 Ibid.
31 Ibid., 90.
32 Ibid.
33 Ibid., 89.

It is herein that the investigation has to necessarily adopt a hermeneutic method. Following Wilhelm Dilthey and generalizing the hermeneutic method to apply not just to texts but to all human activities, Heidegger transforms the task of pure phenomenology into a phenomenological hermeneutics of existence whereby the understanding of being is unconcealed interpretatively within the context of the activity that one finds oneself to dwell within. To put it in the language of formal hermeneutics, all understanding of being must be carried out within the hermeneutic circle (which must not be taken to mean a vicious circle). As Dreyfus very succintly outlines: "Since we must begin our analysis from within the practices we seek to interpret, our choice of phenomena to interpret is already guided by our traditional understanding of being."[34] However, one essential difference between Heidegger and Dilthey must be noted herein. Whereas Dilthey was concerned with the understanding of life expressions, as exemplified in the human science (and differentiated this from the explanatory paradigm of the natural sciences), for Heidegger, hermeneutics is a fundamental–ontological principle in that it is not delimited by any domain of inquiry. It is an a priori ontological structure that precedes any inquiry.[35]

2.2.2.2 Don Ihde's Phenomenological Hermeneutics

Don Ihde endorses this Heideggerian hermeneutic transformation of the phenomenological project. At the same time, one can see in Ihde a much more insightful and sympathetic reading of Husserl than Heidegger has to offer. Ihde's reading offer an inroads into the invariant kernel of Husserlian phenomenology, not so much as a school of thought but as a strategy, an experiment, one which is always in a due process of evolution. Discerning the Husserlian strategy as he finds employed in the *Cartesian Meditations*, Ihde notes how, although phenomenology shared with Cartesian philosophy much of its tenets, it arrived at radically conclusions. For example, one can note the following parallels between Cartesian philosophy and Husserlian phenomenology: the Cartesian method of doubt as analogous to the Husserlian method of bracketing; the Cartesian analysis of clear and distinct ideas and the Husserlian geometrical method; the Cartesian cogito and the Husserlian

34 Dreyfus, *Being-in-the-world*, 36.
35 Thomas M. Seebohm, *Hermeneutics: Method and Methodology* (Dordrecht: Kluwer Academic Publishers, 2004), 165.

transcendental ego, etc. In stopping one's inquiry at such superficial similarities, one misses the radical import of phenomenology. Ihde lays crucial emphasis on this aspect of Husserl in noting

> What phenomenological "suspension" showed was *the ultimate indubitability of the world*; what the analysis showed was that "givens" *are in fact constituted* by a complex process and not simples; and what "subjectivity" revealed ultimately was the *intersubjectivity* of the transcendental.[36]

Ihde's penetrating reading of Husserl lays bare the Husserlian method at work. In it Ihde finds a "latent archeology," an implicit "hermeneutic process" whereby the seemingly familiar is undercut by placing it in brackets. It is then made the object of examination whereby it is taken apart from a new perspective. This process is archaeological in that the "the layers of the seemingly given object are unlayered so that both the object and the process by which the object is constituted are discovered."[37] Husserl, according to Ihde, is a "naive hermeneut" in that he was unable to break free from the Cartesian baggage that followed from the use of the traditional Cartesian language within which the Husserl of *Cartesian Meditations* situated himself.[38] Ihde traces this as the reason for most critics of Husserl to read him as anything but an idealist. Ihde finds this Cartesian inheritance of phenomenology as the major point of contestation between Husserl and his followers. He sees Husserl's followers as continuing the project of phenomenology albeit in a radically new language that does not fall prey to the paradoxes and anomalies arising out of the inescapable legacy of traditional Cartesian philosophy.

Ihde thus offers a unique perspective from which to view phenomenology. He reads into the works of Heidegger and Ricoeur a continuum of themes whose origin cannot lie but within Husserlian phenomenology. Heidegger in this reading comes to be known as a "radical hermeneut" who existentializes Husserl and appropriates phenomenology to fundamental ontology "by coining a radically new language which skirted or circumvented the terminology of subject—object and the constitution of

36 Don Ihde, "Interpreting Hermeneutics: Origins, Developments, and Prospects," *Man and World* 13 (1980), 330; republished in Don Ihde, *Expanding Hermeneutics: Visualism in Science* (Evanston: Northwestern University Press, 1998), 14; emphasis in original.
37 Ibid., 330.
38 Ibid., 331.

knowledge."[39] The conceptual and linguistic richness of this language derives from a drawing upon the much forgotten etymological roots of concepts arising out of the familiar language of rationalism and empiricism, which, as a result of this forgetfulness, are incapable of an adequate understanding of being. This backward inquiry invariably leads Heidegger to an appropriation of the Greek language. Within this radically new language, Husserlian 'intentionality' transforms into 'being-in-the-word'; 'ego' is transformed into '*Dasein'*, and epistemology is transformed into fundamental ontology. But the important point to bear in mind is that the core of phenomenology as a method remains unchanged for Ihde.[40] Moving from Heidegger to Paul Ricoeur, the preeminent French scholar of both Husserl and hermeneutics, Ihde characterizes him as a "restorative hermeneut."[41] Ricoeur's strategy is to arrive at a synthesis through a dialectic process that is receptive of opposing views, with the aim of arriving at "new meanings, a 'third term'."[42] The Heideggerian strategy is "too direct" in that it brings a radical break with the existing language, thereby precluding any dialogue between the conventional and its alternate.

A major shift in perspective occurs with the influence of hermeneutics in phenomenology. This has to do with whether primary importance is attributed to language or perception. Ihde notes that whereas Husserl's empiricist inheritance made him assign greater importance to the structures of perception and consciousness, Heidegger's and Ricoeur's hermeneutic inheritance made them assign primary importance to language and discourse over perception. This shifts the inquiry from an atemporal analysis of the structures of consciousness to a temporal analysis of language, texts, symbols, and interpretations. Regardless of the various transformations ushered in by subsequent hermeneutic phenomenologists, what remains invariant across these changes is the ontological significance of intentionality as the foundational correlational rule. As we shall see, this rule plays the most significant methodological role in Ihde's postphenomenology. The methodological labor that this rule performs is to point to intentionality as the apriori, ontological,

39 Ibid., 331.

40 One can see at play here Ihde's variational analysis whereby one gets to the invariant structure that makes up the core of an object of investigation. This is gotten to by performing imaginative variations from different perspectives and arriving at the unchanging invariants. Much of Ihde's postphenomenology can be seen as a variation analyses of human–artefact relations. This shall be taken up in more detail in Chapter 4.

41 Don Ihde, "Interpreting Hermeneutics," 332.

42 Ibid., 330.

condition of possibility for there being either a subject, object, or world.

In Ihde's reading of phenomenology, the post-Husserlian existential, hermeneutic phenomenologists are not seen as pioneers who had developed a novel method in sharp contrast to Husserlian phenomenology. Rather, Ihde urges us to note that it is vital to note of the "contributions made by Husserl for the transformation of contemporary hermeneutics and its existential philosophy of language."[43] Ihde thus urges us to understand Husserl "with the actual *results* of his phenomenology and with the key notions understood in terms of their *functions.*"[44] Such a functional analysis of phenomenology lets us see that which remains constant through its various transformations. Ihde finds this invariance in the notion of intentionality as the ontological correlational rule whereby the object of experience and the act of experience must always be seen as interdependent. In Husserlian language, the *noema* (object-correlate) and the *noesis* (subject-correlate) are never separate.[45] Ihde notes the radical implications of the correlation to mean that it is indubitable that there exists a world out there, and more importantly, and the subject-correlate can only be known through the object-correlate. There is no subject that can be investigated in isolation from the world. We shall see how this foundational correlation has implications for a philosophy of technology that takes artefacts seriously. The "phenomenological order of procedure" therefore suggests that we begin our investigation with the noema and work back reflexively to the subject. Phenomenology can no longer be labeled as a form of subjectivist idealism in so far as its analysis begins with 'the things themselves' and works its way reflexively back to the subject. Ihde finds in Heidegger an almost complete adaptation of this Husserlian model of analysis. We have already seen an instance of this in the previous chapter wherein the existential analysis of *Dasein* begins with an analysis of the worldhood of the world (Chapter 3 of *Being and Time*). However, Ihde finds three major modifications ushered in by Heidegger to Husserlian phenomenology: first, every element in the analysis is existentialized; i.e., interpreted existentially rather than from a psychological or epistemological point of view. Second, the existential analysis of *Dasein* is performed through the hermeneutic

43 Ibid., 332.
44 Ibid.,
45 It must be noted that Husserl scholarship is divided upon what Husserl meant by 'noema'. Does it refer to the object out there in the world, or does it mean something akin to sense in Frege? Here we can see that Ihde is taking it to mean the object out there in the world. For an exposition of the various interpretations of the noema, see the appendix to David Woodruff Smith, *Husserl*, 290.

method of analysis which applies to *Dasein's* world at large. Third, Heidegger takes apart notion of "being-in as such" (which Ihde finds to be the Heideggerian alternative to the Husserlian intentionality) and divides it into "three equiprimordial dimensions: state of mind, understanding, and discourse. These are the primordial ways in which *Dasein* is related to the world."[46] Ihde finds the arrival of language into analysis with the Heideggerian transformation of phenomenology and maintains that the "philosophical focus of phenomenological hermeneutics...is an existential philosophy of language."[47]

This explains for Ihde the turn to poetry in the case of Heidegger and the turn to metaphor in the case of Ricoeur. It is Ihde himself however who ushers in the turn to technologies within phenomenological hermeneutics. He acknowledges the influence of Heidegger on this turn in noting how "Heidegger...saw clearly the question of technology as a hermeneutic problem."[48] Taking account of contemporary technological advancements, Ihde highlights how language has been transformed into unique technical dialects such as mathematics and programming languages. Moreover, language has come to be embodied and mediated through various technologies of communication. We are no longer at the mercy of the audible range of sound but can now receive and transmit messages across the oceans thanks to radio and satellite communication. Ihde sees these technologies as "texts that call for new types of hermeneutics."[49] As a preliminary step for a program toward a hermeneutic philosophy of technology, he notes

> This explosion of language into "languages" with its accompanying diffusion into technological embodiments saturates and changes our "World." And if phenomenological ontology is correct, when one correlate (the world) changes it implies a change in the other (ourselves) but this change can only be understood by understanding the change in the "World."[50]

Ihde thus makes the case for hermeneutics to expand to a study of technologies, which

46 Don Ihde, "Interpreting Hermeneutics," 336.
47 Ibid., 339.
48 Ibid., 340.
49 Ibid., 341.
50 Ibid.

are the most ubiquitous "texts" of contemporary life. Following Heidegger, Ihde explicitly endorses the view that technology can better be understood as "a kind of being," "a language-analogue than as a thing-analogue." It is in his much later essay "Philosophy of Technology as Hermeneutic Task" that Ihde retrospectively outlines the framework for a phenomenological hermeneutics of technologies.[51]

2.3 Hermeneutics and Philosophy of Technology

Now that we have laid bare the philosophical method of phenomenological hermeneutics, we shall now turn to how it gets appropriated by Ihde into a philosophy of technology. I shall argue that the constant thread that runs throughout Ihde's writings on science and technology is the method of phenomenological hermeneutics expanded and modified suitably for the subject of analysis. Ihde's philosophy of technology involves the expansion of phenomenological hermeneutics to understanding the "hybrid" relation between humans, technological artefacts, and the world. Ihde calls this project "phenomenology of human—technology relations."[52] Many of Ihde's writings provide us with detailed philosophical history of how the "grafting" of phenomenology and hermeneutics had come about through the writings of the most influential hermeneuts, Hans-Georg Gadamer, Martin Heidegger, and Paul Ricoeur. It is with these writers that hermeneutics becomes "*phenomenologically informed*."[53] Such a grafting of the two methods enables the turn toward more foundational and ontological concerns than what was once taken to be the subject matter of hermeneutics—the analyses of textual meaning. As noted already in the above sections, phenomenological hermeneutics, post-Heidegger has been appropriated as the method that can provide access to an 'understanding of being'.

The method of phenomenological hermeneutics thus attained an ontological import in aiming at a "hermeneutic of human existence."[54] Ihde's project neatly fits within this ontological emphasis. Ihde reminds us that contemporary human experience is technologically textured in that it is always already technologically mediated and we can no longer dream of going back to the primitive 'garden' which is but only an

51 First appearing in Ihde, *Expanding Hermeneutics*, refer Chapter 3.
52 Don Ihde, *Expanding Hermeneutics*, 47.
53 Ihde, *Expanding Hermeneutics*, 77.
54 Ibid.

imaginary vestige free of any artefactual mediation between the human and the world. Our ontological condition is such that we have always been and will continue to be beings whose survival and existence has involved the creative use and appropriation of technological artefacts for various means and ends. Ihde thus turns his hermeneutic gaze to the ubiquitous and ever-present technological mediation between the human and the world. Ihde thus conceives of "philosophy of technology as a hermeneutic task." It would be instructive herein to note the shift in the "hermeneutic task" through the works of the pre- and post-Heideggerian hermeneuts. Ihde notes how modernity was witness to an expansion of hermeneutics. This meant that not just theological texts but also the sciences came to fall under the purview of hermeneutics. In this context, Ihde notes

> In the cases of both Friedrich Schleiermacher and Wilhelm Dilthey, what had been textual interpretation was transformed into a "philosophical anthropology," with the former, and into the sciences of *Verstehen* with the latter. In both cases, however, the humanities or human sciences with principles of "understanding" or interpretation were differentiated from the natural sciences and principles of "explanation."[55]

Ihde's hermeneutics is (pace Heidegger) post-Diltheyan in the sense that he argues against any strong separation between the human sciences and the natural sciences (contra Dilthey). Dilthey, it must be remembered is the proponent of the essential separation between the natural sciences and the human sciences. Whereas the former involves *explanation* in terms of causes, the latter involves *understanding* and aspects of interpretation, agency, and subjective first-person experiences. Ihde argues however that if one needs to have an adequate understanding of science, then one must do so by looking at the actual practice of science, i.e., science in operation. In this Ihde is a strong critic of the positivist interpretation which has led to the master narrative of science as the steady march of the scientific method toward arriving at incontestable universal truths, usually conceived in contrast to religious and metaphysical worldviews. Ihde introduces the notion of what he calls the 'Hermeneutics—Positivist Binary' (H–P binary).[56] This binary entails that since

55 Ihde, *Expanding Hermeneutics*, 39.
56 Ihde, "The Field is Clear," in *Expanding Hermeneutics*, 139.

hermeneutics had been conceived as being concerned primarily with understanding and not with explanation—making it inappropriate to study natural science—various forms of positivism had appropriated the task of investigating science, thereby presenting us with the 'standard view of science'.[57] This conception of the natural sciences as standing in opposition to the human sciences has been carried over to phenomenological versions of hermeneutics (which Ihde refers to as the P–H tradition). Ihde's aim in 'expanding hermeneutics' can be seen as one involving the dissolution of this binary and of elaborating a phenomenological hermeneutics of scientific and technological praxis.

In this project, phenomenology acts as the crucial linchpin. For Ihde, phenomenology's strong emphasis on *praxis, perception,* and *embodiment* arising out of the works of Edmund Husserl and Maurice Merleau-Ponty "opens hermeneutics to...the realm of *science and technology*."[58] In the context of expanding hermeneutics, Ihde notes of two strands. What Ihde calls the "older form of P–H hermeneutics" includes Karl Otto Apel and Dagfinn Follesdal, who maintain that hermeneutics is only appropriate for studying the human sciences. Therefore, one could do a hermeneutic analysis of science in terms of a historical, sociological, or anthropological study of science, but one cannot apply the hermeneutic method to science *per se*. To do this would be to conflate the methods of the natural sciences and the human sciences. On the other hand, the hermeneutic expansionists, which includes Robert Crease, Lazslo Ropolyi, and Don Ihde himself, among others, maintain that the praxis of science is guided by interpretation which is technologically mediated. The latter strand thereby argued for expanding hermeneutic analysis to understanding scientific "texts" which are presented to the scientist via technological measuring and imaging instruments. Ihde thus argues that

> much of science praxis is functionally hermeneutic, but only understandably so if certain modifications are made both to the P–H tradition and to the understanding of science as an embodied *technoscience*, the instrument-embodied science of the contemporary world.[59]

57 Ibid., 140.
58 Ibid., 40.
59 Ibid., 4.

Ihde's move can be seen as welding together the phenomenologically derived emphases on praxis, perception, and embodiment with the hermeneutically derived emphasis on interpretation and understanding. With the two combined, what emerges is a philosophy of technology and science that analyzes the ways in which technological artefacts mediate our experience of the world—both in everyday praxis as well as in scientific praxis. Ihde's task of entrusting philosophy of technology to phenomenological hermeneutics is geared toward carrying out experiential analyses of the mediational role played by our technological artefacts in our everyday engagement with the world. In this, one can, and Ihde does, recognize the contributions made by Heidegger and Merleau-Ponty in paying attention to the significance of artefacts for the way in which we experience the world. Ihde finds antecedents in Heidegger's phenomenology of tool use (hammer) and Merleau-Ponty's example of the blind man's cane as a bodily extension. Ihde's philosophy of technology therefore extends the above insights to technological artefacts by focusing particularly on the human—artefact interface.

In the previous section, I have already noted the importance the notion of intentionality plays in Ihde's phenomenological hermeneutics. Ihde uses what he calls an 'intentionality model of human–technology relations.' Intentionality, i.e., the directedness or aboutness of all our experiences is for Ihde actional, perceptual, and embodied. This conception of intentionality covers a broad arrray of perceptual and embodied technological aids to our experience and praxis, such as telescopes, spectacles, walking sticks, white canes, hammers, etc. Ihde sums up his problematic thus:

> [A]lthough one can and often does directly relate to environments in embodied ways...so very much of our relation to environment is *mediated through the use of tools or artifacts*. Does this make a difference, and, if so, what kind of difference?[60]

For Ihde, therefore, technologies are not to be conceived as artificial objects standing over and against biological beings. They are rather to be conceived of as extensions and mediations to human intentionality. Ihde is not interested in the question of the

60 Ibid., 45; emphasis in original.

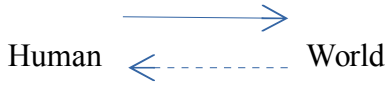
ontological or epistemological status of machines themselves. Rather, Ihde's focus is on the structures of relations realized between humans and machines. Ihde's phenomenological—hermeneutic framework for philosophy of technology is inter-relational and *relativistic* in the sense that the technological artefact to be analyzed is done so always in relation to the user and the context of use (this, as I shall discuss later, is one major limitations of Ihde's phenomenological hermeneutics of technological praxis). Ihde can be seen to be working within the ready-to-hand framework set forth by Heidegger. To recall Heidegger, our everyday dealings with the world involve having equipment ready-to-hand. So long as our equipment is carrying out its intended purpose, it withdraws into the background so that our intentionality is directed toward the purpose at hand. It is only when there is a breakdown in their function that artefacts stand out as objects that command our attention. Ihde's philosophy of technology is similarly geared toward understanding the ways in which artefacts are taken up into this intentional structure in mediating and aiding our experiences of and actions in the world. This phenomenological hermeneutic framework forms the core of Ihde's philosophy of technology which in its earliest manifestation came to fall under the domain of 'phenomenology of human—technology relations'.

2.4 Phenomenological Analyses of Human—Technology Relations

With Ihde's phenomenological hermeneutic method in place, I shall focus attention on the application and consequences of this method to the philosophical analysis of technological artefacts. This necessitates that we turn to one of Ihde's first works in this domain, *Technics and Praxis: A Philosophy of Technology* (1979), which is widely regarded as the "first English-language monograph on philosophy of technology."[61] One can discern a continuing thread starting from the phenomenological investigations into human—machine relations initiated in this book and running through Ihde's later investigations into technoscientific phenomena. More importantly, the implications that Ihde draws from his analyses situate his philosophy in opposition to most utopian or dystopian evaluations of technologies. As already mentioned, Ihde begins his phenomenology of human—machine relations by adopting the Husserlian method of intentional correlations. However, Ihde infuses his

61 Carl Mitcham, *Thinking Through Technology*, 76.

pragmatic flavor in interpreting Husserlian and Heideggerian phenomenology by carrying out a 'functional adaptation' of the phenomenological model of intentionality.[62] This enables him to evade the metaphysical and conceptual problematics arising out of such notions as the transcendental ego or the hermeneutic circle. Ihde's nonfoundational adaption of phenomenological intentionality is founded upon appropriating the following central features of this model. The common features shared among the Husserlian (consciousness-model of) intentional correlation of ego —cogito—cogitatum and the Heideggerian (existential-model) correlation of Being-in-the-world are: (a) What is given in experience—the world—becomes the first subject of analysis. The phenomenological analysis begins with the world. (b) The first stage of analysis reflexively reveals that the world is always given in a particular mode of experiencing. (c) There is a strict correlation between the object of experience and the mode in which it is experienced by the subject. In Husserlian terms, this is the correlation between the *noema* and *noesis*.[63] For Ihde, the intentional correlation becomes simply structured thus:



This correlation forms the 'core paradigm' of Ihde's phenomenology through which he discerns the various relations that realize between us and technologies and the ways in which technologies mediate our experience of the world. The continuous line captures the intentional correlation that is obtained in any experience of the world and suggests the essentially directed aspect of all our experience; the dashed line, on the other hand, represents the reflexive relation from the world back to the experiencing subject. This is crucial to self-knowledge and self-understanding, which within a phenomenological hermeneutic framework, brings interpretation into the picture. This reflexivity emphasizes the notion that our identity is intricately bound with our engagements with the world. Phenomenology cannot therefore be equated with idealism. The human and the world cannot be isolated from each other. With this

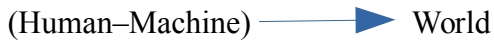
62 Don Ihde, *Technics and Praxis* (Dordrecht: D. Riedel Publishing Company, 1979), 5.

63 There is much debate surrounding the notion of noema in Husserlian phenomenology. Ihde seems to take it to mean the object-correlate, which, in the present context, means the technological artefact. For an exposition of the various interpretations of the noema, see the appendix to David Woodruff Smith, *Husserl*, 290. The subsequent structural diagrams of the human – artefact relations are from Don Ihde, *Technology and the Lifeworld: From Garden to Earth* (Bloomington: Indiana University press, 1990), 107.

correlation in place, Ihde begins his first-person investigations into his own experiences with simple everyday artefacts.[64] A crucial part of these investigations is the method of phenomenological variational analyses which afford the development of a typology of human—machine relations.

2.4.1 Embodiment Relations

Ihde begins his investigations into human—machine relations with a rigorous phenomenological analysis of using a piece of chalk. He notes, at the outset, of his primary interest as lying in the "*experienced uses* of machines" and not in "the conception of, invention of, building of, or other possible human—machine relations."[65] This choice of interest, I shall later argue, is not merely voluntary but rather a consequence of Ihde's phenomenological hermeneutic method. Examining intensely this experienced use of the chalk piece, Ihde notes the following structural features: in using the chalk to write on the blackboard, one experiences the blackboard through the chalk. Putting this in phenomenological terms, Ihde notes that "the terminus of intentional extension into the world is on the blackboard."[66] In affording this extension of experience onto the blackboard, the chalk becomes the *means* of experience and is thereby absorbed into the experience; the user's primary experience is not that of the chalk but of the blackboard which presences itself in terms of its felt properties such as texture, friction, etc. Ihde illustrates this relation through the following relational structure:



The brackets enclosing the human–machine relation indicate that the artefact becomes part of the noetic or subject-correlate of the intentional relation, i.e., it becomes the means of experience of the noematic or object-correlate. Ihde notes of the normative structure at play in this relation: "the better the machine the more 'transparency' there

64 Vivian Sobchack addresses the uniquely personal and anecdotal aspect of all of Ihde's phenomenological investigations; See Vivian Sobchack, "Simple Grounds: At Home in Experience," in *Postphenomenology*: *A Critical Companion to Ihde,* ed. Evan Selinger (Albany: State University of New York, 2006).
65 Ihde, *Technics and Praxis*, 6; my italics.
66 Ihde, *Experimental Phenomenology: Multistabilities*, 100.

is."[67] Extrapolating from this statement, one could note that in order for a technological artefact to effectively perform its function in an embodiment relation, it must be designed such that it affords maximum transparency in order to enable experience to be directed toward the object with least interference.[68] A second characteristic feature of this relation is the transformation of what is experienced. Here, Ihde distinguishes between the experience of the board "through the chalk" and the experience of the board "in the flesh" and notes that the latter is characterized by a "greater richness" than the former. The former is a reduced experience when compared to the latter, which affords multisensory perception.[69] Through variational analysis with other similar embodied instruments such as the dentist's probe and the telephone, Ihde gets to the following invariant features of embodiment relations: the artefact becomes transparent and is absorbed into the experience; the artefact becomes the means of experience whereby intentionality is directed toward the terminus of extension, and not toward the artefact at hand; there is a transformation of experience in the case of being mediated through the artefact such that in-the-flesh experience is richer than machine-mediated experience; every extension or amplification of perception necessarily brings about a corresponding reduction in another aspect of perception. For example, with increased magnification of the object when seen through a magnifying glass, there is a corresponding decrease in the field of vision. Ihde extends the same consequences of this descriptive phenomenological analysis of embodiment relations to scientific instruments (such as the telescope and microscope) and also to media technologies such as television and radio. The crucial implication of these analyses for Ihde is that technologies are non-neutral—in amplifying a certain aspect, they reduce another. Technologies can therefore not be conceived instrumentally as merely a means to an end.

2.4.2 Hermeneutic Relations

67 Ibid., 102.

68 It is ambiguous as to whether this transparency is intrinsic to the machine or is contributed to by the user as well. One could argue that familiarity and expertise also play a role in embodying an artefact for the sake of performing an activity. Ihde suggests this implicitly when he gives the example of driving an automobile. Herein he makes explicit reference to the "expert driver" who "feels the very extension of himself through the car as the car becomes a symbiotic extension of his own embodiedness." Here he seems to suggest an interrelationality between the expertise of the user and the transparency of the artefact within the embodiment relationship. See ibid., 8.

69 It should be noted however that these multisensory perceptual features of in-the-flesh experience are irrelevant to the technological praxis of using the chalk to write on the board. Ihde seems to be making a moot point here.

If embodiment relations involve experiences of the world which are intentionally mediated *through* machines, there exists another human—machine relation wherein the experience is intentionally directed toward the machine itself. Ihde calls these *hermeneutic relations*. This relation can be brought about in two situations: (1) negatively, when the machine breaks and there is a disruption in the embodiment relation, the machine becomes thematized explicitly as that which calls out our attention to it. Intentionality is no longer mediated through the machine but is directed to the broken down machine. (2) positively, hermeneutic relations involve situations wherein the machine affords to *read* the world through it. What Ihde has in mind are measuring and monitoring instruments such as "dials, gauges, rheostats and switches."[70] The human—machine correlation in the case of hermeneutic relations is such that the "primary experiential terminus is with the machine." In this context, Ihde draws an analogy between the machine and the text and notes of the "partial opacity between the machine and the world."[71] Just as the author of a text is indirectly present in the book, so is the information about the world indirectly present in the measuring instrument. This makes room for interpretation and doubt as to whether the states of affairs in the world correctly correspond to those that are presented in the instrument. Ihde lays emphasis on the 'otherness' that characterizes the experience of the machine in the hermeneutic relation and notes:

> In relations in which machines are focal 'other' all of the ambiguity of other relations becomes a possibility. The machine is capable of anthropomorphization in terms of its 'otherness'.[72]

Ihde indicates the structure of hermeneutic relations as

He sees this in opposition to the embodiment relation. One can see at play here the logic of the gestalt switch between the embodiment and the hermeneutic relation. The machine-as-mediator in the embodiment relation emerges as the machine-as-other in

70 Ihde, *Technics and Praxis*, 11.
71 Ibid., 12.
72 Ibid., 13.

the hermeneutic relation. There is a gestalt switch in the significance of the machine —it shifts from working in the background to coming into the foreground.

2.4.3 Alterity Relations

The third kind of relation that can be had between a human and a technical artefact is that of *alterity*. Ihde introduces this third relation in his later work, *Technology and the Lifeworld* (1990). Borrowing the concept from Emmanuel Levinas, Ihde observes that in addition to embodying and interpreting the world through our technologies, we can also relate with technologies as the quasi-other. Ihde distances his position on alterity from that of Heidegger on the one hand and the naive realist on the other. Whereas the former conceives of otherness in negative terms involving breakdown or malfunction and the presence-at-hand that accompanies it, the latter conceives of technologies as ontologically other in defining them in terms of their purely physical and material properties. Ihde's Levinas-inspired phenomenological analysis of technological alterity leads to an exploration and subsequent rejection of anthropomorphism with regard to technological artefacts. Ihde sees research into artificial intelligence as falling prey to such anthropomorphism. The alterity relation between humans and technologies captures our less than transparent *interaction* with artefacts. As opposed to embodying an artefact or reading through an artefact—whereby the artefact becomes absorbed and transparent in delivering its function—an artefact in the alterity relation occupies the "focal center of attention as a quasi-other" such that it itself becomes the object of interaction.[73] The examples he cites are those which relate to toys, computers, video games, etc. wherein the artefacts are not completely absorbed into the human–world relationship, but rather become the object of focus. The structure of alterity relations is represented as

In contrast to the previous two relations, what stands out in the alterity relation is the bracketing of the world rather than the artefact. In this relation, the artefact is disengaged from its normal use-context and engaged with as an end in itself, rather

73 Ihde, *Technology and the Lifeworld*, 100.

than as a means to an end. Ihde observes that the three aforementioned relations form a continuum of transparency whereby embodiment relations form one end, with their fully embodied transparency, and alterity relations form the other end, with their quasi-otherness, and hermeneutic relations falling in between the two.

2.4.4 Background Relations

The fourth kind of human—machine relation to emerges out of Ihde's phenomenological analysis is the background relation which captures the 'atmospheric,' 'ambient,' and 'surrounding' presence of machines, which is very much a characteristic of our modern lifeworld. Whereas the embodiment and hermeneutic relations involved explicit relations with machines—either through mediation or through alterity—the background relation is an indirect relationship with a technological system that functions ubiquitously in order to make other relations—either human or technological—possible. Ihde attributes such human–machine relations to the ever-increasing complexity of contemporary society which can be characterized by its "technological texture...a 'technosphere' within which we do a good deal of our living."[74] Examples of such relations include HVAC (heating, ventilation, and air-conditioning) systems, electricity and lighting systems, etc. Ihde illustrates the correlational structure of the background relation as:

Human (-Machine/World)

As can be seen from the diagram, the world is now a 'machine/world,' or as Ihde would call it, a 'technosphere'. Ihde, in a Heideggerian vein, points to the essential *familiarity* of our relationship with this technological world.[75] What this familiarity entails for Ihde is that we feel the constant need of being surrounded by our technological cocoons wherever we go, be it on a camping expedition to an idyllic mountainscape or to the outer space.

2.4.5 Technological Totalization

74 Ibid., 14.
75 See Chapter 1 of the present thesis; Section 1.2.1, p. 19.

Through his rigorous phenomenological analysis of human–machine relations, Ihde illustrates how such relations "pervade the entirety of the correlational possibilities as possibilities."[76] There is no escape from technologies in our contemporary lifeworld, even if we choose to not engage with technological artefacts in a ready-to-handed mode, for we are always already surrounded by technological envelope within which we exist. One can see clear parallels between Heidegger's tool-analysis in Being and Time and Ihde's phenomenology of human – machine relations. Heidegger, it must be recalled, proceeds from readiness-to-hand to presence-at-hand and then makes the move to the worldhood of the world. Likewise, Ihde's analysis proceeds from the embodiment relations to hermeneutic relations and then finally to the background relations afforded by the technological totalization of the technosphere. Each of Ihde's relations seems to correspond to each mode of existence of Heidegger's tool-analysis. Ihde, however, guards himself against making any moral claims about this existential situation brought about by our technological lifeworld. He makes the following strong claim in this context:

> But I do not wish to end on either a romantic or a pessimistic note. I only wish to indicate that a rigorous phenomenological analysis of human – machine relations poses, to my mind, the best way into an understanding of both the promises and the threats of technology. It is only *through* facing technology that we will ultimately understand it and transcend both its fascination and insidiousness.[77]

Without explaining how, Ihde claims his postphenomenological approach as affording the '*best way'* to *understanding* as well as *transcending* the 'fascination and insidiousness' of technologies. This claim begs many questions. How is it that a descriptive, phenomenological analysis of human – machine relations enables us to transcend our fascination with technologies? What does Ihde mean by *facing* technologies? Why is it even necessary to transcend our technological character of our lifeworld? Isn't there an implicit normative claim in this proposition? Can we fully comprehend and understand our technologies merely from a phenomenological hermeneutic approach? What can a descriptive approach tell us of the normative

76 Ihde, *Technics and Praxis*, 15.
77 Ibid., 15; emphasis in original.

character of our technological praxis? What can we as users learn from this typology of relations? These questions have plagued postphenomenology for quite some time, and is a lively debate among contemporary philosophers of technology. These issues and debates shall be discussed in the final chapter.

2.5 Multistability

2.5.1 Phenomenological Conceptualization

A keystone concept in Ihde's philosophy of technology is what he calls *multistability,* and it has attracted much attention among scholars of Ihde and postphenomenology.[78] The notion of multistability is central to understanding Ihde's postphenomenological approach to technology. Emerging from Ihde's early studies concerning the phenomenology of human–machine relations, it sets the non-foundational agenda of all of Ihde's subsequent works. One can thus trace the emergence of Ihde's non-foundational *post*phenomenology with his explicit conceptualization of the notion of multistability. The genealogy of this concept in Ihde's writings can be traced to its use a compound adjective applied to certain phenomena as being multi-stable phenomena in his early work *Experimental Phenomenology: An Introduction* (1977).[79] Herein, Ihde refers to 'multi-stable phenomena' more as a phenomenological rather than as an ontological concept, with the aim of providing a "concrete introduction to phenomenology."[80] Ihde introduces phenomenology by taking his readers through an adventure of visual illusions as exemplary multi-stable phenomena through which the phenomenological method of variational analysis is clarified and its core concepts are laid out. He starts with simple line drawings which are open to multiple interpretations, and he offers a rigorous analysis of what these multiple interpretations mean for phenomenology. A brief outline of Ihde's experimental method of doing phenomenology shall set the stage for moving to the ontological imports that derive from it.

78 Kyle Powys Whyte, "What is Multistability? A Theory of the Keystone Concept of Postphenomenological Research," in *Technoscience and Postphenomenology: The Manhattan Papers*, ed. Jan Kyrre Berg O. Friis and Robert P. Crease (Maryland: Lexington Books, 2015).

79 The hyphen in "multi-stable" is retained throughout the edition. It is only in the second edition that the hyphen is dropped. "Multistability" and "multistable" are thereby given the status of ontological categories.

80 Don Ihde, *Experimental Phenomenology*: *An Introduction*, (Albany: State University of New York Press, 1977), 7.

Ihde sets up his experiment through presenting the readers with a simple line drawing. This drawing is then subjected to Husserlian variational analysis in order to arrive at possible interpretations of what the drawings stand for. Each interpretation of the drawing is assigned a particular group, and each group is differentiated from the other on the basis of their noematic and noetic contexts. Ihde introduces the notions of noesis and noema within this context of the experiment. He introduces the notion of noesis as the context within which the act of seeing occurs, which can be either 'literal-mindedness' or 'polymorphic-mindedness'. The noema, on the other hand, refers to that way in which the figure has been seen, which can refer to any stable variation of the figure. Within the noetic context of literal-mindedness, one can assert apodictically that their interpretation of the drawing is the right interpretation. However, within the noetic context of polymorphic-mindedness, the drawing is perceived as being multi-stable, in that there is no longer an absolute claim to apodicticity, but rather a claim to the inevitable plurality of interpretations. Thus, within the noetic context of polymorphic-mindedness, there is a shift in the noematic context from an assertion to the apodicticity of one particular interpretation to the multi-stable interpretations of the same diagram. Ihde describes this ascent from literal-mindedness to polymorphic-mindedness as a move towards superior comprehension and greater adequacy, without a loss in apodicticity. There is however a change in the *significance* of apodicticity. Ihde emphasizes the phenomenological significance of perceiving the diagram as multi-stable by noting that:

> To put this phenomenologically, the noema is now seen to contain two possibilities, and two possibilities as variations are relatively more *adequate* than one. The ascent in level is a move to (relative) *adequacy*, which now assumes a higher significance than mere apodicticity.[81]

This experimental investigation enables Ihde to distinguish between the literal-mindedness of the natural attitude as opposed to the polymorphic-mindedness of the phenomenological attitude (Ihde especially emphasizes the literal-mindedness of most experiments in empirical psychology). Ihde thereby introduces the phenomenological method as a search for invariants that underlie the possibilities in the phenomena

81 Ihde, *Experimental Phenomenology: An Introduction*, 72.

through variational analysis. Ihde, however, cautiously notes that these possibilities are possibilities inherent in the figure, the noema.[82] Corresponding to each possibility is a particular noetic act that conditions the perception of the possibility. Ihde refers to these noetic acts as sedimented beliefs, which restrict perception to particular stabilities, as opposed to multi-stabilities. Phenomenology is introduced as a 'method of discovery' corresponding to a 'radicalization of ordinary viewing' whereby a single phenomena is perceived with greater alternations, increased adequacy, and greater comprehension. In other words, Ihde presents phenomenology as a quest for multi-stable perceptions. The invariants that are thus discovered are not the Husserlian essences that constitute and identify objects across all variations, but are rather "structures that happen to be shared across particular stabilities."[83] This reflects the anti-essentialist and nonfoundationalist characteristics of postphenomenology, as opposed to classical, Husserlian eidetic phenomenology.

2.5.2 Ontological Conceptualization

It is interesting to note that the notion of multistability, originally introduced as a conceptual tool to introduce phenomenology, takes on the role of an ontological concept that shall come to characterize all of Ihde's writings, especially his philosophy of technology. It is no surprise then that 'multistability' (sans the hyphen) attains its place in the subtitle of the second edition of the same book, now titled *Experimental Phenomenology: Multistabilities* (2012). Ihde herein notes how this quest for multistability had led him to the reformulation of Hussserlian phenomenology into a non-foundational postphenomenology. Whereas Husserl had used variational analysis and the various reductions as a method to lead him to the invariant essence inherent in any act of perception, Ihde had used the same method, only to be led to the discovery of multistability. This discovery thus marks the break in Ihde with Husserlian phenomenology. All of Ihde's subsequent works have been an

82 Ihde thereby emphasizes an East Coast interpretation of the Husserlian noema, whereby it refers to the object of the act of consciousness (in contrast to referring to the realm of sense which mediates its access). David Woodruff Smith attributes the development of the East Coast interpretation to the work of Robert Sokolowski and John Drummond. This is also a crucial aspect of Ihde's philosophy of technology, wherein the present understanding of multi-stability is extended to technological artefacts. See the appendix to David Woodruff Smith, *Husserl*, 290.

83 Robert Rosenberger, "Notes on a Nonfoundational Phenomenology of Technology," *Foundations of Science* 22, no. 3 (2016): 489. I have pointed to the postphenomenological conception of multistability as one of the basic problems of this approach. See Chapter 4 of the present thesis; Section 4.5, p. 176.

appropriation, elaboration, and extension of this notion to domains as wide as science, technology, and culture. From its initial adaptation to simple line drawings and optical illusions, multistability finds its place in Ihde's thinking about technologies, most explicitly in *Technology and the Lifeworld: From Garden to Earth* (1990). Herein, Ihde substitutes the line drawings of his earlier works with concrete material artefacts within particular cultural contexts, and explores the relationship between technologies and cultural contexts. Ihde's philosophical–anthropological explorations into particular cultural contexts would lead him to proclaim the technology–culture embeddedness as being *multistable*.

Ihde draws a distinction between microperception and macroperception, a distinction which shall also be crucial to his later works.[84] He situates his early work on the phenomenology of human – machine relations within the realm of microperceptual analysis. Microperceptual analysis is Husserlian in character with its focus on perception and experience. Macroperceptual analysis, however, is Heideggerian in character with its focus on ontology and human existence. Ihde could be seen as negotiating the space between Husserlian–microperceptual and Heideggerian–macroperceptual analyses in his turn now to the lifeworld.[85] Ihde thereby supplements his phenomenology of human–technology relations with a hermeneutics of cultural–technological praxis. Ihde calls this 'program' a *cultural hermeneutics* that seeks to understand "the ways in which cultures *embed* technologies."[86] The answer to this question once more takes toward the direction of 'multistability'. Ihde begins his macroperceptual analysis with an historical–anthropological examination of the different ways in which cultures embody technologies. Ihde's anthropological gaze at different technological praxes across cultures leads him to the notion of the essential ambiguity of technologies, i.e., that all technological artefacts are what they are only in relation to a cultural context. There is no such thing as a "thing-in-itself."

2.5.3 Multistability and Cultural Contexts

To identify technologies therefore is to identify them within a particular

84 This distinction plays a crucial role in Ihde's philosophy of science, which he calls 'instrumental realism.' See Ihde, *Instrumental Realism.*

85 Ihde, in a sense, could be said to be reconciling the strained philosophical relationship between Heidegger and Husserl.

86 Ihde, *Technology and the Lifeworld*, 124; emphasis in original.

cultural use-context. An artefact is what it is only within this use-context. Therefore, to note that all artefacts are multistable is to note that the *form* of a particular artefact is compatible with multiple *functions*. To put it in terms of another dominant discourse in philosophy of technology, what Ihde is noting can be put in terms of structure and function as follows: the structure of an artefact can realize multiple functions.[87] This is what Ihde essentially means by the multistability of technological artefacts. This essential multistability of technologies also points to their ambiguity as technologies. It is this ambiguity of technologies that defers any definition and identification of technological artefacts with their designed purposes. Invoking the example of the Acheulean hand axe, Ihde notes of the varying interpretations that have come about in scientific literature in order to attribute a purpose and use-context to this tool. Here too, Ihde, ever the hermeneut, draws an analogy between the artefact and a text. Just as the interpretation of a text cannot be confined to the intentions of the author, the interpretation of the use-context of an artefact cannot be arrived at on the basis of its designed purpose. In this context, Ihde makes the following prescriptive claim:

> [I]n any good interpretive exercise (hermeneutics), the humanist would recognize that while there were intentions, the story belongs now to a different context and possibly to multiple contexts. So, too, does the stone. The designer's intentions play only a small part of the subsequent history of the artifact....Design, in the history of technology, usually falls into the background of a multiplicity of *uses*, few of which were intended at the outset.[88]

For Ihde, the essential ambiguity of technological artefacts corollarily implies that any object—naturally occurring or otherwise—may be appropriated into praxis, thereby giving it a technological character. Note here the crucial divergence between Ihde and Heidegger. Whereas for Heidegger, the hammer is that which has been assigned or referred to as being a hammer, for Ihde, the hammer is any artefact that has been appropriated within praxis for the purpose of hammering. This could be either a

87 This discussion will be dealt with in the subsequent chapters. This discourse stems from 'The Dual Nature of Technical Artefacts' research program. For an in-depth discussion of the ontology of artefacts, refer to Wybo Houkes and Anthonie Meijers, "The Ontology of Artefacts: The Hard Problem," *Studies in History and Philosophy of Science* 37 (2006), 118–131.

88 Ihde, *Technology and the Lifeworld,* 69.

hammer or any other object that has similar properties.

Simultaneously however, Ihde cautions his readers from concluding that technologies are then merely instrumental means to the ends which are determined by our practices. Ihde qualifies his views of technologies as being ambiguous, yet non-neutral—in the sense that they mediate and transform our microperception. He gives the example of the different cultural practices surrounding the introduction and use of the clock as a time-keeping device. Invoking historico-cultural analyses of writers such as Lewis Mumford, Lynn White, Jr., Joseph Needham and Daniel Boorstein, Ihde illustrates through examples the phenomenon of technology transfer in order to make the case for the essentially contextual nature of all technologies. Ihde's strategy of studying technological transfer enables him to capture the phenomenological moment of change as it occurs in macro- and microperceptions. Ihde's analyses are therefore comparative: for example, he compares the cultural and perceptual differences in the navigational techniques between Western and South Pacific navigators; he compares the different values leading to the introduction of the clock in the Ancient Chinese civilization as opposed to the Latin Western civilization.[89]

Ihde reinforces the trope of artefacts as texts when he notes of the clock as a hermeneutic device. Being so, the clock is thus open to multiple interpretations, each of which is adaptable to a particular cultural context. The clock in the Chinese civilization should be taken to be distinct from the clock in the Latin West. Drawing an interesting distinction between an artefact and a technology, Ihde notes:

> the clock is a paradigm example of the essential, although non-neutral, ambiguity of technology...[and] while the artifact [clock] was transferred, one might almost say the "technology" was not. Or, if the analogue of a hermeneutic device to a text holds, the "text" was transferred, but it was certainly differently read. Only when the entire reading process is also transferred could the clock become the "same" technology.[90]

One can see in the above statement the notion implicit in Ihde that no philosophy

89 Ibid., 129.
90 Ibid., 131.

of technology is complete without situating the technological artefact within its "ensemble of technologies."[91] Ihde is giving a nod here to Heidegger's notion of there not being such a thing as "an equipment."[92] For Ihde the ensemble of technologies points to the cultural context within which an artefact gets to be used and the values and norms of the culture that shape the way in which the artefact is used.

2.5.4 Arguments from Multistability

Ihde draws a number of crucial conclusions from his analyses of multistability and technological transfer. Multistability entails two dimensions; one, that any technological artefact is open to multiple possibilities of use; and two, a particular purpose can be achieved by a range of technological artefacts. These two dimensions of ambiguity from multistability "introduces a certain indeterminacy to all human–technology directions."[93] Moreover, this renders the question of control of technology as misplaced. In viewing technologies as cultural instruments, the question of control over technologies for Ihde becomes synonymous to the question of control over culture. Provocatively and rhetorically, Ihde puts the question thus: "Can *cultures* be 'controlled'"?[94] When analyzed phenomenologically, the question of control makes no sense, since the notion of control assumes a certain degree of separation between the human and the technological. Ihde notes that to enter into any technological use-context is to control the artefact as well as be controlled by it at the same time. Here is the argument, differently framed, against the entire debate concerning social construction of technology versus the technological determination of society. There is however a mutual co-shaping that occurs in using technologies. This comes to light only when studying technologies in their use-contexts. These are what Ihde calls technological *intentionalities* or *inclinations*. This is the idea that while technologies do not determine actions, they do provide a framework for action within which certain use-patters arise.[95] Technological artefacts shape the way we engage with a certain activity. To cite one of Ihde's examples, the word processor "shapes" our writing in certain ways as opposed to a typewriter. The former enables us to edit our text

91 Ibid., 157.
92 See Chapter 1 of the present thesis, Section 1.2.1, p. 17.
93 Ihde, *Technology and the Lifeworld*, 139.
94 Ibid., 140.
95 Ibid., 141.

infinitely, without having to go through the tedious chores of working with paper on a typewriter. The typewriter therefore inclines one to put much thought before each keystroke. A handwritten letter, even more so. At the same time, these technologies do not determine our writing, in that we can take note of the ways they are shaping our activities and thereby reclaim our familiar styles of writing. The ambiguity of technology-in-use therefore prevents technologies from being deterministic; they rather prompt us to use them in certain particular ways as opposed to others.

Following from this is the other argument that there is not one single trajectory to technological development. This addresses the debates surrounding the trajectory toward utopia or dystopia due to technological advancement. This has been one of the ever persistent debates in relation to philosophical analysis of technologies and is a favored theme of much science fiction writing. Ihde's cultural hermeneutics of technological transfer and the subsequent discovery of ambiguity and multistability of human–technology relations points to the fact that there exists no single trajectory to a technological society. The essential ambiguity and cultural embeddedness of technologies entails that are constantly appropriated and modified for use in relation to the dominant cultural norms and values. There is however, Ihde notes, again an *inclination* toward a particular cultural trajectory with the dawn of a technological civilization. This inclination involves a move towards pluricultures. Whereas our pre-modern and technologically isolated civilizations were monocultural and unique, our contemporary post-industrial, neocolonial, and globalized lifeworld is pluricultural.

Our contemporary lifeworld is pluricultural in that there is a curious juxtaposition of the pre-modern, modern, and post-modern values, now mediated through technologies. Drawing his clues from the proliferation of cuisines across the world, Ihde notes of similar trajectories in the proliferation of technological artefacts and use-contexts. This trajectory toward pluriculturality is similarly non-neutral in the sense that it precludes any return to any past form of monoculturality, and it obliterates any foundations from which to judge a particular culture as being superior and over another. This is crucial to Ihde's philosophizing in general since it points to an explicit turn to the postmodern. One can see here Ihde's move away from Husserl's essences and toward the postmodern reception of diversity. It is from this technological trajectory towards diversity that Ihde argues against the dystopian

predictions of Herbert Marcuse, Jacques Ellul, and Martin Heidegger. He notes emphatically that "there will be diversity, even enhanced diversity, within the ensemble of technologies and their multiple ambiguities, in the near future."[96]

2.6 Concluding Remarks

Ihde's notions of human–technology relations, multistability, and technological intentionality occupy a central role in postphenomenological investigations into technological praxis. However, many thinkers following in the wake of Ihde note of the limitations posed by postphenomenology in engaging with normative and ethical implications of technological development and use. Ihde, as we have seen above, carefully maneuvers any such normative commitments by maintaining a rigorously descriptive approach to his subject of analysis. As shall be discussed in the following chapter, Peter-Paul Verbeek, one of the most careful readers of Ihde and Heidegger, brings about a normative turn in postphenomenology. Verbeek adopts the abovementioned notions of Ihde and develops an ethical framework within which to evaluate the ways in which technologies influence our actions and behavior, thereby presenting a postphenomenological framework not only for the analysis but also for the design of "responsible" technological artefacts.

96 Ibid., 159.

Chapter 3: Postphenomenology and the Normativity of Technological Artefacts

In the previous chapter, the emergence of postphenomenology as a dominant school of thought in philosophy of technology was outlined. I had traced its gnarled roots deep in the classical, foundational phenomenology of Edmund Husserl, but growing much deeper into the phenomenological hermeneutic tradition initiated by Martin Heidegger, along with the anti-Cartesian, anti-essentialist, and non-foundational pragmatism of John Dewey. I had expanded on Ihde's programmatic approach of philosophy of technology as essentially a hermeneutic task and the ensuing results of this approach in the phenomenology of human–technology relations and an ontology grounded in multistability. In this chapter, I shall explore into the normative turn in postphenomenology ensuing from the work of one of the most keen and critical interpreters of Ihde. Many philosophers have drawn attention to the lack of any ethical commitment in Ihde's philosophy of technology. Its emphasis on rigorous phenomenological descriptions of human–technology relations and its postmodernist commitment to multistability and pluriculture has precluded it from investigating the ethical ramifications in the design and use of technological artefacts. It is with Peter-Paul Verbeek however that the notions of technological mediation, technological intentionality, and multistability are interpreted from a normative point of view with the view toward the development of an ethical framework for the design of technological artefacts.

3.1 Postphenomenology and the Question of Normativity

A number of critics of postphenomenology have laid emphasis on the method as precluding the formulation of an ethical framework with which to come to terms with technological advancement. Given its rigorous descriptive method and its ontological commitment to an anti-essentialist conception of technologies as being multistable, it becomes a challenge to address the ethical implications of technological praxis. Evan Selinger, a prominent postphenomenologist and a student of Ihde, addresses this question in his contribution to the festschrift honoring Ihde's works. Selinger, following Ihde, traces this lack to the characteristic feature of phenomenological inquiry as the privileging of the epistemic over the normative.[1] Although Ihde

1 Evan Selinger, "Normative Phenomenology: Reflections on Ihde's Significant Nudging," in

cautions against framing normativity in essentialist ethical terms, he does offer more than a passing nod to the question of normativity. Selinger notes of the normative dimension in Ihde in the form of "significant nudging." This nudging has both an "*intrinsic normative dimension*" as well as a "*substantive normative commitment*." The former dimension refers to the changes in micro- and macro-perception brought about by the introduction and mediation of technologies in the human–world relationship. In other words, technologies alter the ways in which we perceive the world.[2] Selinger characterizes the latter dimension as metaphilosophical in the sense of being a commitment to a deflationary approach that endorses the diversity and plurality of culturally situated technological praxes, thereby promoting a situated hermeneutics of culturally relative—as opposed to universal—norms and values of technological praxis.

Paul Thompson, too, directs our attention to the inarticulated and underdeveloped extensions of Ihde's thought to the normative realm. Thompson offers a sympathetic reading of Ihde in relation to technological ethics and notes of the bearing that his philosophy of technology has on four different stances that have cropped up in the domain of technological ethics. First is the view that human action, and not technology, ought to be the sole subject matter of ethics. Second is the dystopian view that technology is an autonomous force that has its own trajectory of development which lies beyond the control of human intentions and actions. The third and fourth stances, according to Thompson, are 'poles of a gradient.' At one end of this pole is ethics concerning technology as a whole (technology-with-a-capital-T), and as one moves toward the other end of the gradient, there is a consequent contextualization and particularization of ethics confined to a single domain of technological knowledge.[3] Thompson notes thereby that although Ihde had "rarely addressed normative themes in his writing, Ihde's philosophy of technology bears on all four of these broadly characterized stances in technological ethics."[4] And yet despite postphenomenology's promising applicability to problems concerning technological ethics, Thompson concludes that "it is a promise that one must regard as still largely

Postphenomenology: *A Critical Companion to Ihde,* ed. Evan Selinger (Albany: State University of New York, 2006), 89.

2 Refer to Chapter 2 of the present thesis; Section 2.5.3, p. 87.

3 Paul B. Thompson, "Ihde and Technological Ethics," in *Postphenomenology: A Critical Companion to Ihde*, 110.

4 Ibid., 110.

unfulfilled."[5]

In a similar vein, Richard A. Cohen traces the logical route to ethics that follows from the central tenets of Ihde's philosophy of technology. These central tenets refer to the notion of technologies as prosthetic bodily extensions which are inseparable from their sociocultural contexts. Thus, the normative implications of technologies cannot be assessed without taking into the sociocultural contexts into account. This, in turn, for Cohen begs us to grasp the "depth structure of human sociocultural embodiment,"[6] which is always structured in a certain manner by the political climate of that particular sociocultural context. Cohen thereby clears the ground for the normative in Ihde by heeding to Ihde's invocation of Langdon Winner's notion of the "politics of the artifact."[7] Ihde brings this notion into relief by noting that Heidegger's romantic endorsement of pre-modern Greek artefacts such as the chalice and the Greek temple conceals the political aspect that goes into producing these artefacts. Any analysis of technological artefacts that conceals the political dimensions that go into the production of the artefact is therefore an inadequate analysis. With this due deference to Ihde, Cohen proceeds to develop that which lies only implicit in the former—an ethical framework with which to ground the political based on Emmanuel Levinas' "ethical metaphysics."[8] Here, too, is an example of the need for extending postphenomenology's underdeveloped take in order to address issues concerning the normativity of technological artefacts.

Robert C. Scharff, a longtime critic of Ihde's phenomenological descriptivism, characterizes his philosophy of technology as being "strangely apolitical and 'neutral'."[9] He traces it, among other factors, to the dominant Husserlian vein in Ihde which comes at the cost of dismissing Heidegger's thinking about technology as romanticism of pre-modern techne. He accuses Ihde of having "listened too hard to Husserl and insufficiently to Merleau-Ponty and Heidegger."[10] Scharff takes Ihde to

5 Ibid., 116.
6 Richard A. Cohen, "Technology: The Good, the Bad, and the Ugly," in *Postphenomenology: A Critical Companion to Ihde*, 153.
7 Ihde gives more than a passing nod to Langdon Winner's notion of the "politics of the artifact" in his later work devoted especially to a critical analysis of Heidegger's views on technology. Refer to Ihde, "Deromanticizing Heidegger," in *Heidegger's Technologies*, 82.
8 Cohen, "Technology: The Good, the Bad, and the Ugly," 154.
9 Robert C. Scharff, "Ihde's Albatross: Sticking to a "Phenomenology" of Technoscientific Experience," in *Postphenomenology: A Critical Companion to Ihde*, 131.
10 Ibid., 134.

task for maintaining throughout his oeuvre a two-tiered notion of experience with bodily and perceptual microperception on one level and cultural macroperception on the other level. Scharff draws attention to the inherent flaw in Ihde's attempts at arriving at structural human–technology relations without paying heed to issues of "gender, race, political and economic power, or spiritual understanding."[11] This flaw occurs due to the needless distinction between micro- and macro-perception. Scharff then fires the last salvo by placing Ihde's position in the witness box and summoning him to respond to the question of perspective.

> From what sort of perspective does he [Ihde] make the distinction between perceptual "embodiment" and cultural "context," put their discussions in separate chapters, and often discuss one without reference to the other?" Ihde's body-perceptual/cultural-linguistic cut would seem to reflect his inheritance of a Husserlian dualism that was in its day even less successful in "adding" history and culture to perception. And this, it seems to me, would indeed be an albatross-like feature in any "phenomenology."[12]

Scharff demands a more reflexive account of Ihde's perspective which inevitably colors his phenomenological analyses of technology. Scharff is thus drawing attention to the inherent contradictions within the method of postphenomenology which claims to look at *particular* technologies in their cultural contexts, but nevertheless makes *global* claims for the ambiguity due to the multistability of technological artefacts and the inevitable pluriculturality of the postmodern world. Scharff thus appeals to Ihde and his fellow postphenomenologists to situate themselves and their phenomenological descriptive framework within the political and economic forces of the "democratic-capitalist West" and its normative imperatives. This would then make it urgent to address the necessary question of normativity and not just dismiss it as mere distress or 'pessimistic totalizing'.

Similarly, Peter-Paul Verbeek, like the above critics, notes of the lack of engagement with ethics in Ihde's postphenomenology; however, he envisages his project as one that takes the ethical turn from *within* postphenomenology. Verbeek notes of the

11 Ibid., 136.
12 Ibid., 137.

domain of ethics as being left untouched in most of Ihde's work, but finds implicit in postphenomenology a conducive framework for thinking through an ethics of technologies. He finds Ihde's relational ontology and the notion of technological mediation as enabling the move from a descriptive to a normative analysis of artefacts. Thus, Verbeek ushers in the much-demanded normative turn within postphenomenology, thereby expanding its methodological import towards the design and use of technological artefacts. In the following section, I shall delve deeper into Verbeek's project within postphenomenology.

Ihde, in his defense against critics, acknowledges his "minimalism regarding ethics" but observes an asymmetry between normativists and epistemologists and (rhetorically) wonders why "[n]ormativists are more likely to demand that descriptivists pay attention to prescription, than epistemologists are to demand that ethicists have detailed epistemologies."[13] Ihde's postmodernist stance takes note of the essentially interwoven nature of epistemology and ethics and makes it a question of situatedness within a particular cultural context. Ihde's framework therefore precludes any ethics in the absolutist sense of the term. One can however discern the values at play in Ihde's philosophy of technology. These include nonfoundationalism and anti-essentialism in epistemology, respect for cultural plurality and diversity, political cosmopolitanism, and perspectivalism in interpretation, multistability and the intentional gap between design and use, and a rejection of either utopian or dystopian assessments of technological progress. Ihde confesses to a neo-Enlightenment trajectory in his thought that informs what he calls his "American Pragmatist progressiveness."

In my reading of postphenomenology, I attribute its lack of normative commitment to what I shall call the "hermeneutic bias." In the previous chapter, I had shown how for Ihde, philosophy of technology is essentially a hermeneutic task and how hermeneutics plays a central methodological role in the postphenomenological understanding of technologies. Ihde draws excessively on the analogy between texts and artefacts. He notes of technologies as the most ubiquitous "texts" of contemporary life; he appeals to the trope of the author as being dead in laying claim

13 Don Ihde, "Forty Years in the Wilderness," in *Postphenomenology: A Critical Companion to Ihde*, 278.

to the "intentional fallacy" that accrues when one considers the design intentions as being synonymous to the use-context of the artefact. More importantly, just as a text mediates between the reader and the world, so too does a technological artefact. Ihde's hermeneutic bias finds its most powerful expression when he conceives technologies as merely mediating between the human and the world. I argue that this notion of technologies as mediations between human agents and the world thereby restricts postphenomenological analyses. As noted in Chapter 1, like Heidegger, Ihde's analysis too conforms to a 'submissivist mode of engagement' with artefacts, albeit in a much more nuanced fashion.[14] Ihde differs from Heidegger in one crucial aspect. He does pay heed to the fact that technologies are multistable and that they are what they are only with reference to their particular use-contexts. However, this notion of multistability again draws its inspiration from image-based examples such as the duck–rabbit and the Necker cube. My contention is that such image-based examples when extended to actual technological artefacts, do not afford an analysis of artefacts as wholes which are composed of parts. Rather, owing to the hermeneutic notion of texts as parts within wholes, the artefacts are themselves reduced to parts within larger wholes determined by cultural contexts. It is within such a hermeneutic paradigm that Heidegger can lay claim to the proposition that there is no such thing as "an" equipment. Ihde similarly seems to conceive of technological artefacts as readily given wholes which are multistable due in fact only to a certain perspectival gestalt shift. Thus, to view of technologies as relations of mediation between humans and the world is to conceive of technologies as readymade wholes which find themselves amidst users and their worlds. This precludes any investigation into technological artefacts as wholes composed of parts which are invariably tinkered with in technological praxes, giving rise to new wholes with entirely novel compositions.

Ihde's unique stance (with a nod to Robert Scharff) is therefore that of an inquisitive yet obedient user who investigates a technological artefact as it is given. He is a very astute observer of the inherent potentialities in the artefact and the different contextual functions that it can fulfill. However, he is a user who is wary of breaking open and tinkering with the artefact in order to get to its working principles and structural

14 I have defined this in Chapter 1, Section 1.4.1, p. 46 as the mode of engagement in which the user conforms to the in-order-to structure or proper function of the artefact. This is in contrast to the subversive mode of engagement in which the user subverts the proper function of the artefact by putting the artefact to a use other than its designed, proper use.

composition. One can discern in Ihde the predominance of the relativistic gaze of a comparative anthropologist who traverses across cultures with a disposition to be overwhelmed by the new and the different. Ihde's hermeneutic bias coupled with his historical–anthropological investigations into technological artefacts and his postmodern distaste for any essence, foundation, or core precludes him from taking any critical position with regard to normative technological praxis. This is a severe limitation to postphenomenology, and several critics, as discussed, have raised an alarm to it.

It would also be interesting to draw parallels between Steve Fuller's critique of STS and the abovementioned critiques of postphenomenology. This is justified owing to STS being one of the major influences on Ihde's postphenomenology. Ihde situates postphenomenology squarely within "a philosophical style of analysis which deals with science and technology studies."[15] In particular, he traces the birth of both Bruno Latour's Actor Network Theory and his own postphenomenology to the emergence of social constructivism from the work of Peter L. Berger and Thomas Luckmann's *The Social Construction of Reality* (1966), which had been informed by the works of Alfred Schutz and Edmund Husserl. Fuller's work is situated in the context of the "Science Wars" and its origins in the conflict between science and the discipline of STS. Fuller notes how "STS had developed sophisticated tools for analyzing the role of science and technology in society but it remains studiously deaf to the normative implications of its analyses."[16] Fuller nevertheless draws a boundary between the discipline of STS and that of technology studies and notes in passing how "drawing from their own original normative resources, feminist- and technology-studies practitioners have been among the most penetrating critics of the disciplinary trappings that increasingly characterize STS."[17] Although this cannot be said to apply without reservations to Ihde's postphenomenological approach to technology studies, this normative resource does emerge with the work of Peter-Paul Verbeek. It is therefore imperative to discuss Verbeek's attempts to develop the normative framework—largely missing in Ihde—using postphenomenology and its theory of technological mediation.

15 Don Ihde, "Preface: Positioning Postphenomenology," in *Postphenomenological Investigations: Essays on Human– Technology Relations*, ed. Robert Rosenberger and Peter-Paul Verbeek (Lanham: Lexington Books, 2015), vii.
16 Steve Fuller, *The Philosophy of Science and Technology Studies* (New York: Routledge, 2005), 4.
17 Ibid., 8.

3.2 Moralizing Postphenomenology

Peter-Paul Verbeek develops and extends the postphenomenological method of analyzing technological artefacts by taking it beyond the Ihdean project of merely describing human–technology relations to a framework that can anticipate the ways in which they coshape human decisions and actions. Verbeek's project is therefore to develop a postphenomenological framework for industrial design whereby designers can implement into their designs the postphenomenological understanding of the mediating roles of artefacts and the multistable use-contexts in which they can end up in. For this purpose, Verbeek borrows heavily from Ihde's notions of technological intentionality and multistability. Technological intentionality, as noted in the previous chapter, is the notion that the artefacts that we use are not merely neutral and instrumental means to an end, but rather they come with an implicit instruction manual on how a user must go about using them. They give rise to a certain pattern of use and coshape our actions and intentions toward certain habitual patterns. For example, the technological intentionality of a cellphone is the imperative that one always carry it wherever one goes and respond to the caller at the earliest, if they happen to be unable to pick up their call at that particular moment. The cellphone therefore has the intentionality that one be available for one's peers at all times. This however is not a determining force, since the user can always appropriate the artefact in a number of ways in order to escape its imperatives. However, what remains unchanged is that there is this mutual co-constitution relation between the technological artefact and the user. And it is only when one understands the ways in which the artefacts shape their actions and behavior that they can subvert its norm of use.

Verbeek therefore broadens the definition of Ihde's postphenomenology "to do justice to concrete technologies without abandoning the hermeneutical and existential questions that inspire it."[18] In his book, *What Things Do: Philosophical Reflections on Technology, Agency, and Design*,[19] Verbeek attempts to do justice to his project by working out a philosophy of technological artefacts by via a critical discussion of the

18 Verbeek, *What Things Do,* 101.
19 Originally published in Dutch in 2000, and translated into English by Robert P. Crease in 2005.

conceptual resources offered by Don Ihde's *postphenomenology*, Bruno Latour's a*ctor–network theory*, and Albert Borgmann's notion of the d*evice paradigm*. The end in mind for Verbeek is to inform the domain of industrial design thereby enabling "philosophy of technology to be productively turned toward practical design issues."[20] Verbeek is very much an Ihdean postphenomenologist in the sense that he endorses a relational ontology whereby there is no unmediated access to "the things themselves." He further endorses the fundamental Ihdean tenet that technologies are what they are only within concrete use-contexts and are interpreted for use from within these contexts. His project too is (partly) Ihdean in the sense that his philosophical reflection concerns itself with "the role that these contextual and interpreted constructions play in the "experience and behavior of human beings."[21] I say partly since Verbeek—in distinction from Ihde's move from the hermeneutics of the artefact to a *cultural* hermeneutics—works out a *material* hermeneutics that is confined to domain technological praxis. Whereas Ihde takes the turn from technological intentionality and multistability to an evaluation of contemporary culture through a historico-anthropological perspective, Verbeek takes the normative turn to an ethics of artefacts that informs design, user experience, and behavior, and therefore builds on Ihde's descriptive perspective in order to develop a more normative perspective on the technological mediation of human experience.

3.2.1 Technological Mediation

Peter-Paul Verbeek takes as his starting point the Ihdean notion that technological artefacts are not "neutral intermediaries" but rather "active mediators."[22] They coshape the way in which that which they mediate is presented to us. To use a more digital trope, one can say that technological artefacts "format" the way in which reality is presented to us. This notion of mediation is very much Heideggerian, if by that one is referring to the Heidegger of *Being and Time*. This intuition has its roots in Heidegger's concept of the ready-to-hand as that which mediates between the user and the activity being carried out. The hammer therefore mediates between the carpenter and the nail that is to be struck. The essential insight of postphenomenology starting with Ihde and then emphasized in Verbeek is that the ready-to-hand artefact

20 Verbeek, *What Things Do*, 3.
21 Ibid., 113.
22 Ibid., 114.

does not merely disappear into the background when it is put to use. It rather makes present its object in certain ways and prompts the user to put it to use in certain contexts and with the employment of certain techniques. The artefacts we use "coshape" the way we relate to our world and with each other. Verbeek, with a nod to Ihde, characterizes the mediating role of artefacts in terms of *technological intentionality* and defines it as the characteristic of technologies that assigns "a certain directionality, an inclination or trajectory that shapes the ways in which they are used."[23] Verbeek captures this brilliantly when he talks of technologies as containing "an implicit user's manual" and draws parallels between this notion of technological intentionality and Bruno Latour's constructivist notion of "the 'script' of technologies."[24] He also connects this notion with Langdon Winner's analysis of "the politics of artefacts" whereby the latter cites the example of an overpass that was designed so low that no public transport buses could pass underneath it. Only commuters who owned cars could manage to get to the beaches on Long Island. This meant that the lower classes—of whom the African Americans were a majority—could not gain access to the coastline. Winner thus makes the case that the building and design of the overpass was the brainchild of the city planner Robert Moses, whose politics included racial discrimination against African American. Winner argues thereby that artefacts can have politics designed into them.[25]

Verbeek offers us a "more radical extension" of the concept of technological intentionality. He discerns in the writings of Ihde three senses of intentionality and distinguishes between *technological telos*, *technological intentionality* and *technologically mediated intentionality*.[26] *Technological telos* refers to a characteristic feature of an artefact whereby its 'intentionality' is directed towards a specific aspect of reality. For example, the 'intentionality' of a voice recorder is directed not just to the voice of the person being recorded but also to the background noise surrounding the person. A video camera is directed toward those aspects of reality upon which its lens is focused. This is an analogous extension of the Husserlian phenomenological notion of intentionality as the directedness of consciousness toward its object to technological artefacts. *Technological intentionality* refers to the 'intentions' of the

23 Ibid.
24 Ibid., 115.
25 Refer to Langdon Winner, "Do Artefacts Have Politics?," in *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago: The University of Chicago Press, 1989).
26 Verbeek, *What Things Do*, 114–116.

artefact. This refers to the normative notion of intentions as implying the norms governing the way in which the artefact ought to be used. Ihde offers a number of examples in support of this idea. As already discussed in the previous chapter, Ihde notes of the ways in which our style of writing is shaped by the tools we use. Writing with a word processor affords more editing than writing with a fountain pen, which makes it imperative upon us to deliberate extensively before putting pen to paper. Finally, *technologically mediated intentionality* refers to human intentionality as it is mediated through technological artefacts.

One can read in this tripartite distinction of intentionality, a correspondence of each of these three senses of intentionality with each of the three nodes in the human—technology—world relation. *Technologically mediated intentionality* corresponds to the intentionality of the human user as it is directed to the world via the mediation of the artefact. *Technological intentionality* corresponds to the intentionality of the artefact as it coshapes the way in which it is to be used. Finally, *technological telos* refers to the directedness of the artefact toward a certain aspect of reality. True to his phenomenological roots, Verbeek notes of the essentially intertwined relationship between these three senses of intentionality and proposes an extended postphenomenological framework that affords an understanding of the mediating role of technologies in the human—world relationship, thereby affording an understanding of the ways in which "they codetermine how subjectivity and objectivity are constituted."[27] Exercising caution in order not to "smuggle back in again via the back door the old subject–object dichotomy," Verbeek notes that the ability of the artefact to coshape the human—world relationship must *not* be conceived as being an intrinsic property of the artefact.[28] Pace Ihde, Verbeek endorses the postphenomenological conception of technologies as being understood only in terms of their relationship with humans in their technological praxis. Guarding against realism, Verbeek makes the case for there being no such thing as a technology-in-itself. Technologies are always technologies in-order-to. This notion captures the methodological import that technological artefacts can only be understood in so far as they function within our technological praxis. Here is Verbeek's argument for the multistable hence ambiguous nature of all technological artefacts.

27 Ibid., 116.
28 Ibid., 117.

With his inquiry situated within the aforementioned conceptual realm, Verbeek emphasizes two dimensions of technological mediation—hermeneutic and existential—both of which would be the object of his inquiry into things. The hermeneutic dimension involves an inquiry into the mediating role played by technological artefacts within human *experience*, whereas the existential dimension involves an inquiry into the mediating role played by technological artefacts within human *existence*. The former leads Verbeek to explore the reformulation of traditional hermeneutics into a *material* hermeneutics, whereas the latter leads to a material reinterpretation of the existential–phenomenological perspective whereby the existential idea of authenticity is deflated to give way to the crucial significance of technological artefacts in shaping and realizing human choices and actions. Verbeek incorporates the works of Bruno Latour and Albert Borgmann in developing a postphenomenological understanding of what he calls the "acts of artefacts." Verbeek thereby inaugurates a shift in emphasis within postphenomenology from a descriptive understanding of human–machine relations to a normative understanding of technological mediation.

3.2.2 Hermeneutic Dimensions of Mediation: Mutual Constitution

For the hermeneutic dimension of technological mediation, Verbeek borrows heavily from Don Ihde's postphenomenological approach to interpreting the ways in which technologies shape human–world relations. The hermeneutic significance of technological mediation lies in the fact that technologies play a crucial role in mediating the ways in which reality comes to be meaningful for us. Verbeek recalls Ihde's notion of micro- and macro-perception and notes of how technological artefacts mediate both the cultural as well as the scientific frameworks of interpretation, both of which we rely on extensively in order to make sense of reality. Verbeek privileges the embodiment and hermeneutic relations between humans and technologies over the alterity and background relations as they appear in Ihde's phenomenology of human–machine relations. He draws a tripartite distinction in Ihde's fourfold analysis of human–artefact relations: relations of mediation, alterity relations, and background relations; he brings both the embodiment and hermeneutic relations under the purview of 'relations of mediation' and gives greater significance

to embodiment relations in the mediation of action.[29] Verbeek however finds Ihde's phenomenological exposition of the human–technology–world relation misguided from the perspective that Ihde interprets technological mediation as being located between the subject and the object. Verbeek finds this an inappropriately dualist perspective of mediation whereby the "subject and object [are put] over against one another...." Verbeek interprets Ihde as suggesting that artefacts find themselves amidst "humans already given as such and a world already given as such...." Verbeek however wants to start from the idea that the subject and object "mutually constitute each other" and technologies mediate this co-constitution relationship between subjects and objects.[30] He thus supplements Ihde's analysis of mediation. Mediation, for Verbeek, is *not* to be understood as a transformation in the *manner* in which a 'fixed object' is presented to a 'fixed subject'. For Verbeek,

> [t]he *relation* between the subject and object always already precedes the subject and the object themselves, which implies that the subject and the object are *mutually constituted* in their interrelation. In any relation between subject and object, both are brought into existence in a specific way, and both subjectivity and objectivity acquire specific shape.[31]

Verbeek thereby distinguishes his conception of mediation as '*mutual constitution* of subject and object' from Ihde's notion of mediation as 'mediation *between* subject and object'. This idea is crucial to Verbeek's project since it makes technological mediation extremely significant to subjectivity and objectivity. The very constitution of our notions of subjectivity and objectivity are a product of our technologies. What Verbeek is getting at is that the subjectivity of a user is very different from that of a non-user, and this is due to the inescapable shaping of the technology in the user's experience and perception of the world, and reflexively, of oneself. Citing the example of a wheelchair user, Verbeek notes how their everyday activities are shaped by their wheelchairs and how certain aspects of the world such as stairs—which may be presented as accessible to the non-physically-challenged—may be presented as obstacles that stand in the way of getting to their destinations. On the other hand,

29 Ibid., 193.

30 Ibid., 129. For a critique of Verbeek's dualist interpretation of Ihde, refer to Evan Selinger, "Towards a Postphenomenology of Artifacts: A Review of Peter-Paul Verbeek's What Things Do," *Techne* 9, no. 2 (Winter 2005): 128–134.

31 Verbeek, *What Things Do*, 130; emphasis mine.

wheelchairs with stair-climbing features may not present stairs as obstacles to its users. Verbeek thus argues compellingly that "[w]hat humans are and what their world is receive their form by artifactual mediation." Moreover, with a remark directed at Ihde in mind, Verbeek asserts that, "[h]umans and the world they experience are the *products* of technological mediation, and not just the poles between which the mediation plays itself out."[32] With this programmatic statement, Verbeek could be read as laying the foundation stone for addressing the question of normativity from within postphenomenology.

Although Verbeek credits Ihde for framing an understanding of mediation in terms of transformation of perception, he shows the limitations of Ihde's work in investigating the implications of this transformation for the co-constitution of human–world relations. He finds Ihde's work as confined to understanding the implications of transformation at the macroperceptual level of cultural and scientific interpretation. To put in Verbeek's words, Ihde shows "how transformations of microperception affect macroperceptual ways of seeing." Verbeek, however, is interested in the implications of mediation for microperception, and this he finds missing in Ihde.[33] Hinting at another dimension of what I had referred to as Ihde's 'hermeneutic bias', Verbeek regards Ihde as considering mediation only in terms of the role of artefacts in interpretive frameworks. Verbeek however argues that

> Artifacts help to shape human interpretations of reality not only because they play a role in interpretive frameworks, but also because of their role in sensory perception, which determines the very possibilities human beings have for interpreting reality.[34]

Alternatively, he finds the work of Jan Hendrik van den Berg, a Dutch psychiatrist and phenomenological psychotherapist, as affording a foray into investigating the "hermeneutic aspects of microperceptual mediation" and thereby connecting Ihde's work with question of the roles of technological artefacts in the mediation of meaning. In support of Ihde, however, Verbeek's invocation of van den Berg seems highly redundant. One can discern an uncanny similarity between the phenomenological

32 Ibid., 130.
33 Ibid., 131.
34 Ibid., 132.

explorations of van den Berg and those of Ihde. Both arrive at the essential amplification–reduction structure that is characteristic of all technologically mediated perceptions. And although, finally, Verbeek favors the conclusions drawn by Ihde over those drawn by van der Berg, he finds in the latter the crucial insight that there exists "a direct connection between perceptual mediation and meaning—a connection that is underexposed in Ihde's work."[35]

Here, it would be fair to say that Verbeek is creating a strawman in Ihde. Ever the persistent hermeneut, Ihde's entire work can be read as relating technological artefacts with the question of meaning by expanding hermeneutics—traditionally concerned with texts—to include material artefacts. What Verbeek misses in Ihde is the ever-present movement of the hermeneutic circle between microperception and macroperception. Therefore, Verbeek's distinction between the hermeneutic aspects of macroperception and the hermeneutic aspects of microperception is akin to the fallacy of making a distinction without a difference.[36] There is a constant interplay in Ihde's writings between both micro- and macro-perception and how they relate to each other.[37] Since one of the central questions of hermeneutics has to do with the relationship between the meaning of the part and the meaning of the whole, to separate the part and the whole as distinct realms of analysis is to make room for misinterpretation, especially in the case of hermeneuts such as Ihde. The hermeneutic circle has its origins in the context of the question of the relationship between the meaning of the text and the historico-cultural context within which the text had been written. The notion of the circle emerges with the work of Friedrich Schleiermacher and is transformed into an ontological condition of being in Heidegger's *Being and Time,* wherein the as-structure of interpretation comes about within the fore-structure of understanding. These two structures can be analogously compared with Ihde's notion of microperception and macroperception. Therefore when Verbeek, in the abovementioned quote is referring to sensory perception as that "which determines the very possibilities human beings have for interpreting reality," he is referring to

35 Ibid., 133.

36 In the next chapter of the same book Verbeek notes of the mutual interaction between micro- and macro-perception in speaking of the hermeneutic perspective (ibid., 147). Verbeek, however, does offer an extended discussion of the distinction between micro- and macro-perception in Robert Rosenberger and Peter-Paul Verbeek, "A Field Guide to Postphenomenology," in *Postphenomenological Investigations*, 16.

37 Ihde offers a number of key insights into microperception from the work of Merleau-Ponty in *Instrumental Realism,* 30.

sensory perception in isolation from its constitution within macroperception. Although Verbeek raises a crucial point, it seems to be misplaced to raise it *within* the context of Ihde's phenomenological hermeneutics. It is my contention that to raise this question is to already break with the hermeneutic method and its emphasis on the hermeneutic circle.

In the end, however, Verbeek concedes that Ihde's postphenomenological approach offers a "much more nuanced picture of the hermeneutical role of technologies." And that in contrast to Heidegger, Ihde begins "with our dealings with concrete technological artefacts, and the praxes and interpretations that are made possible by them."[38] Pace Selinger, Verbeek's radical reformulation of Ihde's hermeneutics seems to be an overstatement.[39] Verbeek, however, offers a response to Ihde's normatively informed critics with his reformulation of the notion of technological mediation as the mutual constitution of subjectivity and objectivity. This enables him to raise the problem of normativity in terms of the ways in which artefacts co-constitute the human–world relationship. This leads him to investigate into the ways in which artefacts mediate human actions and choices. This directs him to the works of Bruno Latour and Albert Borgmann.

3.2.3 Existential Dimensions of Mediation: Action and Existence

Verbeek draws parallels between the action–existence relationship crucial to an existential perspective and the perception–experience relationship crucial to the hermeneutic perspective. With the aim of investigating into the role of technological artefacts in the realization of human existence, Verbeek sets out to explore the role of technological mediation in the realization of human action. Human existence, according to Verbeek, comes about "from the mutual interaction of human actions and the context of existence in which specific ways arise for human beings to engage the world."[40] Action and context of existence, therefore, constitute the two aspects of the existential dimension of technological mediation, much in the same way as micro- and macro-perception constituted the two aspects of the hermeneutic dimension of technological mediation. Verbeek draws eclectically from the works of the French

38 Verbeek, *What Things Do*, 143.
39 See Evan Selinger, "Towards a Postphenomenology of Artifacts," 131.
40 Verbeek, *What Things Do*, 148.

constructivist Bruno Latour and the German– American philosopher of technology, Albert Borgmann. In the former he finds a framework for understanding the mediation of action, whereas in the latter he finds a framework for understanding the mediation of existence.

3.2.3.1 Mediation of Action

In order to explore the role of artefacts in mediating human actions, Verbeek attempts to work out "a fertile hybrid" of Ihdean postphenomenology and Latourian actor–network theory (hereafter referred to as ANT). He finds in Latour the conceptual resources necessary to address the normativity implicit in the mediational role played by artefacts in their relations with humans. He finds Latour's ANT as affording insights into the ways in which artefacts mediate human behavior and action. Bruno Latour formulated the ANT as a non-reductive method to understand the ways in which entities such as concepts, facts, objects, etc are produced. The key insight of ANT is the notion that the production of entities happens always within a network of actants, which is a neologism that encompasses human subjects as well as non-human objects. Latour thereby wants to get rid of the modernist separation between humans and nonhumans, and bring all actions as occurring under the purview of a network of actants. These actants themselves—and their potential for acting on other actants—emerge from their relations with other actants. Thus, the function and identity of actants, for Latour, is in virtue of the network of relations of which they form a part. The methodological import of this perspective is that to study a phenomena is to describe all the actants that are involved in the emergence of this phenomena. Latour's early work on the construction of scientific facts in *Laboratory Life: The Construction of Scientific Facts* (1979) is exemplary of this method. Heavily influenced by ethnomethodology and semiotics, ANT marks the break in STS with the emphasis on the "social" as had been the forte of social constructivism. Latour lashes out at all methods which cut a wedge between humans and nonhumans. Condemning this pseudo-modernist "purification" of human from nonhuman actants, Latour makes the case the recalcitrant presence of hybrids which resist such purification. The ever increasing proliferation of hybrids necessitates that we understand them in all their manifestations, and this is the objective which Latour's ANT is aimed at addressing.[41]

41 Refer to Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge: Harvard

Verbeek reads through the parallels and divergences between Latour's ANT and Ihde's postphenomenology. In both, he finds complementary resources to address the mediating roles played by technologies in coshaping subjectivity and objectivity. As already noted, Verbeek finds in Ihde's postphenomenology the hermeneutic resources to understand the role of technologies in mediating experiences and interpretations. In Latour's ANT, however, Verbeek finds the normative resources to understand the role of technologies in mediating behavior and action.[42] Latour's taxonomy of the four aspects of mediation in the names of translation, composition, reversible black-boxing, and delegation affords an investigation into the ways in which technological artefacts by way of their structure and function influence the ways we act in the world. Whenever a technological artefact enters into a relation with a human, there is mediation of action. The "program of action" of the human, i.e., the intention of the human actant, is translated into the function of the artefact. Verbeek illustrates this by using the example of the human—gun relation: a seeker of justice, who may have the program of action "to take revenge" against their assaulter might, upon finding a gun, translate their program of action into one that calls for to "shoot that person." Thereby there emerges a hybrid of actants involving the human and the gun, each actant undergoing a transformation in identity—with the human transforming into a murderer and the gun transforming into a murder weapon. To answer the question as to who is the killer would be to take note of the hybrid composition of the program of action. This hybridity emerging from the inevitable entanglement of human and nonhuman actants necessitates that action be understood not merely in terms of human desires and intentions but always as an association between actants. The Latourian response to the policy-minded question of whether "guns kill people" or "people kill people" would be to note that the program of action "to shoot" is one that is carried out by the hybrid actant that is composed of both the human as well as the gun.

For Verbeek, this move entails that we extend our ethics beyond the autonomy of the human to taking account of the mediating roles played by artefacts in carrying out or

University Press, 1991).

42 Refer to Bruno Latour, "Where are the Missing Masses? The Sociology of a Few Mundane Artifacts," in *Shaping Technology / Building Society*, ed. Wiebe E. Bijker and John Law (Cambridge: The MIT Press, 1992); see also Bruno Latour "On Technical Mediation: Philosophy, Sociology, Genealogy," *Common Knowledge* 3, no. 2 (1994): 29–64.

inhibiting human action. These associations between actants remain concealed and inconspicuous, owing to the smooth functioning of the hybrid composition. When there is a breakdown, however, the network of relations come to light, and all the actants involved in the association are brought to light. One can see here a stark similarity with Heidegger's conception of how the ready-to-hand tool calls attention to itself when it breaks down and thereby becomes present-at-hand. Most crucial for Verbeek, however, is the Latourian concept of delegation. Delegation involves the inscription of a certain program of action within an artefact. Following Latour, one of Verbeek's characteristic examples is that of the speed bump. The speed bump comes to be as a result of delegating to a lump of matter the task of slowing vehicles down. The speed bump is thereby delegated the task that would otherwise have to be delegated to the traffic police. It is the designer/engineer who is called upon to delegate the required program of action of the artefact. It is this basic insight that Verbeek relies on to formulate a design ethics that is based on key insights from his readings of Ihde, Latour, and Borgmann. With a nod to Ihde, Verbeek notes that although artefacts, being multistable as they are, cannot be given determinative roles in the ways in which they mediate human action, one can always anticipate on the basis of cultural norms as to the predominant ways in which the mediation between users and artefacts is carried out.

Calling attention to the normativity of technological artefacts, Verbeek notes of the ways in which they prescribe actions, thereby making it imperative to bring them under the purview of ethics. Verbeek, however, offers a postphenomenological critique of Latour's notion of mediation as implying that mediation is a property of the artefact itself. From a postphenomenological perspective, however, technologically mediated intentionality is "a mode of the intentional relation between humans and world."[43] It is *not* a property of the artefact but a relational category. Verbeek finds Latour's conceptualization of technological mediation in terms of delegation and inscription as suggesting that this is something that is assigned to artefacts by humans. Verbeek contests this notion and clarifies the postphenomenological perspective on technological mediation as implying that the mediating roles of artefacts are relational and are to be situated within the human–world relation. Verbeek therefore "translates" Latour's ideas into a

43 Verbeek, *What Things Do*, 169.

postphenomenological perspective whereby the delegation of things to humans takes priority over the delegation of humans to things. This perspective thus paves the way for a design ethics that is based on anticipating the mediations of artefacts and the roles they play in contributing to human action. Verbeek draws parallels between the notion of translation in ANT and that of transformation in Ihdean hermeneutics. Just as Ihde's hermeneutic analysis of technological mediation revealed perception to have an inherent amplification/reduction structure, Verbeek finds Latour's relational analysis of technological mediation as revealing action to have an inherent invitation/inhibition structure.

Verbeek thus aims his postphenomenological perspective at discerning the ways in which technological artefacts mediate human behavior in terms of the actions that they allow or inhibit. Such a perspective implies that ethics be expanded beyond its confinement to human actions and values. The crucial insight of Verbeek is that since technologies mediate between humans and their actions, they necessitate deeper analysis of the roles they play in our praxis. Drawing attention to the philosophical and ethical significance of artefacts, Verbeek notes how

> They make possible particular praxes and in so doing they shape the relations between humans and their world. Because mediated actions make humans encounter the world in a particular way, the mediating artifact helps to determine how both the world ("objectivity") and those who act in it ("subjectivity") are present.[44]

Thus, Verbeek extends the postphenomenological perspective beyond Ihde in order to address the question of normativity and thereby work out an ethical framework through which artefacts can be designed to anticipate and promote actions that accord to those values that are deemed good.

3.2.3.2 Mediation of Existence

Whereas Verbeek finds in Latour's ANT the resources for investigating into the technological mediation of action, he finds in the work of Albert Borgmann the

44 Ibid., 171.

conceptual resources for investigating into the technological mediation of existence.[45] Borgmann's thinking through technologies consists in extending Heidegger's reflections on technology to our contemporary technological lifeworld. In contrast to Heidegger and in line with the post-empirical-turn philosophy of technology, Borgmann is concerned not so much with the history of being but with the concrete everyday ways in which the technologies that proliferate our live shape it in ways that are unbeknown to us. He finds our contemporary lifeworld to be ruled by what he calls the *device paradigm*, which has radically altered the way in which we are involved in and engaged with one another and the world at large. To do a philosophy of technology, for Borgmann, is therefore to study technological devices, since they are the most ubiquitous representatives of this technological paradigm. This paradigm has gone unnoticed, according to Borgmann, owing to the promise arising out the Enlightenment that technology would liberate us from servitude and enrich our lives. Borgmann points to this Enlightenment promise as being responsible for the inconspicuous prevalence and consumption of the device paradigm, such that one no longer notices it for what it is but rather for what it promises. Borgmann therefore attempts to bring to light this device paradigm with an aim to reveal the ways in which it shapes our engagements with things, people, and the world at large.

Borgmann's conceptualization of the device paradigm rests on the phenomenological distinction he makes between *devices* and *things*. Borgmann observes that with the coming of modernity and the subsequent establishment of the device paradigm, there has been a conversion of *things* to *devices*. Borgmann's understanding of devices is premised on their characteristic feature of making things readily available for consumption without having to go through the effort that is otherwise required to provide for these services. The functions served by devices are instantaneous, ubiquitous, safe, and easy. Things, on the other hand, require that they be engaged and worked with in order to extract the same function out of them. Verbeek, following Borgmann, cites the fireplace as a thing which has come to be replaced by the device which we all know as the central heating system. Whereas the fireplace requires that one engage in activities such as collecting and sizing firewood, monitoring the burning of the wood, replacing the burnt wood, etc, the central heating system can

45 The reference herein is to Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: The University of Chicago Press, 1984).

heat the entire house without requiring any of these engagements. It makes heat available for consumption instantaneously. Borgmann describes the device as decontextualizing the *commodity* from its *machinery*. By commodity, he means that which a device makes available, and by machinery, he means the technological structure which enables the device to deliver the commodity. Borgmann laments the observation that with the device paradigm there has been a separation between the consumption of the commodity and the know-how of the machinery. Verbeek, following Borgmann, defines the device as "an entity that makes available a commodity on the basis of machinery that remains concealed as much as possible."[46] The machinery of a device is therefore the means by which the end of the commodity is made available. As the device paradigm advances, the machinery gets to be increasingly concealed such that the consumer of the commodity need not engage with its machinery. Borgmann thereby characterizes the device paradigm as consisting in the continuous replacement of things with devices, of the separation of the commodity from the machinery, and of the increasing trend of consumption without engagement.

Borgmann therefore marks the coming of the device paradigm with the substitution of consumption for engagement. This entails that human existence is cut off from engaging with its material and social contexts. Borgmann describes this as the "irony of technology—it fulfills its promise of enrichment and disburdening in such a way that the disburdening it offers stands in the way of true enrichment."[47] Although Verbeek offers an empathetic reading of Borgmann's philosophy of technology, he charges him with being too "rash to conclude that mass consumption leads to a pattern of human existence whose exemplar is the couch potato."[48] Verbeek applies his postphenomenological perspective to Borgmann's diagnosis and suggests that it does not give due credence to the multistability of technological artefacts. To speak of the device paradigm as curtailing engagement is to make a negative assessment of technology only on the basis of a unidimensional perspective. However, when technologies are investigated in all their multiple dimensions, it becomes apparent that there do exist technologies that promote and enhance engagement. Verbeek cites the example of automobiles as allowing people to meet frequently and communication

46 Ibid., 177.
47 Ibid., 180.
48 Ibid.

technologies as enabling people to talk over long distances. Verbeek's postphenomenological perspective therefore demands a much more nuanced investigation into the ways in which technologies coshape human existence.

Borgmann's prescription for curtailing the negative effects of the device paradigm is to promote an alternative to the device paradigm. This alternative consists in the cultivation of focal things and practices. Borgmann observes that one of the characteristic features of the the good life is the upholding of the value of a shared community. Borgmann therefore endorses engagement with focal things, i.e., things which act as foci around which human involvements can converge. Focal things, for Borgmann, are those which promote focal practices, i.e., practices which are valuable in and of themselves. Borgmann draws his influence explicitly from Heidegger's essay "The Thing," wherein Heidegger carries out his characteristic etymological–metaphysical analysis of our understanding of things as it originates in Greek thought to its culmination in modern technology. Borgmann cites Heidegger's example of the jug, which "gathers and discloses what Heidegger calls the fourfold, the interplay of the crucial dimensions of earth and sky, mortals and divinities."[49]

One can read Borgmann's philosophy of technology as an axiology that stresses the importance of the intrinsic value of communitarian practices such as working, dining, spending time together, etc. Borgmann is also one of the few remaining philosophers of technology who does not shy away from connecting political philosophy with philosophy of technology. He shows how the main tenets of liberal democracy such as freedom and equality go hand in hand with the tenets of the device paradigm such as mass production, consumer culture, and disengaged consumption. Borgmann goes so far as to say that "[l]iberal democracy is enacted as technology," and chastises its program of leaving it up to the individual to decide on the meaning of the good life.[50] Borgmann brings to light the irony of liberal democracy in that it has inconspicuously provided an answer on everyone's behalf. The pluralism it had promised has turned out to be an empty promise, which has in fact been replaced by a standardized ideal of the good life as consisting only in greater work and greater consumption. Borgmann observes sharply that although one has the freedom to choose from a wide range of

49 See Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: The University of Chicago Press, 1984), 312.

50 As cited in Verbeek, *What Things Do*, 181.

devices, what one does not have is the freedom to choose the way the device shapes their existence in terms of disengaged consumption of the commodity. Moreover, the income disparities under liberal democracies ensures that the poorer classes look up to technology as a liberating and equalizing force, thereby diminishing the scope for democratic transformation of the poorer classes. Political means of transformation are given up in favor of a utopia in which technological progress is inevitably associated with human progress.

Verbeek offers his characteristic postphenomenological critique of Borgmann. Pace Heidegger, Borgmann too romanticizes the past when he claims that pretechnological things are meaningful in themselves since they encourage collective engagement and effort. The device paradigm, on the other hand, in making commodities readily available invites consumption and inhibits engagement. Verbeek calls attention to the fact that Borgmann's notion of focal practices suggests that they are not the usual means-to-end practices, but are rather those which are meaningful in and of themselves. Verbeek therefore goes on to distinguish between two meanings of *engagement*. Verbeek's reading of Borgmann can be read as being typical of the postphenomenological program of saving technology from any kind of essentialist philosophical evaluation. Verbeek therefore deconstructs Borgmann's analysis by discerning a category mistake inherent in the latter's thinking about technology. Verbeek notes that the focal practices which Borgmann discusses belong to an entirely different class of practices than technological praxis. Whereas technological praxis is carried out as a means to certain ends, focal practices are those which are intrinsically valuable and are not in service of particular ends. Similarly, focal things belong to an entirely different class of objects than technological artefacts. The former are not designed for any particular function. Therefore, to compare the two is to make an incommensurable comparison between objects and practices belonging to two entirely different classes. Verbeek subsequently goes on to make a distinction between two different forms of engagement practices—those that diminish effort and those that produce meaningfulness. Verbeek therefore points out that

> Borgmann's concept of engagement undergoes a shift in meaning as his argument develops, making the alleged impoverishment of modern life at least ambiguous....[and] the exclusive alternative he offers between

> engagement with nontechnological things and disengaged consumption of technological devices is untenable. The pattern that he outlines does not do justice to the role of technology in human existence, however enlightening it is to describe it in terms of involvements.[51]

Having delivered the above verdict, Verbeek notes of the more ambivalent role of technological artefacts in focal engagement. Contra Borgmann, he does not distinguish sharply between things (which invite engagement and are intrinsically meaningful) and devices (which diminish engagement and invite consumption). He cites counterexamples to Borgmann's thesis by noting how, for example, the CD player can be engaging as opposed to being consumptive. In making music easily accessible to people who cannot afford to attend live concerts, it allows more people to participate in the activity of enjoying music. According to Verbeek, Borgmann only sees a part of the picture and mistakes it for the whole. From the postphenomenological perspective, however, things are more ambivalent and multistable. From this perspective, "technology can not only reduce engagement but also amplify it...[and it] gives rise not only to disengaged consumption, but also to new possibilities of engagement."[52] Verbeek calls for a revision in our understanding of consumption from being a "disengaged way of dealing with reality" to involving "the making use of products in which the amplification and reduction of engagement are entwined together in an ambivalent way."[53] Verbeek is, in effect, arguing that the reduction or amplification of engagement be understood as being already mediated through technologies.

Verbeek therefore recommends replacing Borgmann's notion of devices as *reducing* engagement with the Latour-inspired conception of devices as *translating* engagement. Verbeek proceeds thereby to develop a postphenomenological framework for understanding the technological mediation of action. This consists in discerning the ways in which our involvements are translated within the human—artefact relation. Technological artefacts can be said to mediate action as they *encourage* certain actions over others and *inhibit* certain actions over others. Verbeek acknowledges that Borgmann is right in pointing to the *inhibiting* aspect of

51 Ibid., 186.
52 Ibid., 190.
53 Ibid.

engagement in devices. However, what he missed was the fact that technological artefacts, owing to their multistability, could be seen as simultaneously *inviting* other aspects of engagement. Just as Ihde discerned the essential amplification/reduction structure to all technologically mediated perceptions, Verbeek discerns an essential invitation/inhibition structure to all technologically mediated engagements. He notes further that of the four kinds of human—artefact relations discerned by Ihde, the embodiment relation is the most important and relevant to the analysis of mediation of action.[54] It is in the analyses of embodiment relations that the technological mediation of action plays itself out most explicitly. It is also within this context that the work of Borgmann, Heidegger, Latour, and Ihde can be brought in dialogue with each other. Since artefacts within the embodiment relation are ready-to-hand and since the artefact *qua* ready-to-hand withdraws into the background, the mode of being ready-to-hand plays a crucial role in the way in which we engage with the artefact.

Artefacts that withdraw into the background owing to their readiness-to-hand, runs Verbeek's argument, do not invite engagement. Addressing a critical comment at Heidegger, Verbeek observes that Heidegger's tool-analysis was limited only to those artefacts that had to be ready-to-hand in order to perform their function. Verbeek notes, however, that there are technological artefacts that perform their functions without necessarily being ready-to-hand. He cites the example of a piano as being an artefact which invites involvement and engagement owing to the fact that it does not completely withdraw into the background. In playing a piano, or any musical instrument for that matter, one's attention is directed towards the music produced as well as towards the process of producing the music. In such contexts, the artefact lies somewhere in between the two modes of readiness-to-hand and presence-at-hand. Verbeek notes that "[r]eadiness-to-hand and presence-at-hand, therefore, cannot be conceived as two *modes* of human-artifact relations, but rather as the *termini* of a continuum on which this relation unfolds."[55] He calls such devices *engaging devices*. The CD player, in contrast to the piano, mediates action in a very different manner. In delivering music by disappearing into the background, it invites engagement only in the form of listening to the music, and not in the form of producing music. When involvement/engagement is seen from the perspective of technological mediation, a

54 See Chapter 2 of the present thesis; Section 2.4, p. 76.
55 Verbeek, *What Things Do*, 194; emphasis mine.

much more nuanced picture emerges. From this perspective, devices, too, can be said to invite engagement and involvement. These considerations complicate and problematize Borgmann's analysis of the device paradigm as necessarily inhibiting engagement.

It is instructive to digress for a moment in order to point out the parallels between Verbeek's notion of *engaging devices* and the notion of the *tinkered artefact* which I had outlined in Chapter 1. Therein, I had noted of how the tinkered artefact exists in a state of *bracketed inconspicuousness*. Such tinkering with the artefact takes place within the *subversive* mode of engagement, which I had introduced as the "mode of engagement with artefacts in which its use is subversive of the in-order-to structure."[56] The subversive mode of engagement usually arises when the requisite equipment is unavailable and one has to "make do" with those objects that one has in their possession. Thus, in contrast to the *requisite artefact*—that which was assigned/designed for the job, that which was ready-to-hand in performing its function, and that which withdrew into the background—the *tinkered artefact* can be said to be "never fully ready-to-hand or present-at-hand, never fully backgrounded or foregrounded, never fully withdrawn or explicit."[57] There is no familiarity with the artefact as it is in the case of the *submissive* mode of engagement with artefacts. The crucial difference between *engaging devices* and *tinkering* is that whereas Verbeek notes of the engagement of engaging devices as a relational property arising out of technological mediation, tinkering can be said to be a phenomenological and epistemological exercise in which affordances are perceived in artefacts which are over and above those designed into the artefact. Therefore, whereas the engagement of engaging devices is limited to the *submissive* mode of engagement, the scope for tinkering arises only within the *subversive* mode of engagement. This has important implications for the normativity of technological artefacts: whereas engagement with engaging devices is the norm that has been designed into the device, engagement through tinkering is that which continually subverts the norm that has been designed into the artefact. I shall extend this argument further in the next chapter. For now, I shall continue to elaborate on how Verbeek argues for a design ethics that takes into consideration the mediating role of artefacts in shaping human experience and

56 Refer to Chapter 1 of the present thesis; Section 1.4.1, p. 46.
57 Refer to Chapter 1 of the present thesis; Section 1.4.2, p. 52.

existence.

3.3 Mediation, Material Morality, and Design Ethics

Having discussed in detail the way in which technological artefacts mediate experience, action, and existence, Verbeek draws the implications of his postphenomenological approach to matters concerning the design of *ethical* artefacts. Here one can discern in Verbeek a crucial methodological move in support of an ethics of artefacts. Whereas traditional ethics has concerned itself with anthropocentric questions such as 'how to act' and 'how to live', Verbeek can be seen as inaugurating a *material turn* in ethics whereby artefacts—owing to the fact that they mediate our actions—are bestowed with moral status. Verbeek argues that since technological artefacts co-constitute subjectivity and objectivity and mediate human actions and decisions, designers of such artefacts "engage in ethics by other means."[58] Verbeek champions Latour as being "one of the first to speak explicitly of the mediating role of artefacts in connection with ethics."[59] He cites the example of a car that is pre-programmed to not start unless the driver puts on the seat belt. This car, according to Verbeek, is "full of morality, for to its machinery has been delegated the task of enforcing the moral determination of whether or not the driver should wear a seat belt."[60]

The essential insight that Verbeek wants to emphasize from the postphenomenological perspective is that technological artefacts mediate and thereby order human–artefact, human–human, and human–world relationships. They do this owing to their structural and functional features. Verbeek offers a brief survey of thinking about technological artefacts in design and notes how its concern has so far been mostly with the sociocultural and symbolic, i.e., with the secondary functions of artefacts. Concern regarding primary function, i.e., the utility value, has traditionally been the forte of engineers. This division of labor between engineers and designers has meant that designers perceive themselves as being preoccupied with improving the sociocultural status value and aesthetic appeal of the product. This has, in turn, led to the prominence of the 'semiotic perspective' in industrial design, meaning that products

58 Verbeek, *What Things Do*, 212.
59 Ibid.
60 Ibid.

are conceptualized predominantly as bearers of signs and designers are assigned with the responsibility of maximizing the symbolic value of products.[61] Verbeek sees this as a significant drawback of design theory, since it fails to see the ethical implications of design. When seen from Verbeek's postphenomenological perspective, however, design is inherently an ethical enterprise, since technological mediation inevitably co-constitutes and shapes human actions and existence. Verbeek therefore calls for a turn to a postphenomenological understanding of design as ethics by other means and of technological artefacts as having moral status. Traditionally, industrial design has focused its attention on distinguishing between the primary and secondary function of artefacts, between what artefacts denote and what they connote, between practical functions and product-language functions, and between an artefact's material utility and socio-cultural utility, and in essence between functionality and meaning, and concentrated its focus on all the latter aspects, respectively. It is only with the postphenomenological perspective that there is an understanding of mediation as yet another important feature of technological artefacts.

Central to Verbeek's understanding of the moral status of artefacts is an adequate understanding of the notion of material mediation. This requires design theory to turn its attention away from secondary and connotative meanings of artefacts and towards the primary functions of artefacts. Verbeek conceptualizes mediation as "not a product's *function*, but rather a *byproduct* of its functionality."[62] In other words, technological artefacts do not just merely perform their functions; in carrying out their primary functions, they mediate and actively shape human–world relationships. Therefore, to investigate into the mediating roles of artefacts is to move beyond their functionality and turn to that which comes about *on the basis of* their functionality. Verbeek illustrates this using the example of the dining table. Whereas the *primary function* of the table is to enable people to sit and dine together and its *secondary function* can be read as suggesting the cultural tastes and social hierarchy practiced by the household (e.g., a round table as having no head position as opposed to a rectangular table; therefore suggesting a non-hierarchical familial setting), the *mediating* aspect of the table concerns the way in which, owing to its materiality, the table actively constitutes the relations between the people who sit around it.

61 Ibid., 206.
62 Ibid., 208; author's emphasis.

Technological mediation is therefore not a means to an end as are the primary and secondary functions. It is however a consequence of the material structure of the artefact. It comes into play once the artefact withdraws into the background in performing its function. Verbeek puts it thus:

> When the table is used (that is, when it fulfills its primary function by making it possible to lay out table settings so that people can sit in proximity), it is absorbed and incorporated into the practice of eating that it makes possible without this being consciously experienced—and from that position it mediates the relations between the people around it.[63]

It seems to be that for Verbeek, there is a mutual relation between mediation, function, and use. It is only in our engagement with artefacts, i.e., in our use of technological artefacts for their designed functions that artefacts mediate our experience and action. Moreover, it is only in conjunction with function that mediation operates. Therefore, since it has been established that technological mediation of human action and behavior is a matter of fact and a property of technological artefacts, Verbeek draws the conclusion that artefacts have moral status and designers have the responsibility for designing 'moral' artefacts. Verbeek, citing Gerard De Vries, goes so far as to say that in our technological culture, devices instruct people on how to live.[64] Verbeek's major influence, however, can be traced to the Dutch philosopher of technology Hans Achterhuis and his call for a *material ethics*. This consists in delegating to technologies the role of bringing about much of our moral actions. A speed bump can be seen as a simple example of this. The act of slowing down near a school or at a Zebra crossing can be delegated to the speed bump, thus moralizing it. This could be seen as being more effective than preaching or signaling drivers to slow down whenever they come by a school or a Zebra crossing. More crucially, Verbeek argues that in not conceiving of artefacts as moralizing objects, we implicitly endorse the proliferation of artefacts which could be termed as immoral when seen from the perspective of a material ethics. Since technological mediation of our actions and behavior is an inescapable fact of artefact function and use, it is the up to the ethical designer to anticipate and design morality into these artefacts.

63 Ibid., 208.
64 Ibid., 213.

3.3.1 Critiques of Material Morality

Verbeek addresses a number of critiques that have been leveled against conceiving of artefacts as moral devices. Critics of this view have especially raised an alarm against Achterhuis' proposal to moralize technologies by accusing him of envisioning a technocracy wherein human freedom and choices are delegated and subordinated to the rule of technological devices. In support of Achterhuis, Verbeek argues that since artefacts inescapably mediate our actions—both moral as well as immoral—they need to be brought under the purview of moral philosophy and all design must be accompanied by ethics. To ignore this aspect of technological mediation is to give a free hand to designers and engineers to decide on the ways in which artefacts mediate our actions. It is this, according to Verbeek, that would lead to the technocracy that the humanists want to warn us against. Another objection that is raised against this framework comes from the intentionalist perspective. From this perspective, things cannot be held morally accountable since they lack intentions. It is therefore a category mistake to ascribe morality to artefacts. The most one can do is to note of the influence of things in making our moral decisions. Verbeek cites Tsjalling Swierstra as a representative of this critique.

According to Swierstra, artefacts cannot be said to partake of the moral community since the most that can be said of them is regarding their causal responsibility for an action.[65] To ascribe moral responsibility to artefacts is to take it too far. From the consequentialist perspective, although things do play a role in the consequences of human action, they do so only instrumentally, as means to ends. The role of artefacts is predicated finally upon human intentions. From the deontological perspective, artefacts come nowhere close to being called moral since they can in no way be said to accord with rational norms of categorical imperatives. Verbeek responds by deconstructing Swierstra's critique as involving the problematic assumption that "carrying moral responsibility is required to make a claim to moral treatment."[66] If this assumption is accepted, Verbeek argues, then "children would have no moral rights, and environmental ethics would be impossible."[67] In contrast to Swierstra,

65 Ibid., 214.
66 Ibid., 215.
67 Ibid., 215.

Verbeek conceives of moral community as comprising entities capable of *shaping* morality rather than *claiming* morality, i.e., it is occupied with deliberating on ethical questions such as how to live and how to act in particular situations. Now since artefacts have been shown to shape our experience, action, and behavior, they definitely form part of the moral community. Verbeek clarifies his position in response to his critics thusly

> Things do not have intentions and cannot be held responsible for what they do. But that does not alter the fact that they do act. They play a mediating role—one with an ethical dimension in that moral considerations are transformed, shaped, or even taken over....[T]hings themselves do not do the moral evaluating, but they do contribute to it—which makes it worth the trouble to anticipate this contribution. If that anticipation does not happen, things would have free play in answering our moral questions, since nobody would try to adapt their built-in morality then.[68]

3.3.2 Design Ethics

Having argued for the inclusion of artefacts as members of the moral community, Verbeek proceeds to show the significance of design ethics for moral deliberation. He invokes the example of Robert Moses' design of the low-hanging overpass, which is canonically cited as exemplary of the political nature of artefacts.[69] However, Verbeek's interesting take on the issue does not concern Moses' racial politics. Rather, he is concerned with the mediation of the overpass design in selectively allowing only cars, and not buses, to pass through them. This entails that one may ascribe moral status to the design of the overpass, regardless of the ideological bias of the designer. Verbeek therefore conceives of design ethics as being concerned with anticipating the mediating role of things and taking responsibility for shaping the ways in which artefacts shape human action and behavior. This raises an issue for the postphenomenological perspective, however. This issue is raised as a result of the multistability of artefacts. As already noted, technological artefacts are multistable in that they do not have a particular identity or essence that defines their purpose. They

68 Ibid., 216.
69 See Winner, "Do Artefacts Have Politics?"

are open to multiple uses, and their identity is determined by their use-contexts. The multistable nature of artefacts poses a challenge for designers to predict the use they would be put to and consequently to anticipate the mediations that they would give rise to. Verbeek discusses this problematic by noting however that multistability "need not hamper designers in explicitly trying to anticipate the mediating role of products in their use context" since empirical studies into use contexts and conventions can help isolate the patterns of use that a particular artefact has been subjected to. This helps isolate the stability in the use-context of a particular artefact and an insight into the possible mediations that an artefact would give rise to. In what shall be characteristic of much postphenomenological analysis into technologies, Verbeek turns to the case study of a Dutch industrial design firm, *Eternally Yours,* as an example of putting to practice the insights that have been arrived at so far.

Eternally Yours, which is a design organization that specializes in the design of ecologically friendly products, 'moralizes' its designs by delegating to them an ethics that prohibits users from disposing of their artefacts prematurely. It inscribes in the products properties that are geared toward promoting attachments between the user and the artefact. Verbeek contrasts this with conventional approach to ecodesign. This approach involves MET—material cycle, energy consumption, toxicity—optimization. As opposed to giving due importance to the human—artefact relationship, this approach focuses its attention toward minimizing the environmental damage caused by the disposal of artefacts. This fails to take into account the user experience of the product and the co-constitution of the human—technology relationship. *Eternally Yours*, on the other hand, takes technological mediation into account and designs durable products that afford easy repair, reuse, upgrade, and retention. This is an example of a design ethics that focuses on materiality and mediation as a space for instilling morals. From within a postphenomenological perspective, Verbeek proposes certain other criteria that must be adhered to in order to make products 'culturally durable' i.e., to minimize the scope for their disposal in our rapidly changing technological culture by strengthening the bonds between users and their devices. Verbeek's main insight is that any criteria must be geared toward the materiality of the artefact itself, rather than to what it signifies or symbolizes.

3.3.3 Transparent and Engaging Artefacts

Verbeek recalls Heidegger's analysis of the ready-to-hand and present-at-hand and the transformation of a tool from the former to the latter upon breakdown. He notes how this is the case with our everyday artefacts when they malfunction, and it is their presence-at-hand that invokes us to dispose of them, unless they afford an easy reversal to their readiness-to-hand. It is here that the notion of transparency plays a crucial role. Verbeek notes that in order to restore artefacts to their functioning state, they must be transparent enough to afford the user to do so. This means that they must be easy to open up and repair or replace the defective parts. However, if the recent trend in design is anything to go by, one observes that an increasing number of artefacts come with tightly sealed compartments in comparison to their previous counterparts which came with nuts, bolts, and screws that made them easy to take apart. This stands as a major obstacle before the restoration of the artefact to its functioning state, and prompts the user to dispose it and to go in for a new device, thereby increasing industrial waste in the process. To make our everyday artefacts transparent is to minimize the obstacles that stand in the way of repairing and restoring them to function. There is also a growing divide between the engineers and the users. The users need to invest considerable amount of time to understand how their devices work, and this is amplified with the advent of digital electronics. Therefore, there is a growing epistemic divide between those who *know* the technology and those who *use* the technology. Verbeek envisages a design ethic that addresses this problem by making artefacts functionally transparent in the sense of making devices modular and conveying crucial know-how regarding the function of key components and how they can be repaired or replaced. He cites the example of the Apple Macintosh computer as an artefact that is easy to use but hard to take apart and get to its hardware.[70] On the other hand, Verbeek points to the Ithaca color printer designed by David Carr as an example of a transparent artefact which makes it extremely transparent to take apart and get to its inner workings, thereby affording a mutual bond between the artefact and its user.

70 Verbeek, quoting the Dutch designer Ed van Hinte, notes how "Steve Jobs and Steve Wozniack sealed their territorial conquest by working their signatures into the inside wall of the Mac housing." See Verbeek, *What Things Do*, 227. This is not entirely factually correct. There had been much contestation between Jobs and Wozniack regarding the transparency of the device. Wozniack had intended the computer to be modular and hackable, but Jobs' vision of a black-boxed device prevailed. See Tim Wu, "The Apple Two: The IPad is Steve Jobs' Final Victory over the Company's Co-founder Steve Wozniak," *Slate*, April 6, 2010. http://www.slate.com/articles/technology/technology/2010/04/the_apple_two.html.

Another criteria that stands out from the postphenomenological perspective as enabling cultural durability is what Verbeek calls 'engaging artefacts'. Such artefacts engage with and involve the user in their functioning. To use a Heideggerian vocabulary, such artefacts can be understood as being "neither entirely ready-to-hand nor entirely present-at-hand."[71] Such artefacts sustain user engagement by not wholly withdrawing into the background, as do ready-to-hand artefacts. They exist in between the two poles of readiness-to-hand and presence-at-hand. Verbeek cites the example of a piano as being an stereotypical engaging device. In playing the piano, one is constantly involved in hitting the keys in order to produce music. Although the piano has to be ready-to-hand in order to produce music, it also has to be engaged with on a continuous basis in order to keep producing music. It therefore does not wholly withdraw into the background, as opposed to say a CD player which does not call for much engagement with itself once it is turned on to play the desired track. Another example that Verbeek champions is the wind-up radio, which is powered by a hand pedal, rather than batteries. In winding the spring using the pedal, the user is engaged with the functioning of the product and becomes, in a way, a "part of the machinery" of the artefact. This is in contrast to a power adapter which does not call for any further involvement with it apart from plugging and unplugging from the power supply.

In this way, Verbeek envisages the application of key insights arrived through a postphenomenological approach toward the betterment of our everyday technological artefacts by making them culturally durable through transparency and involvement. He appeals to designers to take note of the moral aspect of their occupation and notes,

> Because products by definition coshape the existence and experiences of people, their design is unavoidably a moral activity Products help to provide answers to the question, "How should we live?" If designers fail to take account of this, they are neglecting an important dimension of their products.[72]

71 Verbeek, *What Things do*, 229.
72 Ibid., 234.

It is however not too clear as to what is the relationship between mediation and the function of the artefact. Further, what is the relation between the structure and function in a technological artefact. This would help clarify the concept of mediation in relation to the physical and function aspects of artefacts. More importantly, it has to do with Verbeek's ascription of moral status to artefacts. Verbeek does not seem to address this in depth. I shall therefore attempt to discern these relationships in the next section.

3.4 Mediation, Structure, and Function

Verbeek clearly notes of the relation between mediation, function, and structure in the section on 'Mediation and Materiality' in *What Things Do*.[73] Therein he notes of mediation as a byproduct of an artefact's functionality. It is when an artefact delivers its function, i.e., becomes ready-to-hand and withdraws into the background, that mediation comes to play its role. It is therefore instructive to read the title of Verbeek's book with greater emphasis on the word 'do' since it refers to what things *do* over and above merely carrying out their function. He further cautions against reducing artefacts to merely their functions. This suggests that mediation *supervenes* on the function and structure of a technological artefact. Here it is instructive to recall a contemporaneous analytic approach in philosophy of technology that introduces an important distinction between the structure and function of artefact. According to the Dual Nature of Artefacts thesis, a technical artefact is of a dual nature—it is both a physical and a functional object, and it is to be defined by both its structure as well as its function. The proponents of this approach see it as combining two realms of investigation, which are usually assigned to two separate disciplinary domains—one having to do with the realm of "physical objects interacting through causal connections" and the other having to do with "agents, primarily human beings, who intentionally represent the world and act in it on the basis of reasons." Claiming both conceptualizations as "necessary for characterizing technical artefacts", they note of how "[t]his makes technical artefacts 'hybrid' objects that can only be described adequately in a way that somehow combines the physical and intentional conceptualisations of the world." The main theme of their investigation is to understand how function and structure relate to each other and to the intentions of the

73 Ibid., 207.

designer and user. They start with the hypothesis of the function of an artefact as being a "bridging concept that relates the physical and intentional domain."[74]

In juxtaposition to this, Verbeek's theory of function can be discerned to be a property of the structure of the artefact itself. Rather than speaking in terms of structure and function, Verbeek speaks in terms of function and mediation. In doing so, he takes both the structure and function to be aspects of the materiality of the artefact. For example, he notes how mediation takes place "in the domain of their [products'] primary functions or material utility...[and] concerns the ways in which products function as material objects..."[75] If structure and function are the two aspects of the dual nature of artefacts for Kroes and Meijers, materiality and mediation would be the analogous aspects for Verbeek, with function belonging squarely within the material (structural) domain of the artefact. It is my contention that Verbeek's conception of mediation eliminates the crucial aspect of engaging with artefacts—interpretation. The analytic approach of Kroes and Meijers takes interpretation into consideration in conceiving of function as being partly an aspect of human intentional action. On the other hand, in Verbeek's conception, function seems to be a property of the artefact, which as a result of use, becomes ready-to-hand and thereby mediates and shapes human behavior and action. This explains Verbeek's turn to design as the locus of ethics. Even though Verbeek pays due homage to the notion of the multistability of artefacts, it too, is conceived of as a property of the artefact, which attains stability only in a particular use-context.[76] I would therefore want to point to a crucial difference in stating that (a) technological artefacts are multistable, and (b) the functions of technological artefacts are multistable. Ihde and Verbeek resort to the former and appeal to culture and convention as shaping the stable use of an artefact. On the other hand, Kroes and Meijers and other analytic philosophers of technology appeal to human intentions and interpretation as playing significant roles in conceiving the function of a particular artefact.[77]

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74 Peter Kroes and Anthonie Meijers, "Introduction: The Dual Nature of Technical Artefacts,"*Studies in History and Philosophy of Science* 37 (2006), 2.

75 Verbeek, *What Things Do*, 208.

76 Although his reference to multistability as being synonymous with Wiebe Bijker's notion of "interpretive flexibility" points to the contrary. Refer to ibid., 217.

77 There is an entire sub-discipline of analytic philosophy of technology that deals with theories of artefact function. For example, Wybo Houkes and Pieter E. Vermaas, *Technical Functions: On the Use and Design of Artefacts* (Dordrecht: Springer, 2010); Beth Preston, *A Philosophy of Material Culture: Action, Function, and Mind* (New York: Routledge, 2013); Peter Kroes, *Technical Artefacts: Creations of Mind and Matter* (Dordrecht: Springer, 2012).

The core issue here has to do with whether one can speak of technological artefacts as moral agents. Martin Peterson, for example, contends the idea of artefacts being moral agents. Drawing parallels to other entities which influence human action and behavior, such as mountains, he begs the question whether mountains, owing to the tremendous impact they have on human life, can be characterized as having moral status. He challenges Verbeek's notion of moral significance as having to do with the ability of an artefact to shape human experience, action, and behavior. He proposes a provocative thought experiment as follows

> Imagine, for instance, that you are about to climb the Matterhorn, which is one of the most famous peaks in the Alps. It seems hard to deny that a mountain such as the Matterhorn can sometimes, 'help to shape new experiences, either by procuring new ways of accessing reality or by creating new contexts for experience' (ibid.). Moreover, the Matterhorn has a form of 'directedness ... toward reality' (p. 55)—the north face is the most difficult one to climb. But does this really show that the Matterhorn has any *morally relevant* form of intentionality? I believe even Verbeek would agree that the answer is no.[78]

Although Peterson does not invoke it explicitly, what lies implicit in his contention is the distinction between the *moral status* and the *normative status* of technological artefacts. Verbeek's conception of mediation and its relation to materiality seems to suggest that an artefact mediates only by virtue of its material structure. Verbeek's examples of circular and rectangular tables and speed bumps also points toward such an interpretation of mediation. What this account ignores, however, is the normative aspect of technological artefacts, which is crucial to distinguish them from natural objects. Verbeek's theory of mediation falls short of providing resources to adequately conceptualize artefact normativity.

3.5 Concluding Remarks

78 Martin Peterson, "Three objections to Verbeek," in Evan Selinger, Don Ihde, Ibo van de Poel, Martin Peterson, Peter-Paul Verbeek, "Erratum to: Book Symposium on Peter Paul Verbeek's *Moralizing Technology*: *Understanding and Designing the Morality of Things*. Chicago: University of Chicago Press, 2011," *Philosophy & Technology* 25 (2012): 621; author's italics.

Verbeek's mediation theory builds a crucial bridge between postphenomenology and ethics, and it does so in very interesting and insightful ways. Rather than falling back to the classical paradigm of applied ethics, it invites us to think of technologies in terms of mediations which co-constitute both our world and ourselves. It forces us to rethink the modernist separation of subjects and objects and move towards a re-conceptualization of intentionality, freedom, and responsibility as always already mediated through technological artefacts. Such a perspective also crucially implicates the designers and engineers as aiding and abetting to the ways in which artefacts mediate our behavior and actions. Verbeek's theory of technological mediation offers an interesting perspective on the relevance of philosophy of technology for the understanding and design of everyday technological artefacts. It helps to bridge empirical analyses into artefact use and consumption with philosophical analyses into the ways in which artefacts mediation our actions and decisions

However, Verbeek's conception of mediation begs more questions than it answers. A conceptual investigation into Verbeek's notion of mediation begs the following questions: What is the difference between natural and technical artefacts in terms of the ways in which they mediate our actions? What resources does Verbeek's theory of mediation have in distinguishing natural from technical artefacts? Why does the theory of mediation entail a turn to design ethics and not to engineering ethics? Is design more of a moral activity than engineering? When can a weapon be described as a moral artefact? How does Verbeek conceive of the relationship between the morality and normativity of technical artefacts? In drawing a distinction between the hermeneutic and existential aspects of mediation, isn't Verbeek missing the mutual interrelatedness between the two realms, as is suggested by the ontological implications of the hermeneutic circle drawn by Heidegger? More importantly, the crucial question here is this: having given due credence to the fact that technological artefacts are multistable, how does a design ethic work its way into ensuring that the artefact mediates in exactly the way in which it was anticipated to mediate? Isn't this then falling back into the intentional fallacy that Ihde had warned us about? Must we not make the user equally complicit as the designer in situations wherein the user 'discovers' a completely novel use for the artefact, thereby subverting the moral norm designed into it? To address these issues, one needs to work out a metaphysics of

mediation in order to better understand the concept of mediation. Although Verbeek writings contain traces of such a metaphysics, there is still much work that needs to be done in terms of clarifying the abovementioned problematics. In the final chapter, I shall take up some of these pressing questions and explore them by bringing postphenomenological notions in contact with other notions surrounding the ontology and normativity of technological artefacts. This necessitates juxtaposing the postphenomenological approach to the analytic approach within philosophy of technology in order to arrive at a more comprehensive understanding of the philosophical significance of technological artefacts.

Chapter 4: Problematizing Postphenomenology

In the previous chapters, we looked at postphenomenology as it emerged out of phenomenology and its place as an approach to philosophy of technology that turns its attention to the analysis of human—artefact relationships. We have also seen how Peter-Paul Verbeek brings in a normative turn to postphenomenology by conceptualizing technological mediation as a co-constitutive relationship between subjectivity and objectivity. Postphenomenology has attained much significance and popularity as an empirically oriented approach to the study of technological artefacts and their moral and epistemological status in our lifeworld. However, as hinted at in the concluding remarks of the previous chapter, there are certain issues that beg further clarification. The conceptual issues arising out of the investigation conducted thus far necessitate addressing the following questions: how is the technological mediation of an artefact related to its structure and function? How is the normative status inherent in an artefact's function related to its moral status. How is one to account for the differences in the ways in which people engage with artefacts? Is multistability a feature of technological artefacts or does it have to do with the ways in which people interpret an artefact's function? Questions such as these require further clarification into key concepts such as function, mediation, normativity, multistability, and engagement. This shall be a major focus of this chapter. I shall proceed by first clarifying the metaphysics of mediation by offering three plausible interpretations of technological mediation and its relationship to moral significance. I shall then offer a critical evaluation of the moral significance of technical artefacts, following which I shall discuss the significance of design and use for the morality of artefacts. I shall then point to the limitations of postphenomenology and conclude with remarks on a plausible approach to overcome these limitations.

4.1 Clarifying The Metaphysics of Mediation: Three Interpretations

The previous chapter discussed the normative turn in postphenomenology as brought about in the work of Peter-Paul Verbeek who focuses his attention on what things do over and above delivering their function. From the perspective of Verbeek's non-dualist metaphysics, subjects and objects are mutually constituted by each other, and technical artefacts play a significant role in mediating this mutually constituted

relationship. This mediating role of technologies has significant ethical implications which have gone unnoticed owing to traditional dualist metaphysics which separated subjects from objects and assigned privileged autonomy to the former while relegating the latter to merely being instrumental means to human ends. In contrast to such anthropocentric ethics, Verbeek seeks to develop an ethical framework wherein human agency, freedom, and responsibility are conceived not as being autonomous and human-centric, but as relational categories that are mediated through technological artefacts. This therefore implicates the design and function of technical artefacts to moral considerations. As suggested above, however, this raises a number of conceptual issues arising out of the relationship between mediation, morality, design, structure, function, and use. It was pointed out in the previous chapter how Peter-Paul Verbeek's conception of mediation—which could be interpreted as resulting merely from the material structure of technical artefacts—misses the crucial aspect of artefact normativity which is central to the ways in which we engage with artefacts.[1] It would therefore be instructive to juxtapose Verbeek's notion of moral mediation with contemporary theories of artefact function and normativity in order to bring the former into greater relief and clarify some of the conceptual confusions arising out of it.

In order to conceptually investigate into Verbeek's radical postphenomenological program of moralizing technologies, it is crucial to distinguish *moral status* from *normative status*. Verbeek does not make this distinction explicit: Verbeek invokes Wim Muller's distinction between the primary and secondary functions of technological artefacts—whereas the primary function has to do with the material utility or formal and functional features of artefacts, the secondary function has to do with what the artefact signifies in terms of what it says about the personality and lifestyle of the user who owns it. Verbeek also cashes out this distinction in terms of the artefact as 'denoting' its primary function through its form and 'connoting' its secondary function through what its form means as a sign.[2] He notes explicitly however that it is only on the basis of the primary function of an artefact that mediation takes place. It is in the virtue of delivering its primary function that an artefact mediates the relationship between users and their world. Citing the example

1 Refer to Chapter 3 of the present thesis; Section 3.4, p. 126.

2 Verbeek is not referring to the philosophical concepts of connotation and denotation but rather to the everyday ordinary language uses of the terms.

of a dining table, Verbeek notes:

> When the table is used (that is, when it fulfills its primary function by making it possible to lay out table settings so that people can sit in proximity), it is absorbed and incorporated into the practice of eating that it makes possible without this being consciously experienced—and from that position it mediates the relations between the people around it.[3]

From postphenomenological perspective of technological mediation then, it is the primary function in terms of the materiality of artefacts that matters and not their symbolic features. Verbeek emphasizes the significance of the materiality of artefacts in noting that "[t]hings mediate the relation between human beings and their world not in a *linguistic* but in a *material* way."[4] It is on the basis of the materiality of artefacts that artefacts mediate our experiences, actions, and thereby our existence. I shall argue that Verbeek, in conceptualizing mediation as a byproduct of the materiality of technical artefacts overlooks the essentially normative dimension of artefacts and thereby fails to provide an adequate account of differentiating technical artefacts from natural objects[5]. If one strictly follows Verbeek's conceptualization of mediation, one could very well argue that not just technical artefacts but also rocks, streams, mountains, and trees can also be said to mediate the relations between humans by virtue of their material structures.[6] The major premise of Verbeek's program of moralizing technologies is based on the notion that technical artefacts have moral status owing to the ways in which they mediate our actions. I shall offer three plausible interpretations of technological mediation in order to clarify the relationships between mediation, normativity, and morality.

4.1.1 Interpreting Technological Mediation as a Moral Directive

In order to untangle the conceptual knots implicit in Verbeek's argument for the moral status of technical artefacts, it would be pertinent to juxtapose Verbeek's conception of mediation and function with discussions having to do with the

3 Verbeek, *What Things Do*, 208.
4 Ibid. 209; my emphasis.
5 Refer to Chapter 3 of the present thesis; Section 3.4, p. 126.
6 See Martin Peterson, "Three Objections to Verbeek."

normativity of technical artefacts as found in the realm of metaethics. Judith Jarvis Thomson's notion of normativity offers an interesting opening into this realm.[7]

4.1.1.1 Moral Status vs. Normative Status

Judith Jarvis Thomson begins her discussion of normativity with a distinction between moral and non-moral kinds of normative judgments. "A ought to be kind to his little brother" and "D is a good person" are moral judgments, whereas "B ought to move his rook" and "F is a good toaster" are not moral judgments. She calls the first kinds of normative judgments *directives* and the second kind *evaluatives*.[8] In discussing evaluatives, she makes the crucial distinction, following Peter Geach, between *predicative* and *attributive* adjectives. This distinction affords us to capture the difference between adjectives such as 'red' and 'good'. To use her own example, the conjunction 'A is a red car' and 'A is a Mercedes' entails 'A is a red Mercedes'. However, the conjunction 'A is a good tennis player' and 'A is a chess player' *does not* entail 'A is a good chess player'. 'Red' is a predicative adjective, whereas 'good' is an attributive adjective. The crucial difference between the two types of adjectives is that in the case of the attributive adjective, for an artefact to be a 'good toaster' does not entail that it has two properties: (a) being good and (b) being a toaster. Whereas in the case of the predicative adjective, for an artefact to be a 'red toaster' entails that it has two properties: (a) being red and (b) being a toaster. This is Thomson's objection to what she calls G. E. Moore's *Goodness Thesis,* which claims that "there is such a property as being good," or put differently, "goodness...is the property that all good things have in common."[9]

Thomson goes on to argue that a crucial normative implication of 'goodness' not being a property as 'redness' is is that there can be no such thing which can be called good per se. To attribute the adjective 'good' to a thing is always to attribute it in a certain respect. For our purposes here, since we are talking about the normativity of artefacts, I shall restrict the scope of my analysis to Thomson's analysis of artefact kinds. Artefact kinds, for Thomson, are what she calls 'goodness-fixing kinds'. All artefact kinds have this in common: "each of them is such that what being a K *is* itself

7 Refer to Judith Jarvis Thomson, *Normativity* (Illinois: Open Court Publishing, 2010).
8 Thomson, *Normativity*, 2.
9 Ibid.

sets the standards that a K has to meet if it is to be good *qua* K." She clarifies this with the example of a toaster, noting that "being a toaster is being an artifact manufactured to toast, and that itself sets the following standard for being good *qua* toaster: toasting well."[10] Thomson therefore makes the case for the following two suggestions:

(i) Being a good K is being good qua K;

(ii) There is such a property as being good qua K if and only if K is a goodness-fixing kind.

From these, she argues for the conclusion that

(iii) There is such a property as being a good K if and only if K is a goodness-fixing kind.

This strong conclusion enables Thomson to draw a distinction between technical artefacts such as 'toasters' and natural objects such as 'pebbles'. The kind 'pebble' is not goodness-fixing and there are no such properties as being a good pebble. Thomson deals with the objection that certain pebbles may be said to be good relative to human interests (e.g., it may be discovered that pebbles of a certain kind are discovered to cure the common cold). Does this then mean that once common cold is eradicated, these pebbles lose their goodness? Is it not absurd to say that the eradication of the common cold has somehow annihilated the goodness of these pebbles? In contrast to pebbles, Thomson argues that "a toaster that toasts well remains a good toaster" regardless of a change in interests of the peoples of the world —who might lose their interest in bread, say by 2050. The goodness of the toaster as opposed to the pebble remains unchanged owing to the fact that the kind 'toaster' is goodness-fixing whereas the kind 'pebble' is not.[11] The main aim of Thomson in discussing evaluatives is to provide a normative framework that affords one to derive directives from evaluatives without harking back to consequentialism.[12] As we shall see, the central notion in this framework is the notion of 'defect'. Having defined directives as judgments to the effect that "A ought to V," Thomson begins with an analysis of directives as they apply to artefacts on the basis of the premise that it would enable us to understand all directives, especially those having to do with

10 Ibid. 21.
11 Ibid. 24.
12 For Thomson's discussion of consequentialism, see Ibid. 12, 61–62.

people.

Thomson proceeds with her analysis as follows. Assuming A to be a toaster, the following directive seems to be applicable to A:

(1) A ought to toast bread

According to Thomson, that which makes this directive true is the fact that the kind 'toaster' is a goodness-fixing kind, by virtue of which there exists such a property as being a defective toaster. A toaster is defective in so far as, under suitable circumstances, it fails to toast bread. Thomson therefore concludes that the directive (1) is true owing to A's belonging to an artefact kind, i.e., a goodness-fixing kind, and to the further fact that if it fails to toast bread then it is a defective member of the kind. Thomson generalizes this thesis as the Directive Thesis and formulates it thusly:

> For it to be the case that A ought to V is for it to be the case that there is a directive kind K such that: A is a K, and if a K doesn't V, then it is a defective K.
> Where K is a directive kind.[13]

Thomson therefore argues for the following:

> it is avoidance of defect that is at the heart of the concept 'ought', for it will be remembered that "defective" is an attributive adjective—nothing is simply defective, a thing can be at most a defective K, for some K.[14]

With this as the starting point, Thomson analogously proceeds to an analysis of directives as they would apply to human actions. It would however suffice for the purposes of this chapter to restrict ourselves to Thomson's discussion of directives as they apply to technical artefacts.

4.1.1.2 Mediation as a Moral Directive

13 Ibid., 209.
14 Ibid., 211.

With Thomson's normative framework as the metaethical background, we can now proceed towards a conceptual clarification of Verbeek's moralization of technologies. One plausible interpretation of what Verbeek seems to suggest in arguing for the moral status of technical artefacts is that artefacts issue directives regarding the ways in which we ought to act, perceive, and interpret the world. Although Verbeek does not explicitly use the notion of 'directives,' his notion of technologies as "guiding our actions in certain directions" could very well be described as technologically mediated directives.[15] For instance, in discussing technological intentionality and mediation, he talks of how

> [t]echnologies help to shape actions because their scripts evoke given behaviors and because they contribute to perceptions and interpretations of reality that form the basis for decisions to act....To be sure, artifacts do not have intentions as human beings do, because they cannot deliberately do something. But their lack of consciousness does not take away the fact that artifacts can "have" intentionality in the literal sense of the Latin word intendere, which means "to direct," "to direct one's course," "to direct one's mind." The intentionality of artifacts is to be found in their directing role in the actions and experiences of human beings. Technological mediation therefore can be seen as a distinctive, material form of intentionality.[16]

The speed bump issues the directive that we ought to slow down in front of it, and the gun issues the directive that we ought to pull the trigger in the event of a perceived threat. The directives that guide our actions in the absence of these artefacts would be very different than in their midst. Verbeek therefore makes the case that it is imperative for moral philosophy to take the directives of artefacts into account. Contra Thomson, however, Verbeek is arguing for the intrinsic moral dimension of these directives.[17] Thomson as we have seen, makes a distinction between moral and

15 Both Verbeek and Ihde speak of artefacts as coming with implicit instruction manuals which provoke users to use them in certain specific ways as opposed to others. For an extensive discussion of this phenomenon, see Peter-Paul Verbeek, *Moralizing Technology: Understanding and Designing the Morality of Things*, (Chicago: University of Chicago Press, 2011).

16 Verbeek, *Moralizing Technology*, 56–57.

17 Kroes interestingly contrasts this with the 'inherent' moral significance of technical artefacts. See Kroes, *Technical Artefacts*, Chapter 6. I shall discuss this later in the chapter.

non-moral directives on the basis of the grounds on which these directives are made. Therefore, the directive 'you ought not tell lies' is a moral directive whereas the directive 'the toaster ought to toast bread' is not a moral one, since the former appeals to the moral value that lying is bad whereas the latter appeals to the instrumental value that if you want to toast bread then you ought to use a toaster. If you tell lies then you are being immoral whereas if the toaster does not toast bread then it is being defective—one which is not instrumental to toast bread. Verbeek, in contrast, is making a radical claim that the technologically mediated directives must be interpreted as moral ones on the grounds that they shape our actions and intentions. They direct us towards certain acts as opposed to others and are therefore to be brought within the realm of moral deliberation. Moreover, these directives issue from the primary function, i.e., the domain of material utility of artefacts.[18]

Moreover, Verbeek's conceptualization of mediation as ensuing from primary function —which in turn belongs to the domain of the material structure of technical artefacts —leads to an ambiguity between natural and technical artefacts. Verbeek comes close to what Peter Kroes calls the 'Cummins-style theory of functions' whereby function is a physical capacity of objects and has nothing to do with human intentions. Kroes characterizes this by the slogan "no material object, no physical capacity, no technical function".[19] Kroes and other philosophers who subscribe to the dual nature of technical artefacts program, on the other hand, conceptualize technical functions and hence technical artefacts as being hybrid in nature. They are both physical as well as functional in nature. Their physical nature makes them mind-independent and hence subject to causal laws, whereas their functional nature makes them mind-dependent and closely tied to human intentions. Technical functions are interesting precisely because they cannot be reduced to either a purely physical or purely intentional framework of understanding and explanation. Although Verbeek does not provide us with an explicit theory of technical functions, there is an implicit bias towards conceiving of function as a material capacity of artefacts. He notes, for example:

> When material mediation by things is localized in the domain of the material

18 See Verbeek, *What Things Do*, 208.

19 See Kroes and Meijers, "Introduction: The Dual Nature of Technical Artefacts," *Studies in History and Philosophy of Science* 37 (2006), 1–4; see also Kroes, "Theories of Technical Functions: Function Ascriptions Versus Function Assignments, Part 1." *Design Issues* 26, no. 3 (Summer 2010).

> utility or the primary functions of products, products cannot then be completely reduced to their functionality—as was done, for instance, during the modernist movement in the history of design. The materiality of products reappears in the analysis when they are considered from the perspective of their functionality—for functionality always presupposes the material presence of a thing and not just its presence as a sign—but mediation does not coincide with functionality. What things "do" encompasses more than merely "referring" or "functioning." Things mediate the relation between human beings and their world not in a linguistic but in a *material* way. They fulfill their functions as *material objects*, and by this functioning they shape human actions and experiences.[20]

The ontological difference between Verbeek and Thomson regarding mediation and moral directives has to do with their corresponding conceptions of function. Whereas Thomson offers a normative conception of function, Verbeek offers a causal, Cummins-style conception of function as a material capacity. This brings Verbeek very close to a behavioristic interpretation of technological mediation as a moral directive steering the behaviors and actions of users. It is precisely in disregarding the normativity of artefact functions and its relation to human intentions that Verbeek fails to disambiguate natural objects from technical artefacts. And it is due to this ambiguity that Peterson's critique of Verbeek's program of moralizing technology hits the target.[21] Peterson acknowledges the fact that artefacts shape the ways in which we act and experience the world, but he questions the moral relevance of these artefacts; he aims his critique on exactly the point that Verbeek's account of technical artefacts as having intentionality "fails to pick up on the [differences between technical artefacts and natural objects]."[22] One could imagine Judith Jarvis Thomson as agreeing with Peterson in limiting the membership of technical artefacts to normative kinds with goodness-fixing properties while reserving 'moral' as the category applying to humans alone. Moreover, Thomson appeals to the notion of 'defect' in order to ground her theory of normativity. It is only against an understanding of defect that the norm of function makes sense. Similarly, it is only against an understanding of what is immoral that the moral is brought to relief. Verbeek,

20 Verbeek, *What Things Do*, 209; my emphasis.
21 Peterson, "Three Objections to Verbeek," 605–631.
22 Ibid., 622.

however, does not provide us with any clear discussion of what would be an instance of a morally defective artefact.

In order to better understand Verbeek's conception of (im)moral artefacts, it would be instructive to undertake an examination of the examples that Verbeek explicitly endorses in terms of the ways in which they mediate our actions.[23] As already discussed in the previous chapter, Verbeek endorses the following kinds of designs—durable, transparent, and engaging. Durable artefacts are those which are designed to materially mediate such that the user develops a strong attachment with the artefact and is thereby prevented from discarding it due to changing tastes.[24] Transparent artefacts are those which afford easy repair in the event of malfunction through incorporating features such as ease of disassembly and troubleshooting. Engaging artefacts, on the other hand, mediate such that they do not merely deliver their function and withdraw into the background but actively involve the users in their functioning. There is much in Verbeek's writing that suggests that durability, transparency, and engagement could be interpreted as moral values. In this context, what is interesting in Verbeek's program of moralizing technologies is the idea that technical artefacts carry moral values. The moral status of artefacts is a by-product of the normative status of its functioning. Juxtaposing this conception with that of Thomson's, we see that 'A is a good K' for Thomson is good—in nonmoral terms—in so far as A belongs to the normative kind K and A is a defective K if it does not perform its function well.[25] On the other hand, for Verbeek 'A is a good K' is good in moral terms in so far as it adheres not just to the instrumental norm of function but also to the morally mediating values of durability, transparency, and engagement. One could observe that artefact kinds are not just goodness-fixing or normative or function kinds but also mediating and moral kinds. Verbeek can be understood as appealing for all 'moral' technical artefacts to embody the 'moral' values of durability, transparency, and engagement; these features can be understood as *moral values* that Verbeek is calling for all 'moral' technical artefacts to embody. But this only begs the question: is a well-functioning gun that is designed to be durable, transparent, and engaging a

23 See Chapter 3 of the present thesis; Section 3.3.3, p. 124.

24 This idea shall be examined in greater detail later in the chapter.

25 Thomson notes: "The kinds toaster, seeing eye dog, and tennis player are sometimes called function-kinds: to be a member of one of those kinds is to have a certain function. A fortiori, to be good qua member of one of those kinds is to be a member of one of those kinds that performs the appropriate function well." See Thomson, *Normativity*, 20.

'moral' artefact? It seems to be that ultimately, the moral status of a technical artefact is dependent on the final value it is designed to serve. The plausibility for interpreting mediation as a moral value shall be addressed further in the chapter.[26]

Moreover, as Peterson's critique suggests, the same that is said of technical artefacts can be said of natural objects. Mountains can be discriminated according to the ways in which they issue directives to the climbers on the basis of their physical geography, and so could rivers and buildings and rocks and roads.[27] As already mentioned, it is in linking mediation to function and function to the material structure of the artefact that Verbeek falls prey to such a critique. Verbeek's conception of artefact function as a physical capacity realized by its material structure misses the normativity associated with the existence of technical artefact kinds of which the artefact is but a member. It is this membership that endows the artefact with a proper function and enables us to render it as continuing to belong to its kind even when it fails to perform its proper function. It is this normativity endowed by kind-membership that affords us to make statements such as "X is a malfunctioning toaster," "this hammer is broken," etc. In closely linking function and, in turn, mediation to the physical structure of the artefact, Verbeek implicitly conforms to a theory of function as a physical capacity. This misses the crucial aspect of normativity and thereby fails to disambiguate technical artefacts from natural objects. A related critique that could be leveled against Verbeek's mediation theory is that malfunctioning technical artefacts could also be said to mediate the actions, experiences, and behavior of users.[28] It is an open question to Verbeek, however, whether there would be a difference in co-constitutive relation as brought about by functioning artefacts as opposed to malfunctioning artefacts. All this suggests that mediation theory is not just limited to technical artefacts but also to all kinds of artefacts humans engage with. This is an issue since it makes the theory too broad and all-encompassing, failing to pick out on what makes technical artefacts unique and separates them from other artefacts such as artworks, natural objects, social artefacts, etc. Peter Kroes offers an interesting alternative that gets us out of this

26 See current chapter, Section 4.1.3, p. 154.

27 Remember that Verbeek is interested in "[c]reating conceptual space for delegations by nonhumans to humans...for it makes it possible to observe more in artifacts than only what is delegated to them, or inscribed in them, by humans." Verbeek, *What Things Do*, 170.

28 In Heidegger's existential analytic of the worldhood of the world, for instance, malfunction plays a very crucial role. It is what causes an artefact to shift to being present-at-hand from being ready-to-hand. One could very well argue that from a present-at-hand mode of being, the entity mediates quite differently than when it was ready-to-hand, but that it nevertheless does mediate.

bind.

4.1.2 Interpreting Technological Mediation as Inherent Moral Significance

4.1.2.1 Ontology and Moral Significance

Peter Kroes presents an insightful discussion of the moral significance of technical artefacts and provides a perspective based on the dual nature of technical artefacts thesis that avoids the pitfalls of both the moral-neutrality thesis and the intrinsic morality theses.[29] Kroes makes a crucial distinction between inherent and intrinsic moral significance and argues for the former against the latter. Kroes offers an instructive summary of how the ontology of artefacts relates to the moral claims made on their basis.

4.1.2.1.1 Moral-Neutrality Thesis

According to the moral-neutrality thesis, technical artefacts are morally neutral passive instruments and have nothing in themselves that makes them morally good or bad. It is based on the ontological conception of artefacts as 'human-made-physical-constructions.' On the basis of this ontological conception, technical artefacts are merely physical objects which are appropriated by humans to realize certain ends. Just like natural objects such as electrons and pebbles, technical artefacts (as physical objects) have no ends associated to them on their own and they thus cannot be morally assessed. It is only the ends to which humans appropriate the artefacts that can be judged from a moral perspective. This view is also based on the premise that there is a strict separation between means and ends, with artefacts being the means and human intentions being the ends. Whereas the means can be evaluated instrumentally, only the ends may be evaluated morally. Kroes critiques the moral-neutrality thesis as being 'seriously flawed' on the grounds that it does not adequately account for technical functions and artefact kinds. Kroes argues that the identification of functions with physical capacities "raises serious problems about interpreting malfunction of technical artefacts and being an instance of a technical artefact kind."[30]

29 This is a summary of Chapter 6, "The Moral Significance of Technical Artefacts," from Kroes, *Technical Artefacts*.

30 Kroes, *Technical Artefacts*, 170.

Kroes gives the example of using a gun as a hammer. The ontological claim of artefacts as being human-made-physical-constructions would suggest that the gun has turned into a hammer. Kroes, however, finds this unacceptable and reserves his claims to merely stating that what we have here is merely an instance of using a gun *as a* hammer, and it is the kind-proper function of the gun which distinguishes the gun from the hammer whereas it is the use-accidental function of the gun for hammering which makes it meaningful to state that 'the gun is used as a hammer.' An appeal to artefact kinds affords giving preference to the kind-proper function over the many use-accidental functions which can be realized by the physical properties of the artefact. Kroes therefore argues against the moral-neutrality thesis on these ontological grounds.

4.1.2.1.2 Intrinsic Morality Thesis

According to the intrinsic morality thesis, technical artefacts have moral significance by themselves owing to the fact that there are specific ends associated with them. The ends to which technical artefacts are to be used are intrinsic to them, and it is on the basis of these intrinsic ends that the artefacts may be morally evaluated. In contrast to the moral-neutrality thesis, the intrinsic morality thesis rests on the ontological claim that technical artefacts are much more than human-made-physical-constructions. They have properties over and above their physical properties. Kroes lists the entities that are invoked as candidates for such non-physical properties: function, technological intentionality, script, etc. The ontological claim according to Kroes goes like this:

> If a technical artefact has a function or an inbuilt script, then that artefact is intimately tied to specific ends associated with that function or script and through those ends the technical artefact may acquire moral significance on its own.[31]

These non-physical properties are not reducible to physical properties and therefore to claim that 'X is a hammer' is as much a real fact as claiming that 'X is made of iron' and 'X weighs 2 kg'. To maintain intrinsic morality, the non-physical property that

31 Kroes, *Technical Artefacts,* 172.

intimately ties the artefact to its ends must be intrinsic to the artefact and mind-independent. Kroes raises several issues with the intrinsic morality thesis. He explores the plausibility of technical function as a candidate entity for such a non-physical property that intrinsically ties the artefact to its ends, independent of human intentions. He argues from the dual nature of technical artefact thesis that technical artefacts are by definition mind-dependent and therefore their functions are dependent on both human intentionality as well as the physical structure of the artefact.

4.1.2.1.3 Moral Agency Thesis

Kroes then takes up the co-constitution claim, according to which humans and technologies co-constitute each other and agency is understood as distributed across such hybrid human–artefact associations. It must be noted that Kroes' critique applies as much to Latour as it does to Verbeek, since as we have seen in the previous chapter, Verbeek adopts ('translates,' to be more precise) the Latourian framework of mediation of existence into the postphenomenological framework for understanding what things do to human actions and perceptions.[32] The co-constitution claim and the claim for moral agency are intimately related. Moral agency, according to Latour, cannot be examined in isolation either in the human subject or the technical artefact, it is rather co-constituted in networks of associations in which both humans as well as artefacts play equal roles in realizing an action. Technical artefacts, according to Latour, are qualified to be moral agents in so far as they execute the program of action that has been delegated to them by humans. Since artefacts embody programs of action—or 'scripts' as these are usually referred to by in actor-network theory—and thereby act as agents on their own, they can also be said to be moral agents.

Kroes, in a manner similar to the aforementioned juxtaposition of Verbeek with Thomson, juxtaposes Latour with Georg Henrik Von Wright. Contesting Latour on the grounds that not all prescriptions are moral, Kroes interprets Latour's conception of technical artefacts—as carrying scripts which prescribe certain programs of action—as Von Wrightian practical inferences which enable us to derive "practical necessities

32 See Chapter 3 of the present thesis; Section 3.2.3.1, p. 107.

from statements of an end and of causal relationships."[33] For example, the *prescription* that 'the driver decelerate before a speed bump' may be derived from the *causal relation* that 'unless the driver decelerates the car before the bump, the suspension of the car might get damaged' and the *end* that 'the driver does not want to cause damage to his car's suspension'.[34] Kroes appeals to the fact that Latour—in claiming that artefacts be treated as moral agents owing to their prescriptions—can be charged with conflating practical necessities with moral oughts. For Kroes, however, the most problematic claim of co-constitution has to do with *identity*. Latour argues that the identity of a technical artefact is contingent to the relation in which it features:

> You are different with a gun in your hand; the gun is different with you holding it. You are another subject because you hold the gun; the gun is another object because it has entered into a relationship with you[35]

Kroes contends that in order to make sense of the moral status of artefacts, we must be able to "establish the identity of objects and humans moving from one collective to another." It is on the assumption of identity as persisting through time that we can point to an artefact and say of it that it is the one which was used in a particular act or to a person and say of them that they were the one who pulled the trigger. By appealing to co-constitution, for instance, a culprit could plead not guilty by arguing that what they are now and what they were when they held the gun are two different hybrids and therefore they must not be prosecuted.[36] Although Kroes agrees to the more modest claim that "technology in general is constitutive for modern human beings...that does not mean that we have to draw the conclusion that at the level of individual technical artefacts human beings and technical artefacts co-constitute each other."[37]

4.1.2.2 Kroes' Argument for Inherent Moral Significance

33 Kroes, *Technical Artefacts*, 176
34 Ibid.
35 As quoted in Kroes, *Technical Artefacts*, 178. The same insight is captured by the postphenomenological concept of 'multistability'.
36 The consequences of this view for postphenomenology are discussed later in this chapter. See Section 4.5, Basic Problems of Postphenomenology, p. 176.
37 Kroes, *Technical Artefacts*, 179.

Having demonstrated the ontological inadequacies underlying the moral-neutrality, intrinsic morality, and co-constitution theses, Kroes explicates his argument for *inherent* moral significance of technical artefacts. As an alternative to the above theses, Kroes invokes the dual nature thesis, according to which, technical artefacts are both material objects with physical properties (mind-independent) as well as functional objects related to human intentions (mind-dependent), with function acting as a bridge connecting "its intrinsic physical features to its relational intentional features."[38] In contrast to Verbeek's conception of function—as a physical capacity realized by its material structure—Kroes conceives of function as a relational property —which only makes sense in relation to human intentions. Function is however an *inherent* property of the technical artefact in the sense that it is a defining feature of the artefact which crucially distinguishes such an artefact from a natural object. Moreover, it is owing to its function that the artefact gets associated with certain ends.[39] Kroes thereby argues that the moral significance of technical artefacts is *inherent* but *not intrinsic*. Inherent in the sense that it belongs to the technical artefact on its own (owing to its membership in a kind with kind-proper functions), but not intrinsic in the sense that the moral significance depends ultimately on the moral significance ascribed to human ends. Kroes can therefore be read as very subtly maneuvering between the moral-neutrality thesis and the intrinsic morality thesis. He notes:

> On this dual-nature interpretation, a technical artefact considered on its own may be said to be related to particular ends, namely the ends associated with its function, and this may be a ground for attributing moral significance to a technical artefact on its own. Yet, a technical artefact has no ends of its own in the sense of intrinsic ends. The ends associated with technical artefacts are always ends of human agency and any moral significance attributed to these ends ultimately derives from the moral significance of human ends.[40]

To contextualize Kroes with respect to Judith Jarvis Thomson's discussion of normativity, Kroes seems to argue that belonging to a normative kind or a goodness-

38 Ibid., 196.
39 In a Heideggerian vein, it is the function that grounds the in-order-to structure constitutive of all equipment. I have discussed this in Chapter 1; See Section 1.2.1, p. 15.
40 Ibid., 180.

fixing kind inherently relates the artefact to certain ends which are morally significant since they tie the artefact to particular human ends. Contra Thomson—who distinguishes between moral and nonmoral directives—Kroes is making a claim for moral significance as inherently tied to both kind-membership and human intentions. He illustrates his stand by performing a thought experiment featuring the humble speed bump—one of the most ubiquitous artefacts in philosophy of technology.

Kroes presents three situations concerning speed bumps: Situation A, in which there is a bump on a deserted highway formed due to natural circumstances (such as rain, erosion, etc.); Situation B, in which there is a speed bump intentionally installed in front of a school—which happens to be of the same physical structure as the one naturally formed on the highway.[41] Kroes invokes the dual nature theory of function as an inherent property and notes a crucial distinction between Situations A and B. Only the bump in Situation B is a technical artefact, owing to its kind-proper function which is constituted partly by its physical properties and partly by the intentions of its makers; it belongs to the kind, 'speed bump'. The bump in Situation A, however, lacks this defining feature—it has no for-ness. According to Kroes' conception of moral significance, only the Bump B has inherent moral significance since, being a technical artefact, its function is tied to particular human ends. Kroes further considers Situation C, in which the two bumps are interchanged, such that the bump on the highway is the intentionally made speed bump (Bump B) and the bump in front of the school is a naturally formed bump (Bump A). Now this situation clarifies Kroes' notion of moral significance. Kroes maintains that although the speed bump on the highway retains its inherent moral significance owing to its intentional and functional characteristics, it now becomes morally problematic since it now finds itself in a context in which its presence might enrage drivers (who expect highways to be usually bump-free). The natural bump in front of the school, on the other hand, is morally significant in that its absence would be morally problematic. Kroes invokes a distinction between moral outcome and moral status and notes that whereas the moral outcomes of the natural bump and speed bump in front of the school are the same, their respective moral status are different. While the intentionally made speed bump may be said to have inherent moral significance (owing to its belonging to a function-kind), the naturally formed bump may not. Analogously, in the case of the deserted

41 Ibid.

highway, while the outcomes of the naturally formed bump and the intentionally made speed bump are the same, the moral status of the intentionally made speed bump is questionable and problematic. This, Kroes argues, is due to its kind-membership which ties it to particular human ends. The crucial import of Kroes' account of moral status of technical artefacts is the distinction between moral significance and moral outcome. Moral significance is inherent to technical artefacts whereas moral outcome is related to the context of use of the artefact.

From the above, we see Kroes deriving inherent moral significance from the dual nature approach to technical artefacts, whereby a technical artefact qua technical artefact is intimately related to human intentions, with its function inherently tied to human ends which fall within the scope of moral evaluation. Another way to understand Kroes' formulation of moral significance is by asking what moral value the artefact in question has been designed to achieve.[42] The function of the speed bump, for example, is to bring about traffic safety by slowing down vehicles in accident prone areas. There is thus an inherent connection between the instrumental function of the speed bump and the final value that it has been designed to achieve. Speed bumps can therefore be said to embody moral values such as traffic safety. Van de Poel and Kroes express this formulation as follows: "[T]echnical artefacts, as objects with a function, may embody extrinsic final values, since functions are extrinsic features of technical artefacts."[43] Inherent moral significance can therefore be better understood as the extrinsic final value that has been embodied into the artefact through design. 'Extrinsic' refers to values which are relational and not intrinsic, i.e., in the sense of being dependent only on the intrinsic (physical) properties of the artefact; 'final' refers to values for their own sake, as opposed to instrumental values, which derive their value from being instrumental to attaining something else that is of value.[44] Drawing a comparison between Kroes and Judith Jarvis Thomson would help clarify this point further. Kroes, by adopting the dual

42 The idea that artefacts can embody moral values is dealt with by Kroes in a later paper; see Ibo van de Poel and Peter Kroes, "Can Technology Embody Values?" in *The Moral Status of Technical Artefacts*, ed. Peter Kroes and Peter-Paul Verbeek (Dordrecht: Springer, 2014).

43 Van de Poel and Kroes, "Can Technology Embody Values?," 114. The plausibility of interpreting mediation as a moral extrinsic final value is discussed later in this chapter; see Section 4.1.3, p. 154.

44 See Ibid. (Section 7.4 and Appendix) for an argument why instrumental values cannot be said to be real values. This has to do with whether the instrumental value of X is the kind of value which gives us reasons for a pro-attitude towards X. Van de Poel and Kroes argue that it does not.

nature ontology of technical artefacts, relates the normativity inherent in the function of the artefact to its moral significance; Judith Jarvis Thomson, on the other had, limits herself only to the normative goodness of artefacts qua artefacts. Whereas normative goodness is fixed by kind-membership, moral significance is grounded in final ends, the ends which the artefact has been designed to be instrumental for.

4.1.2.3 Interpreting Mediation as Inherent Moral Significance

With Kroes' ontological and moral framework at hand, we are now better equipped to investigate into the relation between mediation and ontology of technical artefacts. It was mentioned earlier that Verbeek, in conceiving of function as belonging exclusively to the material structure of artefacts, implicitly adheres to a Cummins-style theory of function. Such an ontology of artefacts, according to Kroes, corresponds to the moral-neutrality thesis. However, at the same time, Verbeek's conception of mediation as a non-physical and relational property is making a strong claim for artefacts as being inherently moral. To add to this, we have Verbeek endorsing the Latourian strategy of co-constitution (albeit without symmetry) of subjects and objects through technological mediation. Therefore, it seems to be that Verbeek's conception of moral significance cuts across Kroes' distinctions between moral neutrality, intrinsic morality, and moral agency. Kroes' evaluation of Verbeek places him (along with Latour) in the camp which attributes moral agency to technical artefacts. A closer look at Verbeek's conceptualization of technological mediation reveals that it is more complicated than this. This is due to the fact that Verbeek does not, a la Kroes, explain mediation and its moral significance in ontological terms by drawing their relationship to the structure and function of the technical artefact. This opens technological mediation for multiple ontological interpretations.

Although there are sufficient reasons to group Verbeek alongside Latour owing to their arguments for co-constitution and mediated agency, a closer look at Verbeek's conception of technical artefacts and mediation reveals however that he is trying to capture the same insight as that of Kroes.[45] In order to see this, it would be instructive

45 Verbeek explicitly calls attention to this in his lecture, "Thinking Through Technological Things: Instrumentality, Dialectics, Hybridity." Therein he remarks that the Twente approach (e.g., Verbeek) and the Delft approach (e.g., Kroes) share the same intuition (between 2:03–3:20 minutes). See "PHITECO P.-P. Verbeek "Through Technological Things: Instrumentality, Dialectics, Hybridity"," YouTube video, 45:13, posted by "Cleo Collomb," January 22, 2016,

to recapitulate a few comments of Verbeek in this regard. He notes for example that "the mediating roles of artefacts are not properties of the artifacts themselves, but arise in the relations which people have with artifacts."[46] In his later work, Verbeek analyzes the paradigmatic cases of moral significance—speed bumps and Moses' overpasses—in terms of moral mediation rather than as moral instruments or moral agents and notes the following:

> Understanding them as moral agents would go too far, at least in the sense of being moral agents "in themselves," capable of moral action. Only in the context of the practices in which they function do their moral roles emerge. Sometimes these roles coincide with the intentions of their designers, sometimes they don't. In all cases, the moral roles of technologies come about in the context of their relations with their users and the environment in which they function.[47]

This suggests that mediation is not an intrinsic property of artefacts but is relational, i.e., extrinsic, and non-physical. This mediation can be interpreted as a technologically mediated directive.[48] At the same time, as already mentioned, he conceives of technical functions as a material capacity fulfilled by artefacts considered as material objects. This picture is made further complex by the postphenomenological notion of multistability, according to which "[t]echnologies have no fixed identity" and are defined on the basis of their context of use or 'stability'.[49] Here's how Verbeek's framework seems to work: the identity of an artefact is relative to its context of use, and there could be multiple contexts of uses of an artefact; within a particular stability or context of use, the artefact plays a specific mediating role by shaping the ways in which the user and the world are presented to each other.

This seems to be analogous to Kroes' conception of inherent moral significance, albeit with a very significant difference. Both Kroes and Verbeek are arguing that it does not

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https://www.youtube.com/watch?v=M7gdMV0uP9A.

46 Verbeek, *What Things Do*, 217.

47 Peter-Paul Verbeek, *Moralizing Technology: Understanding and Designing the Morality of Things* (Chicago: The University of Chicago Press, 2011), 52.

48 See current chapter, p. 137, footnote 13.

49 See Verbeek, *Moralizing Technology*, 97.

make sense to think of technical artefacts in isolation from the realm of human intentions. But whereas Kroes is making an appeal to inherent moral significance owing to the notion that technical artefacts qua technical artefacts are related to particular ends (the ends associated with their designed, kind-proper functions), Verbeek is appealing to moral mediation owing to the mediating roles that artefacts play in a certain use-context by directing the actions and experiences of its users. Verbeek, pace Kroes, seems to be arguing for inherent but not intrinsic moral significance. For Kroes, the moral significance is inherent to the norm of (kind-proper) function; whereas for Verbeek, the moral significance is inherent to the identity given to the artefact within a particular context of use. Since there is no norm of proper function in Verbeek (and Ihde), the way in which artefacts mediate seems to suggest something akin to a directing force acting between humans and the world, which could very well be said to arise from natural objects as well (hence the critique by Peterson).[50]

It must be noted however that in order for this interpretation to work, mediation must be interpreted as 'mediation between' rather than as 'mutual constitution.' Verbeek makes it clear that he takes mediation to mean mutual constitution, and he advances this appeal by calling out Ihde's phenomenology of technological mediation as implying that "mediation is located 'between' humans and world (as in the schema I–technology–world)." This for Verbeek invokes an ontology in which artefacts merely mediate the relations between "humans already given as such and a world already given as such."[51] This leaves out any scope for understanding the mutual constitution of the subject and object brought about through technological mediation. Thus, where one situates Verbeek in Kroes' classification of moral significance depends on how one interprets mediation. Although Kroes is justified in interpreting mediation as co-constitution and locating Verbeek along with Latour in the 'technical artefacts as moral agents' camp, there are scattered remarks elsewhere that leave a space of possibility for interpreting mediation as mediation between subject and object and thereby situating it within Kroes' classification of inherent moral significance.[52] Such an interpretation squares well with the design ethics program that is common to both

50 Verbeek calls this "The Acts of Artifacts." See chapter 5 of Verbeek, *What Things Do*.
51 Verbeek, *What Things Do*, 129–130.
52 For instance, see footnote 43 of the current chapter.

Verbeek and Kroes.[53]

Furthermore, there exists an asymmetry between Kroes' interpretation of Latour and Verbeek's interpretation of Latour. There is sufficient evidence to suggest that each of the author's interpretation of Latour is aimed at either associating or dissociating themselves from Latour's actor-network theory. As already discussed, Kroes interprets Latour as arguing for artefacts as moral agents.[54] Verbeek on the other hand interprets Latour as arguing not so much for moral agency but rather for technologies as moral mediators. Verbeek conceptualizes technical artefacts as moral mediators rather than moral agents since he is hesitant to follow through on Latour's symmetry principle according to which there is no ontological distinction between human and non-human actors—they are both 'actants' according to Latour. Rather, Verbeek favors the "phenomenological differentiation between humans who act and a world of things in which action takes place."[55] In this context, he notes:

> Rather than moral instruments or moral agents, Latour's work makes it possible to see technologies as moral mediators. This position does justice to the active moral role of technologies in moral actions and decisions, without reducing this role entirely to human intentions. At the same time, it avoids characterizing morality as an intrinsic property of the technologies themselves. By mediating human experiences and practices...technologies mediate moral decisions and actions. Technologies help us to phrase moral questions and find answers to them, and they guide our actions in certain directions.[56]

Verbeek therefore interprets and translates Latour's co-constitution into mediation and thereby, pace Kroes, makes a case for inherent moral significance. A closer reading of Verbeek therefore makes it challenging, and hence problematic, to classify him, alongside Latour, in the 'technical artefacts as moral agents' camp.

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53 Andrew Feenberg offers an alternate reading of mediation based on his readings of Lukacs and Heidegger. See Andrew Feenberg, "Making the Gestalt Switch", in *Postphenomenological Investigations: Essays on Human–Technology Relations*, ed. Robert Rosenberger and Peter-Paul Verbeek (Lanham: Lexington Books, 2015).

54 See in the current chapter, Section 4.1.2.1.3, p. 144.

55 Verbeek, *What Things Do*, 216.

56 Verbeek, *Moralizing Technologies*, 52.

Referring back to the speed bump example, the mediating role played by the naturally occurring bump in Situation A can be said to be the same as that played by the intentionally made speed bump in Situation B.[57] For Verbeek therefore the moral significance lies in the moral outcome of the mediating role played by a particular stability of the technical artefact within a certain use-context; whereas for Kroes, the moral significance lies in the moral status of the technical artefact qua technical artefact, owing to the kind of thing to which it belongs. Whereas moral status is kind-dependent, moral outcome is context-dependent. Kroes is interested in the former, whereas Verbeek in the latter. This brings Verbeek close to a consequentialist approach to moral significance of technical artefacts; Kroes, on the other hand, can be seen as negotiating between both Kantian and consequentialist approaches. At the same time, however, both stress the importance of design, which for Kroes, is crucial to defining what an artefact is, and which for Verbeek is an ethically relevant activity involved in anticipating and assigning the mediating roles our artefacts carry out. Verbeek is thereby maneuvering between a rock and a hard place by appealing to both design as well as to multistability. This brings about a contradiction in Verbeek's postphenomenological framework that is hard to ignore. Whereas multistability suggests that there is no proper function to an artefact, the turn to design implies a reference to design intentions. This could be said to be analogous, within literary theory, to holding on to authorial intention and the intentional fallacy at the same time. This contradiction, however, does not arise in Don Ihde's postphenomenological perspective owing to its strong ontological commitment to the multistability of artefacts, thereby precluding any talk of normativity arising out of design intentions.[58] Verbeek acknowledges this contradiction but prefers to call it a "complicating factor" that arises from multistability.

> This multistability of things makes it difficult to anticipate the eventual character of the mediation, and thus to explicitly anticipate it in the design process. But this anticipation is not impossible. The problem presents itself particularly in the case of entirely new product categories. Wherever

57 See current chapter, Section 4.1.2.2., p. 145.

58 See Ihde, "The Designer Fallacy and Technological Imagination," in *Philosophy and Design: From Engineering to Architecture*, ed. Pieter E. Vermaas, Peter Kroes, Andrew Light, and Steven A. Moore (Dordrecht: Springer, 2008).

conventions are already in place concerning particular objects, some stability has arisen in the multistability. Within design theory, extensive attention has been paid to such "stability," with constant research into the habitual use of particular products and into the degree to which particular product forms are in fact used for an intended end.[59]

4.1.3 Interpreting Technological Mediation as Moral Extrinsic Final Value

When it comes to understanding technical artefacts as embodying moral values, however, there seems to be greater consilience between the dual nature approach and the postphenomenological approach of Verbeek.[60] If we are justified in interpreting durability, transparency, and engagement as values that Verbeek is prescribing for 'moral' artefacts to embody, then it becomes plausible to see that both Verbeek and Kroes (and Poel) are appealing to the idea that technical artefacts can embody moral values, provided the values that Verbeek is prescribing are interpreted as extrinsic final values. This is explained by the fact that van de Poel and Kroes regard the most interesting version of the moral-neutrality thesis as arguing that "technical artefacts cannot embody moral extrinsic final values."[61]

4.1.3.1 Technical Artefacts as Embodying Moral Values

Before proceeding to an interpretation of technological mediation as moral extrinsic final value, it is necessary to clarify what it means for artefacts to embody moral values. Van de Poel and Kroes carve value in terms of two distinctions: one, between instrumental value and final value; and two, between intrinsic value and extrinsic value. The first distinction captures means and ends—a technical artefact can be said to embody instrumental value if it derives its value from being an instrumental means for attaining an end that is of value; on the other hand, a technical artefact can be said to embody final value if it derives its value from being an end in itself. The second distinction captures relationality—a technical artefact can be said to embody

59 Verbeek, *What Things Do*, 217.

60 In this context, by the 'dual-nature approach', I am referring particularly to van de Poel and Kroes' investigation into the question of whether technical artefacts can embody values. See van de Poel and Kroes "Can Technology Embody Values?."

61 Ibid, 111.

intrinsic value if its value remains unchanged under all circumstances, i.e., if the value depends on properties which are intrinsic and thereby independent of any external relations to the artefact; whereas a technical artefact can be said to embody extrinsic value if its value is relational and therefore dependent on extrinsic properties such as functions (as understood by the dual-nature thesis).

The fourfold classification of values leads to the following possibilities of values that artefacts can embody—intrinsic final, intrinsic instrumental, extrinsic final, and extrinsic instrumental. There is much discussion regarding the contentious status of instrumental value as a value. This has to do with the debate surrounding the intimate relation between values and reasons. Van de Poel and Kroes agree with those philosophers who ascribe to values the characteristic feature of giving us reasons for a positive response towards them. They describe this conditional relation between values and reasons by the following clause:

> (V) If x is valuable (in a certain respect) then one has reasons (of a certain kind) for a positive response (a pro-attitude or a pro-behavior) towards x.[62]

In the background of this clause then, instrumental value—for example, the instrumental value of a knife (i.e., cutting things)—does not give us the requisite reasons to use it for cutting, unless there is also an accompanying desire for cutting. It is only in the possession of a desire to cut that the instrumental value of the knife for cutting gives us a reason to use it for cutting. Final values, on the other hand, give us reasons for responding to them in a positive way. The seat belt in a car, for example, embodies the final value of passenger safety. It is not just that the seat belt can be used to protect the passenger but, more crucially, it can be said that the seat belt is designed to protect passengers. In other words, the seat belt has been designed for the purpose of achieving the final value of safety. It is this final value that gives passengers the reason to wear the belt while traveling.[63] Thus final values are the relevant sort of value to look for in order to investigate into the embodiment of moral values in

62 Van de Poel and Kroes, "Can Technology Embody Values?."

63 The unfortunate fact that we require traffic police to enforce this action on passengers stands testament to the prevalence of human irrationality. The reason in these circumstances is provided for not by the final value of safety but rather the instrumental value of money. Ultimately however it is the final value that gives the requisite reasons for law to enforce—by any means justifiable—adherence to the norm dictated by the value.

technical artefacts. Subsequent to the above discussion, we are then left with the following two kinds of final values—intrinsic final value and extrinsic final value. According to the dual-nature thesis, technical artefacts are by definition both physical as well as intentional and hence relational. This definition excludes intrinsic final values from our analysis, since intrinsic final value is understood to be both unconditionally good, i.e., good regardless of its relation to anything else. The authors then go on to argue for why technical artefacts can be said to embody moral extrinsic final values.

4.1.3.2 Introducing a Distinction: Functions and Purposes

The above discussion calls for a distinction between functions and purposes. This would enable us to better disambiguate instrumental values and final values and clarify as to what it entails for a technical artefact to embody moral extrinsic final values. This distinction lies implicit in van de Poel and Kroes' discussion of values, but it is never explicitly invoked in their conceptual schema. For example, although they caution that "functions are usually associated with instrumental values, since they are interpreted in terms of means–ends relations," they nevertheless note that they "associate functions also with final values."[64] The distinction between function and purpose has been cashed out in different ways in various contexts, in the present context this distinction corresponds to the distinction between instrumental value and final value as characterized by van de Poel and Kroes.[65] The instrumental value of an artefact refers to the artefact's technical function, whereas the final value refers to its purpose. The function is the means, whereas the purpose is the end. Thus in the

64 Van de Poel and Kroes, "Can Technology embody Values?," 113.

65 Vermaas, Eck, and Kroes however explicitly discuss this distinction. See Pieter E. Vermaas, Dingmar van Eck, and Peter Kroes, "The Conceptual Elusiveness of Engineering Functions: A Philosophical Analysis," *Philosophy and Technology* 26 (2013): 159–185. For discussions of this distinction in other contexts, see Timothy Blanton's discussion of Christine Korsgaard in Timothy Blanton, "Function and Uniqueness: A Defense of Korsgaard," *Ethical Theory* (2012). https://www.academia.edu/8421434/Function_and_Uniqueness_A_Defense_of_Korsgaard; Ayhan Sol "Biological Function without Natural Design," in *Phenomenology of Life: From the Animal Soul to the Human Mind*, Book II, *The Human Soul in the Creative Transformation of the Mind*, Analecta Husserliana, vol. XCIV (Dordrecht: Springer, 2007), 165–78; Kari Jormakka, "Function and Its Discontents" *Cloud-Cuckoo-Land* 32 (2012): 183–207. http://www.cloud-cuckoo.net/journal1996-2013/inhalt/en/issue/issues/112/Articles/4.4%20%20%20Jormakka.pdf. Kristo Miettinen, "Design: Structure, Process, and Function: A Systems Methodology Perspective," in Vermaas, Kroes, Light, and Moore, *Philosophy and Design*, 217–230; Peter McLaughlin, *What Functions Explain: Functional Explanation and Self-Reproducing Systems* (Cambridge: Cambridge University Press, 2001), 52–53.

abovementioned comparison between a knife and a seat belt, the knife has a designed function (to cut) without having a designed purpose, whereas the seat belt has a designed function (to hold the passenger in place) which is in the service of achieving a designed purpose (to ensure the safety of the passenger). Another way to put this would be to point to the fact that the user has a veto over the purpose in the case of an artefact embodying only instrumental value, whereas the designer has a veto over the purpose in the case of an artefact embodying final value. This is what van de Poel and Kroes seem to mean when they say:

> The point is not that sea dikes can be used to achieve safety but that achieving safety is part of their function. This is witnessed by the fact that design requirements, and in fact legal norms, and design approaches for dikes are based on the value of safety (Snippen et al. 2005). Dikes are thus *designed for safety*.... The instrumental function of sea dikes (protection from flooding) can hardly be distinguished from the final value for which they are designed (safety with regard to flooding).[66]

Therefore, van de Poel and Kroes can be interpreted as arguing that in artefacts which incorporate value-sensitivity into their design, there is an intimate relationship between their functions and purposes such that the two cannot be distinguished from each other. Value-sensitivity can therefore be said to refer to sensitivity towards the ends to which the artefact serves as a means for. Value-sensitive artefacts are therefore artefacts which have been designed especially for serving certain purposes which can be said to be of value. These are artefacts designed to embody moral extrinsic final values.

4.1.3.3 Mediation as Moral Extrinsic Final Values

Van de Poel and Kroes cite a number of examples to rebut the moral-neutrality thesis by illustrating that artefacts can be said to embody moral extrinsic final values, and they group them into two categories—one wherein the function of the technical artefact is indistinguishable from its embodied extrinsic final value; and the other wherein the final value is separate from its function, being rather a side-effect of the

66 Van de Poel and Kroes, "Can Technology embody Values?,", 114; author's italics.

designed features which realize the function. Translating this into the function/purpose distinction, we could say that in the first category, the function and purpose coincide, whereas in the other, the purpose is achieved as an intended side-effect of the function. Artefacts such as sea dikes, seat belts, and speed bumps fall into the first category, since they are designed for the purpose of achieving a final value which is good in itself. The function and purpose in these artefacts is intimately intertwined. Artefacts such as Robert Moses' low-hanging overpass, power-saving light bulb, gender-sensitive video games, and electric vehicle fall into the second category, since the purpose or final value is only indirectly related to their function.[67] The designed purpose is achieved as a side-effect of the instrumental function of the artefact.

Early in the chapter, we pointed towards a plausible interpretation of transparency, durability, and engagement as moral values. In the context of the above discussion, we can further clarify the plausibility of this interpretation. Since Verbeek makes it clear that technological mediation is a by-product of an artefact's functionality, he could be seen as endorsing the second category of examples cited by van de Poel and Kroes—technical artefacts as embodying moral extrinsic final values such that the final value results not from the function but as a side-effect of its designed features. Verbeek's examples correspond exactly to this criteria. Transparent, durable, and engaging artefacts have these values designed into them; these values are however not the function of the artefact. One could not say of the "Ithaca" Color Printer (which Verbeek cites as an example of a transparent artefact) that its function is to be transparent. Rather, transparency is a designed feature that is intentionally embodied to supplement the artefact's function. Similarly, the engagement that is brought about by an engaging artefact such as the piano is not a function of the piano but is rather a valuable side-effect that results from the way a piano functions. So is the case with sustainable and durable artefacts. The purpose or final value in these examples is separable and distinguishable from their function or instrumental value. Therefore, in addition to interpreting mediation as a moral directive and as inherent moral significance, one could interpret mediation as moral extrinsic final value, thereby pointing to a further parallel between Verbeek's postphenomenology and Kroes' dual nature theory of technical artefacts. These interpretations all point to the fact that

67 See Chapter 3 of the present thesis; Section 3.3.2, p. 122.

technological mediation be understood in terms of its relationship to the norm of function and in turn to the kindhood of artefacts in order for it to (1) disambiguate between technical artefacts and natural objects, (2) make sense of our everyday claims regarding technical artefacts, such as those having to do with malfunctioning artefacts, (3) enable users to disambiguate between the function or instrumental value and the purpose or final value of artefacts, and (4) afford a distinction between mediations of positive as opposed to negative moral value.

4.2 Critical Evaluation of Moral Significance of Technical Artefacts

From the above interpretations of mediation, we see that Verbeek does not maintain an ontological commitment to multistability as does Don Ihde. Such a non-committal approach to multistability affords Verbeek to create space for a design ethics based on anticipating the stabilities arising out of habitual use of artefacts. Ihde's strong ontological commitment to multistability and the designer fallacy, on the other hand, precludes him from making any appeal to an ethics of design.[68] The ontological significance of multistability in postphenomenology is a revolt against essentialism, thus marking a break from the essentialism intrinsic to early Husserlian phenomenology. Such anti-essentialism leaves no space for normative investigations into technical artefacts. However, we have seen both Verbeek and Kroes arguing for moral significance of technical artefacts. On the one hand, we see Kroes providing us with an ontological framework which appeals to the dual nature of technical artefacts; on the other, we see Verbeek providing us a postphenomenological perspective which appeals to the mediating nature of technical artefacts. On the one hand, we have Kroes negotiating between moral neutrality and intrinsic morality, whereas on the other, we have Verbeek negotiating between multistability and technological mediation.

4.2.1 Kroes' Cognitivism Versus Verbeek's Behaviorism

There is however a major and crucial difference between Kroes and Verbeek which is a reflection of the philosophical attitudes characteristic of analytic philosophy of technology, on the one hand, and of postphenomenology on the other.

68 The designer fallacy is the technical equivalent of the intentional fallacy in literary theory, according to which, it is fallacious to infer the meaning of a text by referring to the intentions of the author. See Ihde, "The Designer Fallacy and Technological Imagination."

Kroes derives normativity and moral values not only from the proper function and moral value embodied into the artefact by the designer but also more importantly from the reasons this gives users to adhere to the proper function and thereby to promote the final value. This is exemplified in the abovementioned Clause (V) which states that "If x is valuable (in a certain respect) then one has reasons (of a certain kind) for a positive response (a pro-attitude or a pro-behavior) towards x."[69] Van de Poel and Kroes argue for a strong link between reasons and values. This idea is captured well when they note that "speeds (sic) bumps give us reasons to slow down not just because it is inconvenient to drive fast over a speed bump but primarily because they have the function of traffic safety."[70] Now although potholes can be said to have the same function as speed bumps in slowing traffic down, they do not have any purpose which they are in the service of. Consequently, they do not give commuters the *reasons* to slow down as do speed bumps. Someone who speeds over a pothole may not be reprimanded for doing so, as would be the case (ideally) with someone speeding over a speed bump. To put in the normative language of Judith Jarvis Thomson, we could say that the latter is 'morally defective' for not slowing in front of a speed bump. The former could be said to be rather merely a 'careless rider'. Artefacts designed to embody moral extrinsic final values give users the normative reasons to adhere to their proper use. Consequently, van de Poel and Kroes' approach is cognitivist in so far as they conceive the user as a rational, informed, and responsible agent who adjusts their reasons, desires, judgments, and actions in accordance to the designed purposes or final values of the artefacts they encounter.

In Verbeek, however, we find no reference to the reasons that users need to aware themselves of or adhere to. The onus lies entirely on the designer and the materiality of the artefact to mediate the actions and perceptions of the users. Verbeek's discourse on technological mediation seems devoid of any talk of normative reasons. In contrast to van de Poel and Kroes' cognitivist approach towards values, Verbeek endorses a quasi-behaviorist approach towards technological mediation of morality. It is 'quasi'-behaviorist in so far as it is non-naturalist in its ontology and allows for user interpretation to play a role in moral mediation. However, this too is made conditional upon the artefact that 'shapes' the interpretations and thereby informs the behavior of

69 Van de Poel and Kroes, "Can Technology Embody Values?," 108.
70 Ibid., 115.

its users. In fact, Verbeek explicitly distances himself from any cognitivist associations. For example, he refers to the work by Lorenzo Magnani on 'moral mediators,' which are defined by the author as artefacts which mediate our moral ideas and recalibrate our values.[71] Associating himself instead with actor-network theory, Verbeek steers clear of Magnani's cognitivist approach and notes "Magnani's strong focus on knowledge as the primordial variable in ethics and in moral mediation is rather remote from Latour's focuses on practices, interactions, and materiality."[72] Verbeek's behavioristic tendency is further supported by his discussion of mediation as having behavior-steering effects. Technologies, according to Verbeek, can steer behavior either by "forcing people to behave," "persuading users into specific actions," or "seducing users into a form of behavior."[73] This behaviorist language is in stark contrast with Kroes' cognitivist language of values, norms, and reasons for action. Therefore, a contrast could be made between Kroes' value-sensitive design approach and Verbeek's mediation-sensitive design approach. Whereas Kroes wants designers to be sensitive to final values or purposes, Verbeek wants designers to be sensitive to the mediation of behaviors.[74]

In fact, stark parallels between Verbeek's design ethics and the behaviorist B.F. Skinner's program to 'engineer behavior' can be pointed to. There is a passage in Skinner's behaviorist manifesto which sounds very similar to what Verbeek has in mind. Skinner's manifesto for the 'design of a culture' is very reminiscent of Verbeek's design ethics which appeals to designers to design artefacts which help mediate moral behaviors. For instance, Skinner writes:

> Contingencies are accessible, and as we come to understand the relations between behaviour and the environment, we discover new ways of changing behaviour. The outlines of a technology are already clear. An assignment is stated as behaviour to be produced or modified, and relevant contingencies are then arranged. A programmed sequence of contingencies may be needed.

71 See Lorenzo Magnani, *Morality in a Technological world: Knowledge as Duty* (Cambridge: Cambridge University Press, 2007), xi.
72 Verbeek, *Moralizing Technologies,* 54.
73 Ibid., 126.
74 See Nynke Tromp, Paul Hekkert, and Peter-Paul Verbeek, "Design for Socially Responsible Behavior: A Classification of Influence Based on Intended User Experience," *Design Issues* 27, no. 3 (2011).

> The technology has been most successful where behavior can be fairly easily specified and where appropriate contingencies can be constructed.[75]

This is very similar to Verbeek's idea of design as 'ethics by other means'. Moreover, Skinner and Verbeek both reject the idea of human autonomy in their programs for behavioral engineering and moralizing technology, respectively. For example, Verbeek says of autonomy that

> ...the postphenomenological approach shows that we cannot hold on to the autonomy of the human subject as a prerequisite for moral agency; rather, we need to replace the "prime mover" status of the human subject with technologically mediated intentions.[76]

On the other hand, we have Skinner whose book *Beyond Freedom and Dignity* is a sustained attack on the idea of the 'autonomous man'. In this context, for example, he notes: "A scientific analysis of behavior dispossesses autonomous man and turns the control he has been said to exert over to the environment....It is only autonomous man who has reached a dead end."[77] Verbeek's conception of mediation—as going beyond the modernist separation of subjects and objects and therefore beyond the notion of autonomy—affords little scope for talk about norms and reasons for action. That mediation talk gets rid of reason talk is a significant drawback for the normative turn within postphenomenology.[78] Another interesting way to see the differences between Kroes and Verbeek is through the lens of the distinction made by Hubert Dreyfus between 'ethics' and 'morality'. Dreyfus draws this distinction to illustrate his 'phenomenological account of the development of ethical expertise'.[79] Dreyfus

75 B.F. Skinner, *Beyond Freedom and Dignity* (Harmondsworth: Penguin Books, 1971), 147.
76 Verbeek, *Moralizing Technologies*, 16.
77 Skinner, *Beyond Freedom and Dignity*, 200–1.
78 For a similar critique of behaviorist tendencies in Latour and actor-network theory, see Katinka Waelbers and Philipp Dorstewitz, "Ethics in Actor Networks, or: What Latour Could Learn from Darwin and Dewey," *Science and Engineering Ethics* 20, no. 1 (2014), 23–40. The authors' critique of Latour's 'Machiavellian view on ethics' applies equally well to Verbeek: "Latour adopts a Machiavellian view on ethics, in which moral norms can be employed to influence people's behavior in an anticipated way, and he adds that technologies are far more powerful in steering human behavior than moral norms and values." see ibid., 8.
79 Hubert Dreyfus, "What is Moral Maturity? A Phenomenological Account of the Development of Ethical Expertise," in *Skillful Coping: Essays on the Phenomenology of Everyday Perception and Action*, ed. Mark Wrathall (Oxford: Oxford University Press, 2014). See also the accompanying "Double Column Contrast of 'Morality' and 'Ethics'" at www.alpheus.org/TS_Open/Moral-Ethical.pdf

understands morality as "based on principles that tells us what is *right*." On the other hand, he understands ethics as "based on involvement in a tradition that determines what is *good*."[80] Whereas the paradigm of morality has to do with deliberative action that is grounded in 'knowing-that' so and so consequences result from such and such norms, the paradigm of ethics for Dreyfus has to do with unreflective, intuitive, situation-governed action that is grounded in 'knowing-how' to respond skillfully to a given situation. One can observe that whereas Kroes' user is a 'moral' user, Verbeek's user is an 'ethical' user. Rather than seeing this as an unbridgeable divide, one could follow Dreyfus in conceiving these two paradigms in continuum. It is however an extremely crucial question as to whether the ethical precedes the moral or vice versa. Dreyfus is certain of the position of each in his conception of moral maturity—we begin with the moral and develop into the ethical with experience and expertise. He notes:

> It seems that beginners make judgments using strict rules and features, but that with talent and a great deal of involved experience the beginner develops into an expert who sees intuitively what to do without applying rules and making judgments at all. The intellectualist tradition has given an accurate description of the beginner and of the expert facing an unfamiliar situation, but normally an expert does not deliberate. He does not reason. He does not even act deliberately. He simply spontaneously does what has normally worked and, naturally, it normally works.[81]

According to Dreyfus then, an 'ethical/expert' driver would be one who skillfully copes with the speed bump based on the situation, even maneuvering around it if need be. There is no scope here for responding appropriately to the final value/purpose of traffic safety embodied in the speed bump. Dreyfus' phenomenological exposition of expertise could be taken as a starting point to work towards improving the design effectiveness of value-sensitive artefacts such that they mediate the user's behavior is such a way as to ensure that the embodied final value/purpose is given priority over the individual ends/goals of the agent.[82]

80 Hubert Dreyfus, "What is Moral Maturity?,"183; author's italics.
81 Ibid., 188.
82 For a comparison of Hubert Dreyfus' particularism (which invokes pre-reflective skillful coping) with Jonathan Dancy's moral particularism (which invokes reason and judgment), see Section 5.4 of Benedict Smith, *Particularism and the Space of Moral Reasons* (Hampshire: Palgrave

4.3 Design and Moral Significance

It is however very interesting to observe that regardless of these fundamental differences in approach, both Kroes as well as Verbeek turn to the activity of design as crucial to the moral significance of technological artefacts. For Kroes, design is responsible for instilling the norm of function in the artefact, thereby tying it to human ends which are morally charged, i.e., design assigns moral status to artefacts. For Verbeek, design is an ethical activity since designers are responsible for the ways in which artefacts mediate our lives and co-constitute our agency. One crucial point to note regarding the turn to design in Kroes and Verbeek is that whereas the norm of function and final value is a product of the intentions of the designer in Kroes, technological mediation, on the other hand, is a by-product, an unintended consequence, of the designed function of the artefact.

From the above conceptual investigation, I argue that Verbeek's 'consequentialist' approach to the moral significance of technical artefacts, which appeals to the moral outcome that ensues from the ways in which they mediate our actions and experiences, encounters a conundrum when it turns to the idea of moralizing technologies through design. If technical artefacts are multistable and if mediation is conceived as a by-product or unintended consequence of the function of the artefact then the designer seems to only have a limited role to play in the moral outcome of her designed artefact. In comparison to Verbeek, Kroes' dual nature approach, however, provides a much more cogent account since the moral responsibility it attributes to the designer is limited in its scope to design intentions, which delineate the technical artefact kind to which the artefact belongs and the consequent proper function that it is endowed with. In a truly Verbeekian fashion, van de Poel and Kroes note:

> In our opinion it is part of the responsibility of designers to try to anticipate the circumstances and ways in which artifacts will be used and to try to anticipate how this will affect the realization of values. This is not to say that designers should always accept current user practices. They may

Macmillan, 2011).

> sometimes have good reasons to ask users to 'properly use' an artifact in a way that deviates from what they are used to. In other cases, however, it might be that the designers have to adapt their notion of 'proper use' to actual practices or to what can be realistically expected from users. We also do not want to suggest that designers can precisely predict or control how artifacts will be used and what values will be realized in practice (cf. Albrechtslund 2007). We nevertheless think that fruitful design for values requires that designers try to anticipate actual use and the actual realization of values. Moreover, they ought to monitor whether values are realized in practice and feed such insights back into the design process.[83]

Van de Poel and Kroes' approach to design allows for a bilateral conversation on ethics between designers and users via the medium of artefacts. The user is not just a node in a negative feedback loop, as in the case of Verbeek's design ethics, but is rather an active participant in the moral community which includes designers, users, policy makers, artefacts, values, engineers, norms, standards, etc. The user as a rational agent is just as responsible as the designer in ensuring adherence to the purposes/final values for which the artefact has been designed. Verbeek's model of design, on the other hand, is similar to a cybernetic model wherein the user provides information as input for the designers to work with in order to correct the error between the desired and actual mediation. Although Verbeek does warn against technocracy and speaks of the need for designers to design behavior-steering mediations in a "desirable, morally justifiable, and democratic way," his notion of mediation is devoid of reference to norms, values, and reasons for action.[84] Verbeek conceives of moral mediation as a method to steer behavior through the materiality of technologies. As discussed earlier, this misses the crucial normative element of function which, following the dual-nature theory, is an essential aspect of the ontology of technical artefacts. However, there exists a possibility of reconciling the two

83 Van de Poel and Kroes, "Can Technology Embody Values," 121. Compare with Verbeek, *What Things Do*, 234: "In general, technological design processes would do well to try explicitly to anticipate the future mediating roles that products will play. These roles always exists, which gives designers the responsibility to carefully manage them. Because products by definition coshape the existence and experiences of people, their design is unavoidably a moral activity. Products help to provide answers to the question, "How should we live?" If designers fail to take account of this, they are neglecting an important dimension of their products." Also see chapter 3 of the present thesis, Section 3.3.2, p. 122.

84 Verbeek, *Moralizing Technologies*, 154.

approaches by supplementing one with the other. Where Kroes' cognitivist approach to value-sensitive design falls short of invoking the proper response from the user, Verbeek's mediation approach may be used as a supplement to enable the realization of the desired behavior through appropriately designing the materiality of the artefact. This could especially be effective in certain cultural contexts for designing public artefacts such as roads and transportation services, which tend to be abused/misused. It could also be worthwhile to consider expanding Donald Norman's ideas on user-experience design from the design for affordances of functions to the design for affordances of values such that the moral extrinsic final values embodied in the artefact through design are made transparent to the user during engagement.[85]

The turn to design ethics, however, begs the following questions: why would designers design value-sensitive or mediation-sensitive, 'moral' artefacts? What incentive would there be for manufacturers to design for final values or purposes which are ends in themselves? It is more common to find artefacts which are designed for the purpose of the profit motive rather than for any consideration for final value. On the other hand, one could beg the same question of users: under what circumstances would users adhere to the final values/purposes embodied into the artefact through design? Van de Poel and Kroes make the assumption that users would respond appropriately by conforming their actions to the purposes designed into the artefact; for example, van de Poel and Kroes assume that drivers would respond to a speed bump by slowing down, since the speed bump embodies the final value of traffic safety, and this gives them the *reason* to apply the brake and slow the vehicle down. This sounds like a designer's utopia, since in actual practice, there are innumerable instances where people *do not* respond appropriately to the purposes for which the artefacts have been designed.[86] It is under these circumstances that Verbeek's appeal to designing technologies as moral mediators attains its rightful significance, since the mediation approach is well-equipped to address the ways in

85 See Donald Norman, *The Design of Everyday Things* (New York: Basic Books, 2013), 13. Here Norman conceives of affordances as "clues to the operations of things." It is an open question whether affordances may be designed such as to offer clues to the *values* embodied in things.

86 Citing an example to illustrate the context-sensitivity of response to artefact purposes, van de Poel and Kroes cite an example that precisely captures the *actual response* to speed bumps on Indian roads: "Suppose that a speed bump is part of a racing track to add an element of skillful driving to a racing competition. In that case, slowing down does not seem the proper response, but it is rather something like skillfully driving as fast as possible over the speed bump." This imaginary situation is very much a part of the lived experience of Indian commuters. Ibo van de Poel and Peter Kroes, "Can Technology Embody Values?," 115.

which materiality may be designed in order to shape user behavior—without the user having to deliberate upon the right course of action to be undertaken. Mediation theory can also equip users with a highly effective reflexive framework to understand and evaluate the ways in which everyday artefacts influence and determine their actions, despite their own reasons and desires.

This calls attention to the sociocultural context in which the designed artefact finds itself. A cursory glance at the differences in the sociocultural contexts of India and the Netherlands reveals the different approaches to design that each context calls for. Dutch design is a very well-established school of thought in the field of design. It is no wonder then that much of the philosophy of technology from the Netherlands focuses on the importance of design. As Kroes' focus on design illustrates well, it is through design that artefacts attain their membership into technical artefact kinds, are baptized with their proper functions, and embody final values. This endows artefacts with normativity and makes it sensible to say of an artefact that it is either functional or defective. In developing countries such as India, on the other hand, design thinking is still at a nascent stage. It is more often the user rather than the designer who assigns functions to artefacts. This is reflected in the ways in which artefacts designed for one function are appropriated for various other functions. It is therefore a far cry to expect users to respect the values/purposes for which artefacts have been especially designed. It is only with the invocation of sanctions such as fines for deviant drivers and riders without helmets that values such as safety are put into effect. Within such a sociocultural context, mediation may be a better approach to the design of moral values.

4.4 Modes of Engagement: Submissive and Subversive

In the phenomenological–normative reading of Heidegger's philosophy of technology presented in Chapter 1, I drew a distinction between two modes of engagement with artefacts—submissive and subversive.[87] Using the concepts acquired heretofore, these two modes of engagement can be understood in terms of proper function and/or mediation as follows: in the submissive mode of engagement, the user adheres to the norm of the 'proper function' for which the artefact has been designed; in terms of

87 See Chapter 1 of the present thesis; Section 1.4.1, p. 44.

mediation, it can be thought of as the mode of engagement whereby the mediation of user behavior successfully corresponds to the designed mediation. Whereas, in the subversive mode of engagement, the user subverts the norm of the 'proper function' of the designed artefact; herein, there is a gap in the designed mediation and the resulting behavior of the user. Understood hermeneutically, submissive mode of engagement is one in which the meaning/function of an artefact is assigned to it by the meaning/function of the equipmental totality to which it belongs. This evokes a reference to the hermeneutic circle whereby "the meaning of the parts is derived from the meaning of the whole, and vice versa."[88] This is also the Heideggerian paradigm in which there is no such thing as "an equipment," i.e., "an artefact". It is the referential whole which assigns meaning/proper function to the part and the user subordinates themselves to its proper function or what Heidegger calls the in-order-to structure. In the subversive mode of engagement, on the other hand, the part is interpreted as a whole in itself, with the meaning of the part not constrained by the meaning of the whole, thereby enabling the assignment of novel functions to artefacts. Familiarity plays an interesting role herein: in the submissive mode of engagement we are familiar with the proper functions and purposes of artefacts, and this familiarity is expressed in the way we *normally* engage with artefacts; in the subversive mode of engagement, the subversion of the norm arises from either an unfamiliarity or an intentional bracketing of the familiar/normative ways of engaging with things. The subversive mode of engagement points towards a break in the hermeneutic circle, which characterizes the submissive mode of engagement.

The effectiveness of van de Poel and Kroes' as well as Verbeek's turn to design ethics is grounded on the submissive mode of engagement. Similarly, I called attention to the 'hermeneutic bias' in Ihde's postphenomenology, whereby I argued that Ihde, in expanding hermeneutics to technologies, conceives of artefacts merely as mediations between humans and the world.[89] This mediation is predicated on the readiness-to-hand that is characteristic of the submissive mode of engagement. Although Ihde does derive alterity relations—wherein the artefact becomes the focus of attention and engagement—through his phenomenological analyses of human–artefact relations, it remains largely underdeveloped in his theory of technological mediation, which

88 Seebohm, *Hermeneutics*, 40.
89 See Chapter 3 of the present thesis; Section 3.1, p. 95.

privileges the embodiment and hermeneutic relations over others. Even when it is taken up by postphenomenologists following in the wake of Ihde, it is conceived of as analogous to "person-to-person interaction," involving an interface that is designed to simulate human interaction.[90] This is another expression of the hermeneutic bias which precludes the possibility of conceiving of alterity relations as involving an engagement with the artefact in the subversive mode.[91] Moreover, Ihde's ontological commitment to multistability and the intentional fallacy is applicable only while traversing across cultures; within a particular lifeworld, however, the user is conceived as adhering to the submissive mode of engagement by conforming their use to the culturally dominant function of the technical artefact.[92] In the case of Kroes and Verbeek's design ethics, the moral value/mediation embodied in the artefact through design is realized only when the user submits themselves to the intentions of the designer. This might be effective only in certain sociocultural contexts—contexts in which adherence to the norm of proper function and to the boundaries between artefact kinds is the dominant mode in which users engage with artefacts. It is in such contexts that designers have a veto over the proper function and the kind to which the artefact belongs. Kroes makes this explicit when he notes:

> Instead of explicating the notion of proper function in terms of function assignments by users, I relate proper functions to function assignment by the creators of technical artefacts. In this way I am able to solve a problem on which various theories of technical functions run afoul, namely the problem of how a technical artefact that loses its ability to perform its function (a malfunctioning technical artefact) may still remain an instance of its technical artefact kind.[93]

This is a crucial point since it points to the origins of normativity in the creation and design of artefacts. This might well be the case in the Netherlands where design

90 See Rosenberger and Verbeek, "A Field Guide to Postphenomenology," 18.

91 Ihde does point to the subversive potential in the alterity relation when he talks of it as involving the "disengagement of technology from its ordinary use context...[and appropriating it for]...various disengaged engagements which constitute such activities as play, art, or sport." See Ihde, *Technology and the Lifeworld*, 107. But this potential remains largely underdeveloped within postphenomenology, which can be attributed to its hermeneutic bias of conceiving of artefacts as mediations.

92 See Chapter 3 of the present thesis; Section 3.1, p. 96.

93 Kroes, *Technical Artefacts*, 196.

enjoys a respectable stature. Within the same sociocultural context, moreover, it could very well be representative of only a particular class of consumers—those belonging to a higher economic stratum of the society. In other contexts, such as in developing countries—where design for values is either in its nascent stages or conspicuously absent—or in the lower economic strata of the society, it could be argued that it is the user rather than the creator who attains a privileged status in assigning functions to artefacts. Such users, by creatively appropriating artefacts to functions other than their proper functions, may very well be said to determine the kind to which an artefact belongs. Ihde's ontology effectively captures the notion of identity of artefacts as determined by their use-contexts; it however falls short of accounting for the crucial ontological difference between what Kroes calls 'being a y-er' and 'being for y-ing'. Kroes' distinction between 'being a y-er' and 'being for y-ing' captures the notion that a thing may be for y-ing without being a y-er. He gives an instance of how a coin "may be said to be for driving screws...without being a screwdriver."[94] For Kroes, the property of 'being a y-er' is captured ontologically by the kind to which the technical artefact belongs: although a coin may be used as a screwdriver, the coin and the screwdriver belong to different artefactual kinds. Here it is more appropriate to say that one thing *is used as* another, rather than making the strong ontological claim that one thing *becomes* another in its use. An example from the Indian context that is usually cited is that of using a washing machine to churn curd in order to make *lassi*, a refreshing drink consumed in North India.[95] This could be thought of in terms of the distinction between function kinds and artefact kinds. In the above example, the user is subverting the function kind to which the artefact kind belongs. From the design point of view, 'washing machine' is an artefact kind which belongs to the function kind 'clothes washing device'. From the user point of view, however, the 'washing machine' is an artefact kind which belongs to the function kind 'curd churning device'. In such cases, notions of normativity and malfunction may be said to be in a flux. One could not say of the washing machine, if it fails to churn curd well, that it is an instance of a malfunctioning artefact.

Invoking the function/purpose distinction, we could characterize this as being an instance where the function has been put in the service of a purpose other than the

94 See Kroes, "Theories of Technical Functions," 64.

95 See Dheeraj Sinha, *Consumer India: Inside the Indian Mind and Wallet* (Singapore: John Wiley and Sons, 2011), 73.

intended purpose of the designer.[96] Following Kroes, we could note that such subversive modes of engagement carry the sanction of losing any claim to malfunction and thereby to normativity. In the subversive mode, we can no longer hold the designer responsible for malfunction. Manufacturers usually call attention to this sanction explicitly through the use of cautionary stickers with disclaimers such as "warranty void if seal broken or removed." This is but one way to prevent users from tinkering with the artefact. Following Kroes, we can say that the artefactual normativity arising out of design applies only in so far as the user submits themselves to the proper function of the artefact and abstains from tinkering with it. Submission to the proper function and the norms of use set by the designers seem to be the conditions under which normativity, and hence malfunction, apply. This is an interesting point to note in the context of those who romanticize subversion in the name of '*jugaad'*.[97] Although the subversive mode of engagement comes with its own benefits in terms of demonstrating resourcefulness and skillful coping in the face of malfunction or economic constraints, it comes with the caveat of losing out on any claims to normativity or malfunction which arises from design and manufacture. There is no norm of function or value of safety, for example, in a motor cart that is put together using an engine from a discarded motorcycle mounted on the chassis of a cycle rickshaw. Although such bricolage demonstrates tremendous resourcefulness and practicality as far as the norm of function is concerned, it offers no guarantees with respect to values such as safety. To engage in tinkering and bricolage is to step outside the scope of normativity. This could be a crucial trade-off to make, for it falls conveniently in the hands of manufacturers, policy makers, and governing bodies who are more than happy to disclaim responsibility for malfunctioning goods and services. A turn to design ethics in such lifeworld contexts may be a step in the right direction.

4.4.1 Ethical Subversion

96 See in Section 4.1.3.2 of the current chapter; p. 156.

97 See for example, Navi Radjou, Jaideep Prabhu, Simone Ahuja, *Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth*, (San Francisco: Jossey-Bass, 2012). '*Jugaad'* in Hindi is synonymous to what Claude-Levi Strauss refers to as '*bricolage.'* See Claude Levi-Strauss, *The Savage Mind*, (Hertfordshire: The Garden City Press Limited, 1966). It has been described as "'shrewd improvisation' with the materials at hand, and it connotes flexibility, inventiveness, pragmatism, and guile. One of the classic images of *jugad* is of a truck that has been cobbled together from spare parts, scrap metal, and bits of wood. The word sometimes carries the more specific sense of combining materials that come from two quite different spheres, such as the use of a modern engine to drive an old buffalo cart or the use of a pair of tights to fix a car's fan belt." See Craig Jeffrey and Stephen Young, "Jugad: Youth and Enterprise in India," *Annals of the Association of American Geographers* 104, no. 1 (2014), 188.

There is an important caveat, however. Conceiving of moralizing technologies from the design point of view, with a nod towards endorsing the submissive mode of engagement comes with its own dangers. More often than not, artefacts are designed to embody negative values such as planned obsolescence, whereby they are designed to malfunction prematurely, much prior to serving the life they are technologically capable of. The cultural historian and critic Giles Slade defines planned obsolescence as a "catch-all phrase used to describe the assortment of techniques used to artificially limit the durability of a manufactured good in order to stimulate repetitive consumption.[98] In the context of planned obsolescence, submitting oneself to the proper function of the artefact may in fact be morally inferior to subverting the proper function/purpose of the artefact. Invoking the function/purpose distinction, we could say that one has a reason to subvert the proper function of the artefact provided the function is put in the service of a purpose that is of greater moral value than that intended by the designer. The function/purpose distinction enables us to separate the instrumental value of function from the final value of purpose of the artefact. Planned obsolescence may then be defined as the method of manufacturing technical artefacts for the purpose of maximizing sales by embodying the values of lower durability and higher obsolescence into the design of the artefact. Just as the value of traffic safety in the speed bump gives us reasons, according to Kroes, to respond appropriately by braking in front of the bump, the value of obsolescence, it could be argued, gives us reasons to respond appropriately by hacking/tinkering/subverting the proper function of the artefact. This calls for a shift in thinking in terms of design ethics or value-sensitive design to thinking in terms of value-sensitive use or user-engagement ethics. This could be more effective than expecting designers to moralize technologies, which could well be a foregone conclusion in a market-driven economy.[99]

The above discussion affords an understanding of technical artefacts in terms of 'unethical design' as well as 'ethical subversion'. Unethical design may be conceived

98 See Giles Slade, *Made to Break: Technology and Obsolescence in America* (Cambridge: Harvard University Press, 2007), 5.

99 Andrew Feenberg is one of the few philosophers of technology who identifies hacking as one of the "essential forms of activism in a technological society...[which] limit the autonomy of experts and capitalist management and force them to redesign the worlds they create to represent a wider range of interests." See Andrew Feenberg, Making the Gestalt Switch" in *Postphenomenological Investigations*, 235.

of as the design of artefacts whose instrumental function is made to serve a purpose that is of low moral value. For example, the recent expose involving Facebook is quite illustrative of this. Whereas Facebook claims to be a social networking site that is designed to serve the purpose of connecting people, a leak involving an internal memo reveals that the actual purpose of Facebook is to maximize growth at all costs, even if it means the use of "'questionable' tactics to increase the number of users...even if it leads to a suicide or even a terrorist attack."[100] Here is an instance of unethical design, since the function of connecting people is put in the service of the purpose of maximizing growth at all costs. Ethical subversion may then be conceived of as the subversion of the proper function of the artefact in order to put it in the service of a purpose that is of higher moral value. This could mean, for example, using Facebook for the purpose of raising awareness regarding a disease or a mental illness, etc. In contrast to this, unethical subversion could be conceived of as using Facebook for collecting user data in order to use it to manipulate public opinion during an election.[101] The notion of ethical subversion may also be applied to an understanding of 'ethical hacking,' which has conventionally been understood as the purposeful attack of an organization's computer systems in order to test and identify their vulnerabilities, which if unattended to could plausibly be taken advantage of by potentially malicious hackers.[102] Ethical hacking can then be understood more broadly as the act of hacking into an unethical design in order to put its function in the service of a purpose that is of greater final value.[103] Similarly, it could be argued that Linux, the open source operating system, is an ethical design since it is designed for being open-source and transparent with regard to the background processes running in the system, when compared to proprietary operating systems such as Microsoft. Following Kroes, we could argue that values of open-source and transparency give a

100 Conor Friedersdorf, "In Defense of the 'Ugly' Facebook Memo: An Executive's Deliberately Provocative Post Offers an Encouraging Sign that the Company is Grappling with the Forces it has Unleashed," *The Atlantic*, 30 March, 2018. https://www.theatlantic.com/politics/archive/2018/03/in-defense-of-the-ugly-facebook-memo/556919/.

101 Oliver Laughland, "Cambridge Analytica Closing after Facebook Data Harvesting Scandal: Political Consultancy, under Fire Over Use of Millions of Facebook Users' Data, has Begun Insolvency Proceedings," *The Guardian*, 2 May, 2018. https://www.theguardian.com/uk-news/2018/may/02/cambridge-analytica-closing-down-after-facebook-row-reports-say.

102 Rafay Baloch, *Ethical Hacking and Penetration Testing Guide* (Florida: Taylor and Francis, 2015), 2. 'Ethical' or 'white-hat hacking' is usually contrasted with 'malicious' or 'black-hat hacking'.

103 Here the word 'hacking' is not limited to the context of computers and Internet security, but also to the context of everyday technical artefacts. For an appreciation of the potential of the hacker for our contemporary consumer culture, see McKenzie Wark, *A Hacker Manifesto* (Cambridge: Harvard University Press, 2004).

reason for users to trade their proprietary software for open source-software. This is an instance of ethical submission, whereby the user submits oneself to the proper function and final value/purpose of the artefact, much in the same way as a driver submits to the proper function of a speed bump by slowing down in front of it. Avoidance/disengagement with an artefact may also be understood thusly. There are reasons to not use or disengage with an artefact when the artefact is designed for a purpose that is of low moral value. It is an open question as to whether the ethical subversion of an artefact is more virtuous than disengaging with it.

Ethical subversion, however, can apply not only to artefacts which embody moral extrinsic final values or purposes but also to artefacts designed only for their instrumental functions. In these cases, ethical subversion may be simply thought of as putting the function to 'good use' in the sense of using it in the service of a final purpose of significant moral value: for example, using the functions of the laptop in the service of purposes such as learning and research, or using the cellphone to warn people of disasters, etc. Such an understanding of moral significance in terms of modes of engagement implicates not only the designers but also users in the discourse surrounding the moral significance of technical artefacts. Both Kroes and Verbeek's focus on design comes at the cost of ignoring the crucial aspect of user engagement. The postphenomenological notions of mediation and multistability preclude any talk of artefact kinds and modes of engagement, since the notion of 'modes of engagement' is grounded on the notion of the 'proper function' of an artefact, which, in turn, is assigned to it qua the artefact kind to which it belongs; consequently, it also hangs on the distinction that Kroes makes between use-proper functions and use-accidental functions. Postphenomenology's distaste for artefact kinds and essences precludes such talk of modes of engagement. Verbeek acknowledges this fact when he observes that postphenomenology's focus on the mediating roles of technologies has led to the consequence that "the ways in which human beings appropriate technological mediations tends to remain underexposed." Appealing to fellow philosophers of technology, Verbeek asserts

> Having shifted its focus from human understandings of technology toward the materiality of technologies, we now have to move toward to technologically mediated human beings. In order to understand how

> technologies mediate knowledge, morality and metaphysics, we should not only study technologies, but also the ways in which human beings give meaning to their mediating roles.[104]

Although this is a welcome move for philosophy of technology in general and postphenomenology in particular, the method by which to study the ways in which users give meaning to technological mediation is crucial. Verbeek turns to conversation analysis as the method by which to study the "interpretive appropriation" of technical artefacts by humans. This is yet another manifestation of the hermeneutic bias within postphenomenology, just another reflection of the text-as-artefact analogy which is a central working hypothesis within postphenomenological analysis of technical artefacts.[105] On the other hand, Kroes' turn to design ethics precludes any talk of user-engagement ethics. Kroes' turn to the realm of creation of artefacts rather than to the use of artefacts is grounded in his ontology of technical artefact kinds, according to which, he asserts:

> In line with Thomasson's theory of technical artefact kind I am of the opinion that it is the creator of a technical artefact who ultimately determines what kind of new object is put into the world, not the user. Creating instead of using appears to be the kind of activity that may enrich the ontology of the world and that is exactly what engineers are doing when they design and make new technical artefacts....Instead of explicating the notion of proper function in terms of function assignments by users, I relate proper functions to function assignment by the creators of technical artefacts. In this way I am able to solve a problem on which various theories of technical functions run afoul, namely the problem of how a technical artefact that loses its ability to perform its function (a malfunctioning technical artefact) may still remain an instance of its technical artefact kind.[106]

104 Peter-Paul Verbeek, "Toward a Theory of Technological Mediation: A Program for Postphenomenological Research" in *Technoscience and Postphenomenology: The Manhattan Papers*, ed. Jan Kyrre Berg O. Friis and Robert P. Crease (Maryland: Lexington Books, 2015), 192.

105 As noted by Kroes, Ian Hutchby offers an insightful critique of the idea of technology-as-text; see Ian Hutchby, "Technologies, Texts and Affordances," *Sociology* 35, no. 2 (2001). See Kroes, *Technical Artefacts*, 185.

106 Kroes, *Technical Artefacts*, 196.

Although I agree with Kroes with regard to the ontological significance of creating artefacts as opposed to using them, the above discussion is intended to illustrate the limitations of design ethics. This limitation could be overcome by turning to the domain of use and the roles users can play in contributing to the moral significance of technical artefacts.

4.5 Basic Problems of Postphenomenology

The foregoing discussion calls attention to some basic problems that postphenomenology must deal with in order for it to provide a more satisfactory account of our technological praxis. The postphenomenological notions of multistability and mediation do not provide a satisfactory account for the normativity of artefacts, which is captured by their designed functions. Technical artefacts, as Kroes points out, come in kinds, owing to which they are endowed with their kind-proper functions. These kind-proper functions are the source of normativity in artefacts and form the basis for making sense of statements such as "X is a good K," where K is the kind to which the artefact belongs. As we have seen, Judith Jarvis Thomson is but one of the exemplars of deriving normativity from kindhood. The notions of kindhood as well as normativity are challenged by the postphenomenological notions of multistability (according to which there are no essences to artefacts) and designer fallacy (according to which it is a fallacy to ascribe a proper function to an artefact on the basis of design intentions), respectively. Although it is uncontroversial to observe that a technical artefact can be put to serve more than one function, it is quite problematic, as illustrated by Kroes, to maintain that the identity of an artefact is relative to its use-context.[107] This anti-essentialist claim comes close to resembling a subtle form of the moral-neutrality thesis, since it suggests an ontology of artefacts as human-made-physical-constructions which attain their identities on the basis of the ends to which they are put to use. Such anti-essentialism fails to capture the norms/values embedded in artefacts through design.[108] Moreover, as Kroes observers, it fails to capture the notion of a malfunctioning artefact, i.e., it fails to account for how an artefact which does not serve its intended function can still be a member of its kind. This is a serious drawback for the

107 See, for example, Kroes' critique of Latour in Section 4.1.2.1.3 of the current chapter; p. 144.
108 Refer to the discussion on the moral-neutrality thesis in Section 4.1.2.1.1 of the current chapter; p. 142.

postphenomenological approach.

The abovementioned problem could be traced back to two basic strategies guiding Ihde in his approach towards developing postphenomenology. The first concerns Ihde's use of two-dimensional line drawings such as the Necker cube as a heuristic device in order to arrive at multistability. This is a further instance of postphenomenology's hermeneutic bias, since it reduces the three-dimensional and graspable nature of technologies—as affording opportunities for action and engagement—to a two-dimensional stick figure that is meant to be visually apprehended. Moreover, in contrast to technical artefacts, one cannot claim of these drawings that they belong to so and so kinds or that they ought to perform such and such functions. The same could be said of texts which, along with perceptual line drawings, inform much of Ihde's assertions regarding technical artefacts. Ihde could therefore be called out for making an implausible argument for designer fallacy by drawing inferences from an ill-conceived analogy between the author of a text and the designer of a technical artefact. From the dual nature perspective, technical artefacts differ crucially from social artefacts as well as from texts by having their material structures intimately related to their intended functions; moreover, the notion of a 'malfunctioning text' does not make as much sense as that of a 'malfunctioning artefact'.[109] Ihde's affinity for all things 'post-' (postmodernism, post-pragmatism, post-analytic, postphenomenology, etc.) seems to have informed his anti-essentialist stand, and one wonders if he has not been too hasty in giving up on the original Husserlian project of phenomenology as an eidetic science enabling access to essential structures of the objects of our consciousness.[110] As a rebuttal to Ihde's anti-essentialism, one could advance a Husserlian critique on the ground that we experience artefacts as being meaningful and coming in kinds, having certain functions and purposes, rather than as being multistable or ambiguous. Husserlian phenomenology, as opposed to Ihdean, nonfoundational postphenomenology, may

109 For a critique of the technology-as-text analogy from the idea of affordances, see Hutchby, "Technologies, Texts and Affordances." 444.

110 In his introduction to the book *Postphenomenology: Essays in the Postmodern Context*, Ihde writes, "Today we live amidst the 'posts.' It is a post-industrial era, a postnuclear period, and there is postfeminism, postanalytic philosophy, and above all, postmodernism—so why not postphenomenology? All these 'posts' are, perhaps, some thing like a technological society's substitute for previous metaphorical forests, within which one could get lost. What all the postmodern captures is the sense of transition, of a proliferating pluralism, and—for the nostalgic—a 'loss of the centers' or 'foundations.'" See Don Ihde, *Postphenomenology: Essays in the Postmodern Context* (Evanston: Northwestern University Press, 1993).

therefore be more effective in entering into dialogue with the dual-nature theorists such as Kroes et al. since it affords speaking in terms of concepts, essences, and kinds.

The second strategy has to do with Ihde's anthropological stance towards technologies, and this forms the further basis for his arguments for multistability. Ihde borrows extensively from the field of anthropology, and its influence is apparent in his affinity towards descriptivism and aversion to normative pronouncements on technologies. Much of Ihde's analyses concern comparative case studies of the ways in which different cultural contexts have led to the emergence of different technological practices; for example, he draws very insightful, phenomenological comparisons between European and South Pacific navigational techniques and between the different cultural variations of artefacts employing the principle of bow-under-tension.[111] These examples, as Ihde himself acknowledges, are much more material, embodied, and existential than the simple line drawings presented initially.[112] The notion of multistability is therefore derived in large from his cultural sensitivity to the different ways in which users relate to artefacts. However, as David Cerbone insightfully points out, there exists a major discrepancy in Ihde's use of anthropological examples for his argument for multistability. In the case of the perceptual line drawings, the drawing remains constant across all variations; however, in the case of technological practices across cultures, such as navigation and archery, there is no analogous constancy which would enable one to argue for multistability.[113] In this context, Kyle Powys Whyte observes with great insight that the postphenomenological notion of multistability only makes sense in the background of what he calls a 'pivot,' i.e., "that which allows the variation to make sense as a

111 For the discussion on navigational techniques, see Don Ihde, *Technology and the Lifeworld: From Garden to Earth* (Bloomington: Indiana University Press, 1990), 65; for discussion of bow-under-tension, see Chapter 14, "The Seventh Machine: Bow-Under-Tension," in Ihde, *Experimental Phenomenology: Multistabilities*.

112 Don Ihde, *Experimental Phenomenology: Multistabilities,* 180.

113 Cerbone notes: "After all, the different forms of archery are materially different; in each case, the bows, strings, and arrows have been differently fashioned, often with different materials, and nothing about one excludes the other....What remains constant across the diversity is the notion of archery, schematically described, but it is not especially surprising that this schema might be filled out in more than one way. Consider all the styles, kinds, makes of automobiles the average driver sees on any given day: are these "phenomenological variations" of one another? Does the variety of cars show that automobile technology is multistable in "precisely its phenomenological sense"?" See David R. Cerbone, review of *(Book 1) Ironic Technics; (Book 2) Postphenomenology and Technoscience: The Peking University Lectures*, by Don Ihde, *Notre Dame Philosophical Reviews*, October 14, 2009. https://ndpr.nd.edu/news/book-1-ironic-technics-book-2-postphenomenology-and-technoscience-the-peking-university-lectures/#_ednref1.

variation." The pivot is the point of reference from which a technical artefact can be said to be multistable. This brings out a paradox in Ihdean postphenomenology: if the identity of artefacts is relative to their use-contexts, then what provides the foundation upon which to locate the pivot?[114] As already mentioned, Kroes offers a crucial distinction between 'being a y-er' and 'being for y-ing' and acknowledges the possibility that a thing may be for y-ing without being a y-er.[115] Following Whyte, one can say that the technical artefact kind provides the ontological pivot from which Kroes performs his analysis. This affords a strong ontological and conceptual ground for all further analyses. In Ihde, on the other hand, there is a collapse of the distinction between 'being a y-er' and 'being for y-ing' since there is no ontological commitment to artefact kinds. Subsequently, the choice of the pivot from which to perform the variational analysis remains a challenge. In a similar vein, Whyte begs the following question:

> To pivot on the artifact requires that we assume the identity of the artifact remains constant across the variations....Each pivot requires that we assume that something remains constant and that the reader will not question the identity....Are certain pivots more conducive to some projects than others? And is there any reason to choose a pivot beyond its being a rhetorical move that better situates the point that the author is ultimately trying to make. It is this question on which the future of postphenomenological research rests. Can these choices be defended?[116]

Albert Borgmann offers a similar reading of Ihde. Drawing a distinction between Husserlian variational theory and Ihdean multistability, Borgmann observes that whereas the former "begins with the variety of senses or appearances and points at the invariant reference or thing in itself," the latter "centers on reference or the thing in itself and from there explores the variety of senses or phenomena." He notes:

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114 David Cerbone raises the same concern in his scathing critique of postphenomenology where he notes that Ihde's claims "appear to drain the notion of any of its thicker significance, since "technology" just seems to mean something along the lines of "using something to do something"....Given Ihde's anti-essentialism, don't sea otters, chimpanzees, and even birds employ a variety of 'technologies'? If the meaning of 'technology' is that diffuse, however, how can one formulate philosophically significant theses about 'it'?" Ibid.

115 For a discussion of this distinction, see Section 4.4 of the current chapter; p. 170.

116 See Whyte, "What is Multistability?," 78.

> They [stabilities] underlie and enable variations and multistabilities. Without some stable and identifiable thing at the center, variants would be different independent entities, and the multistability of interpretations would turn into a multiplicity of objects.[117]

While Borgmann conceives of both variational theory and multistability as complementary, Ihde tends to focus his attention solely on the latter as against the former, even drawing an unbridgeable gap between the two; speaking of how his adoption of the Husserlian phenomenological method led to unexpected results, Ihde writes:

> Earlier I had recognized, of course, that if I followed Husserl's method of variations, including his overly complex "reductions," I should find "essences"—but I didn't. Instead, I discovered multistabilities. By doing phenomenology in practice, I was finding a different result than in its classical expression.

The absence of an ontology of artefact kinds is a major drawback for postphenomenology; as illustrated in this chapter, it gives rise to a number of challenges with regard to understanding and accounting for the ontological and normative significance of technical artefacts. In its anti-essentialism and nonfoundationalism, postphenomenology may be seen as a post-structuralist turn within philosophy of technology—with its turn to the mediation of artefacts between humans and the world as analogous to the post-structuralist turn to the mediation of language within any discourse. This is reflected in its postmodern, eclectic style of borrowing influences from various schools of thought—pragmatism, phenomenology, hermeneutics, social constructivism, anthropology, ethnomethodology, science and technology studies, actor network theory, etc. In this regard, it is interesting to read Ihde's postphenomenological re-interpretations of Husserl and Heidegger as a deconstruction of his phenomenological predecessors with a keen eye towards their (mis)conceptions of technologies.[118] Similarly, Verbeek offers such deconstructionist

117 See Albert Borgmann, "Stability, Instability, and Phenomenology," in *Postphenomenological Investigations: Essays on Human– Technology Relations*, ed. Robert Rosenberger and Peter-Paul Verbeek (Lanham: Lexington Books, 2015), 249.

118 Representative of such postphenomenological, deconstructive readings are *Heidegger's Technologies* and the more recent *Husserl's Missing Technologies.*

readings of philosophers such as Karl Jaspers, Martin Heidegger, and Albert Borgmann.[119] This has its own uses as many adherents of postphenomenology have brought out so well; it helps challenge notions such as the primacy of design intentions, romantic and dystopic conceptions of technologies, monolithic understanding of technology (with-a-capital T), understanding technology as applied science, understanding science devoid of its technological embodiment, etc. Granting all this, however, postphenomenology falls short of accounting for the the normative dimensions of creating and using technical artefacts and understanding them in their own right as wholes composed of parts designed with the intention of serving a particular function. The notions of multistability and designer fallacy, moreover, do not enable us to hold the creators of artefacts accountable for the norms/values designed into them; the descriptivist focus on mediation, in particular, does not afford us to draw a distinction between function and purpose, and therefore between the values embodied in artefacts through design. Although Verbeek's reworking of postphenomenology for the purpose of accounting for technologies as moral mediators is a step in the right direction, this comes at the cost of giving up on the ontological commitment to multistability, which forms the core tenet of postphenomenology.[120]

A further worry that plagues the normative turn brought about by Verbeek within postphenomenology concerns the inadvertent incorporation of behavioristic tendencies, as illustrated earlier in the chapter. This can be traced to postphenomenology's functional appropriation of intentionality in its conception of technological intentionality. In doing so, intentionality is robbed of its phenomenological significance of being the 'mark of the mental' as Brentano conceived it to be. Rather, it is appropriated to capture the observation that technologies have intentionalities, in the form of implicit instruction manuals, by virtue of which they mediate and thereby shape our actions. So the core phenomenological tenet of intentionality as the mark of the mental now gets transformed into a mark of the technical. Technological intentionality is conceived as

119 See Verbeek, *What Things Do*.

120 Robert Rosenberger addresses very similar issues and offers a defense of postphenomenology against what he calls the "problem of invariance" and "the problem of grounding" in the form of a series of cautionary prescriptions that would enable it to maintain "its commitments to anti-essentialism and nonfoundationalism." See Robert Rosenberger, "Notes on a Nonfoundational Phenomenology of Technology," *Foundations of Science* 22, no. 3 (2016): 471–94.

mediating and co-constituting the behaviors, actions, and experiences of users, rather than as norms which users have a reason to adhere or fail to adhere to. Such a behavioristic tendency reaches its climax in Verbeek's turn to design as involved in the effective use of materiality for the purpose of mediating desirable actions. As mentioned earlier, such a conception of moral mediation and technological intentionality offers a very limited scope for accounting for the different modes of engagement that people adopt with respect to technical artefacts and the reasons they may have to do so. While postphenomenology does manage to account for technologically mediated experiences and behaviors, it fails to account for the significance of technologies for the way we respond to the norms and values embodied in technologies. Here, Kroes et al.'s dual-nature approach offers a much needed conceptual framework that postphenomenology could do well to engage with. However, as already mentioned, mediation theory offers an interesting interpretative framework for users to understand, reflect, and evaluate the ways in which their actions and behaviors are guided and influenced by the artefacts that surround them.

4.6 Concluding Remarks

Philosophy of technology has so far been biased towards the submissive mode of engagement in its understanding of technological praxis. As illustrated in the preceding chapters, this has been the case in Heidegger as well as in the postphenomenology of Ihde and Verbeek and in the dual-nature analysis of Kroes. As shown herein, the turn towards design is grounded on the assumption that the user submit themselves to the mediation/proper function designed into the artefact. Although the design turn offers a plausible solution to the many of the problems facing our contemporary lifeworld, it also raises the danger of a hyper-designed world in which design is used insidiously and in very subtle ways in order to steer our behavior in unacceptable ways.[121] Ihde's postphenomenology coupled with Verbeek's inauguration of the normative turn and Kroes' analysis of moral significance from the dual nature of technical artefacts perspective afford a great deal of understanding of the experiential and moral significance of technical artefacts. It is my contention, however, that if philosophy of technology is to contribute to our everyday

121 See Robert Rosenberger, *Callous Objects: Designs Against the Homeless* (Minneapolis: University of Minnesota Press, 2017). https://manifold.umn.edu/project/callous-objects.

engagements with technologies in our lifeworld, it must shift its focus towards understanding the subversive mode of engagement and the moral significance of ethical subversion.

The emergence of the do-it-yourself (DIY) subculture further complicates and challenges the turn towards design in philosophy of technology. Open-source hardware microcontroller kits such as Arduino and Raspberry Pi pose a challenge to Kroes' theory of technical artefact kinds, since they are designed such that it is the user who is given the privileged status in defining the kind-relevant features of the artefact. The advent of portable and affordable 3D printing also problematizes the distinction between the designer and the user, enabling the user to design and fabricate three-dimensional artefacts with extremely complex forms and functions.[122] The blurring of the boundaries between the user and the designer poses an ontological challenge to design ethics, which is grounded on the distinction between creating and using. This calls for thinking through the ethics of use and understanding the moral significance of the user. Thus, in addition to the submissive mode of engagement and design ethics, philosophy of technology must tend also to the subversive mode of engagement and DIY ethics. DIY could also be conceived as an ethical response to unethical designs, i.e., those designs which mediate and shape our experiences inappropriately or those which embody negative final values. More importantly, this can be done in conjunction with Verbeek's analysis of technological mediation and Kroes' analysis of moral significance of technical artefacts, which when taken together offer a wealth of conceptual tools in order to understand and interpret our technological lifeworld.

The conceptual analysis presented in this chapter points in the direction that understanding technological mediation requires understanding technical artefacts in terms of their structure, function, and purpose. Moreover, responding to technologies as moral mediators, may in certain lifeworld contexts, require a turn towards user

122 The proliferation of 3D printing has led to a number of challenges, since there have been instances of using them for the purpose of fabricating firearms. 3D printing requires minimal know-how, since anyone with a 3D printer and the program that contains the instructions for printing a particular object can replicate the object in their living room. See Adam Popescu, "Cody Wilson: The Man Who Wants Americans to Print Their Own 3D Guns," *The Guardian*, June 6, 2016. https://www.theguardian.com/us-news/2016/jun/06/cody-wilson-3d-guns-printing-firearms-lower-receivers.

engagement ethics rather than design ethics. As Kroes' analysis illustrates, technical artefacts differ crucially from natural objects in that they are intentionally created by humans for fulfilling certain functions, and it is these functions that are the source of normativity in artefacts. Verbeek's emphasis on mediation as resulting from the materiality of the artefact misses the crucial dimension of mediation that results from the normativity of the artefact. Verbeek's theory of technological mediation, however, is effective in understanding the unintended side-effects that arise as a consequence of our use of technologies. Such a consequentialist account of moral significance, however, falls prey to the standard critiques of consequentialism that are ubiquitous in contemporary ethics. Since technological mediation is context-dependent, one can never arrive at any conclusive judgment regarding the moral significance of an artefact—just as theory may be said to be underdetermined by data in philosophy of science, mediation may be said to be underdetermined by the innumerable unintended consequences of the use of any technological artefact. In any given context of use, there are innumerable mediations at play and separating the relevant from the irrelevant ones seems to be a subjective matter, thereby posing a challenge to any 'theory' of moral mediation. Kroes' analysis of moral status as grounded firmly in the designed values of the artefact offers a much more workable account of moral significance which can be very effective in understanding not only value-sensitive design but also the crucial significance of the user in contributing to the moral significance of technical artefacts. As illustrated in the chapter, there is much scope for dialogue between postphenomenology and the dual nature program in that the latter provides a much more clear and fine-tuned conceptual framework with which to understand mediation in terms of structure, function, purpose, kindhood, and normativity. The latter however can benefit much from the insights of phenomenology and hermeneutics in understanding the ways in which artefacts are embodied, perceived, and interpreted by users in their technological praxis. Postphenomenology however offers an interpretative framework for users to reflect on and understand the ways in which their actions and relations to others are guided and motivated by the artefacts they engage with. Postphenomenology, however, offers a limited scope for dialogue with the dual-nature theorists due to its ontological commitments to multistability, i.e., anti-essentialism with reference to artefact kinds. This conflicts with the latter's notion of technical artefact kinds. Therefore, a turn back to Husserlian phenomenology with its focus on essence and structure might be a more interesting

approach to initiating a dialogue. To conclude, the foregoing analysis calls for an enactive turn in the philosophy of technology, which would inaugurate a shift in focus from design and mediation to a phenomenology of user engagement. I shall conclude my thesis by offering a preliminary groundwork for such a turn within the philosophy of technology.

Conclusion: Towards an Enactive Philosophy of Technology

In this dissertation, a conceptual investigation into postphenomenology has been carried out through tracing its influences in phenomenology, hermeneutics, and pragmatism. In the process, an investigation into the relationship between the ontology, normativity, and moral status of technical artefacts has been carried out. Postphenomenology as an approach towards the study of concrete technologies as mediations between humans and the world has come to dominate much of contemporary philosophizing about technology. The empirical turn towards case studies involving first-person investigations into the ways in which technologies mediate our perceptions and actions is a testament to the influence of postphenomenology. This is accompanied by a strong distaste for passing any judgments concerning the moral implications of technologies. At the same time, however, technologies from the postphenomenological perspective are non-neutral in that they come with inherent norms and values regarding their use, thereby organizing perceptions and actions in certain specific ways as opposed to others. The preceding investigation into some of the central concepts of postphenomenology such as human–technology relations, mediation, technological intentionality, multistability, design ethics, and designer fallacy has revealed certain inconsistencies and limitations. As discussed in the previous chapters, these inconsistencies arise due to the following basic reasons: (1) the hermeneutic bias, according to which artefacts are conceived as being analogous to texts in mediating between humans and the world. This results in the appropriation of textual metaphors such as intentional fallacy and multistability, which apply only in a limited sense to technical artefacts. (2) Multistability, according to which artefacts have no essential identity or proper functions; like texts, they are open to multiple interpretations or uses, with their identities being relative to their contexts of use. This misses the crucial point that technical artefacts come in kinds which are essentially functional/normative kinds in that they enable us to make evaluative claims regarding their goodness or malfunction.

Postphenomenology and mediation theory, in particular, offer effective frameworks for case studies on specific technologies. This they share in common with the STS approach to scientific praxis. However, this also subjects them to the usual critiques

against STS. Their eclectic approach opens them to a number of paradoxes, such as having to do with the relationships between function, structure, and mediation and multistability, identity, and pivoting. In this context, Steve Fuller's critique of the lack of a normative dimension within STS applies equally well to postphenomenology.[1] In addition to this, the absence of an ontology of artefact kinds and a preference for a non-foundational approach over the eidetic approach to phenomenology justifies Feenberg's assessment of postphenomenology: "The rarefied air these thinkers breath [sic] is no doubt healthy but it is awfully thin."[2] On the other hand, postphenomenology provides ethnography and anthropology with a rigorous descriptivist framework with which to account for the first-person, experiential dimensions of technological praxis which is characterized by an essential amplification/reduction structure. It affords an in-depth understanding of the implicit norms that arise as unintentional side-effects of the use of particular technologies within particular contexts. In this it supplements dual-nature's Kantian account of moral status from design intentions with a consequentialist account of moral outcome from unintended side-effects of artefact use. In its consequentialism, mediation falls prey to the problem of underdetermination—just as theory may be said to be underdetermined by data in philosophy of science, mediation may be said to be underdetermined by the unintended consequences of the use of any technology.

An analysis of postphenomenology vis-a-vis dual-nature theory has shown that in order to make sense of technological mediation, it must be understood in terms of a metaphysics of artefacts which conceives of artefacts as being both physical (structure, mind-independent) as well as functional (intentional, mind-dependent). As has been pointed out, postphenomenology, with its ontological commitment to multistability, is predisposed towards a conception of artefacts as being human-made-physical-constructions whose identity is context-relative. This fails to account for the crucial ontological distinction between kind-proper functions ('being an x') and use-accidental functions ('being used as an x'). For example, between 'being a screwdriver' and 'being used as a screwdriver' (e.g., a coin, which may successfully serve the function of a screwdriver). In order for postphenomenology to make sense of the moral significance of technical artefacts, it is imperative that it enables us to

1 See Fuller, *The Philosophy of Science and Technology Studies*, 4.

2 Andrew Feenberg, review of *What Things Do: Philosophical Reflections on Technology, Agency, and Design* by Peter-Paul Verbeek, *Human Studies* 32 (2009), 228.

draw this distinction. An ontology of artefact kinds is necessary for the turn to design. In this context, Kroes' dual-nature theory enables understanding moral significance in terms of moral status arising out of design intentions and the kindhood to which the artefact belongs. Verbeek's postphenomenology, on the other hand, enables understanding moral significance in terms of moral outcomes, which is context-relative and always changing. Moral significance conceived in terms of moral status offers design ethics a more cogent framework with which to work when compared to moral significance conceived in terms of moral mediations. The latter, however, provides a phenomenological framework for users to reflect upon and evaluate the ways in which their actions and perceptions are mediated by the technologies they engage with. The three plausible interpretations of mediation offered in the last chapter suggest that technological mediation must be understood in terms of a normative framework that appeals to artefact kinds. This would afford greater scope for dialogue between postphenomenologists and dual-nature theorists. The notion of artefact kinds, however, comes in conflict with postphenomenology's non-foundationalism—its commitment to multistability. It is therefore suggested that a turn back to phenomenology might be a move in the right direction.

Moreover, some of the basic assumptions of the turn towards design ethics have been put to question. Design ethics begs the question as to why would designers design moral artefacts? In reality, aren't there artefacts that are designed with negative values such as planned obsolescence, non-sustainability, etc.? Does not the profit motive triumph over the moral imperative to design artefacts with moral values? More importantly, design ethics is realized only insofar as the user adheres to the proper function of the artefact—the submissive mode of engagement. Furthermore, there is an immanent threat of a hyperdesigned world in which designers and town planners have all the say in the ways in which people ought to act and behave, with users and citizens merely following the norm. As noted, there are contexts in which value-sensitive design and design for the mediation of appropriate action may be a good idea, for example, having to do with designing public transportation and traffic safety, etc. In the context of everyday technological artefacts, however, a turn towards value-sensitive use or user-engagement ethics is suggested as a plausible alternative to design ethics.

In order for philosophy of technology to attain its true relevance, it must not be limited in its scope to designers and philosophers, but also to users, guiding them in their everyday engagement with artefacts. Contemporary philosophy of technology has been successful in arguing against some commonly held conceptions concerning technologies, such as (1) technologies are autonomous and have a determining force over humans, leading either to a utopic or dystopic vision of the future, (2) they are merely instrumental and neutral means to ends, (3) it is the intentions of the agent and not the norms in the artefact that determine action, (4) philosophy, especially ethics, must concern itself only with human intentions, desires, virtues, and consequences therefrom, and (5) science is ontologically prior to technology, with technology being conceived of as applied science. The conceptual investigation presented in this work suggests that philosophy of technology must not rest satisfied with analyzing the implications of technologies through empirical case studies, but must participate in the activity of creating, using, and tinkering with technical artefacts. This has been a much neglected aspect within this subfield of philosophy. As revealed in the dissertation, postphenomenology's hermeneutic bias expressed in its focus on technological mediation offers little scope to understand the phenomenological and hermeneutic aspects of the subversive mode of engagement with artefacts. The idea that artefacts are co-constitutive mediations between humans and the world does not offer much in the way of understanding artefacts as objects which are engaged with as the objects of human intentionality in praxis. As was pointed to in the last chapter, the turn towards design thinking has been a much prevalent tendency within contemporary philosophy of technology—as exemplified by Verbeek's postphenomenology and Kroes' dual-nature theory. As noted therein, this is an expression of the lifeworld context in which design thinking is not just the dominant paradigm but a heritage that is well-known all around the world. Design ethics begs the following questions: what is the motive and why should we expect designers to design value-sensitive artefacts? Is it a moral society if the moral actions are brought about as a result of designing the appropriate technological mediations? What role does the user play in moralizing technologies?

As shown in the last chapter, insights from postphenomenology and dual-nature theory could also afford an alternative to design thinking through providing a framework for understanding the ways in which users engage with artefacts and its

implications for normative and ethical considerations on technical artefacts. The notion of modes of engagement was introduced to differentiate between the submissive and subversive modes of engaging with artefacts. A normative framework which affords to capture the ethics of subversion was introduced, which is grounded in the function/purpose distinction and reasons for action. Ethical subversion or hacking with a reason was proposed as a novel approach to understand the moral significance of the subversive mode of engagement which is exemplified by technological praxis involving hacking, tinkering, etc. This offers an alternative to design ethics by involving the user in the moral evaluation of technological praxis. This investigation therefore proposes a shift in thinking from value-sensitive design to value-sensitive use. This offers a potential for understanding and distinguishing ethical subversion from unethical subversion, which is ever more pertinent in the contemporary times with the advent of do-it-yourself microcontrollers and easy access to portable computer-aided manufacturing tools such as 3D printers.

Some of the main contributions of the present investigation into the postphenomenological approach to technological praxis include the following: it (1) offers a phenomenological–normative reading of Heidegger's tool-analysis; (2) points to the dominant hermeneutic bias within postphenomenology which is manifested in its predisposition towards the technology-as-text analogy and the consequent notion of technologies as mediations; (3) offers an analysis of postphenomenology vis-a-vis Peter Kroes' dual-nature theory in order to clarify the relationships between mediation, materiality, structure, function, ontology, normativity, and the moral status in technical artefacts; (4) offers three plausible interpretations of technological mediation in terms of moral directives, inherent moral significance, and moral extrinsic final value; (5) introduces a distinction between function and purpose in technical artefacts in order to disambiguate instrumental values from final values and thereby affords identification of the moral values embodied in artefacts and the appropriate responses they invoke; (6) offers a critical evaluation of the moral significance of technical artefacts which points to Kroes' cognitivist and Verbeek's behavioristic tendencies; (7) offers a critical evaluation of the design turn in moralizing technologies and points to its limitations; (8) offers an alternative framework to design ethics by arguing for a turn to value-sensitive use or user-engagement ethics grounded on the distinction between submissive and subversive

modes of engagement; (9) conceptualizes ethical subversion as a user-centered approach towards moralizing technologies, thereby enabling the plausibility of conceiving of hacking as an ethical response to the purposes or final values embodied in artefacts; (10) points to some of the basic problems of postphenomenology which include the anti-essentialist argument for multistability over kindhood and consequently the argument against the designer fallacy which fails to provide a coherent account of the normativity and malfunctioning of technical artefacts; (11) calls for a deeper dialogue between phenomenology and dual-nature theory by proposing a turn back to a foundational and Husserlian phenomenology which affords a more commensurable language comprising of essences, kinds, and modes of engagement; and finally, (12) calls for an enactive turn within philosophy of technology which inaugurates a shift in focus from design and mediation to a phenomenology of artefact engagement.

Towards an Enactive Phenomenological Hermeneutics of Technological Praxis

I shall conclude this thesis by providing some preliminary thoughts about some of the core features of a philosophy of technology oriented towards users acting with technologies. One of the main tasks of such a philosophy of technology would be to enable users to understand and reflect upon the norms, values, and mediations inherent in artefacts and provide them with a framework to act morally in response to them. In this it would be both descriptive as well as normative. As an initial foray into such a philosophy of technology, I shall propose an alternative phenomenological hermeneutics of technological praxis, one that would account for normativity from kindhood as well as its subversion. The aforementioned investigation suggests a return to a Husserlian, foundational phenomenology in order to afford a more commensurable dialogue between the phenomenological and the analytic, dual-nature approach of Kroes et al. Such an enactive phenomenological hermeneutics of technological praxis would have to fulfill the following desiderata which are derived from the investigation carried out herein: (1) It must account for Kroes' distinction between 'being a y-er' and 'being for y-ing,' i.e., it must account for the phenomenology of perceiving artefact kinds, and ipso facto, the hermeneutics of interpreting the proper function therefrom—this would afford an understanding of the submissive mode of engagement. In this it must account for the role that artefact kind

terms play in the way they refer to artefact functions/purposes and hence to the norms, standards, and values implicit in our technological praxis; (2) it must account for the phenomenology of perceiving multistabilities/affordances in artefacts which point to functions and purposes other than those intended by the designer; (3) it must account for the reasons for submitting to/subverting the proper functions/final values embodied in artefacts. In short, a phenomenology of technological praxis must account for the distinction between the submissive and the subversive modes of engagement. It must afford an understanding of how it is that whereas the dominant tendency in technological praxis is to submit to the proper function of an artefact, there exists many instances of subverting the proper function and exploring novel purposes for the same artefact.

All the abovementioned desiderata, as I shall argue, are fulfilled by a Husserlian phenomenological approach suitably modified such that artefactual engagement, rather than visual perception, becomes the focus of its analysis. This is different from an Ihdean phenomenology of human–technology relations. Ihde is concerned with different human–world relations in which artefacts mediate the human–world intentionality relation. He derives the embodiment, hermeneutic, alterity, and background relations by varying across different *kinds* of technical artefacts—eye glasses, thermometers, ATM machines, refrigerators, etc. More importantly, he develops his theory of multistability from a visual paradigm involving two-dimensional line drawings, which lends itself comfortably to the study of *imaging* technologies, rather than a more engaged paradigm exemplified by hacking or tinkering with technical artefacts in the subversive mode of engagement.[3] The phenomenology of technical praxis that I would like to sketch herein has to do with the intentionality relation between the human and the artefact itself. It is closer to a Husserlian phenomenology in that the object pole of the relation is fixed in order to analyze the different modes of engaging with the *same* artefact. A Husserlian conceptual schema affords an interesting foray into a phenomenology of technological praxis, with its tripartite noesis—noema—object schema. The mediation of the noema —the meaning component in an act—in picking out the object accounts for the mediation of the artefact kind term in picking out the proper function of the artefact.

3 As already noted, the alterity relation in Ihde comes closest to the subversive mode of engagement. As noted in the previous chapter, its potential remains largely underdeveloped due to the prevalent hermeneutic bias within postphenomenology. See Chapter 4, footnote 91.

The noema refers to the kindhood of the artefact.[4] It is the noema that picks out the goodness-fixing kind to which the artefact belongs, thereby picking out the normative function, i.e., what the artefact *ought to do*.

If Husserlian phenomenology has to do with exploring into and analyzing the "'a priori of correlation' between intentional objects and their modes of givenness or manifestation to consciousness, that is, between the noema and the noesis,"[5] we could undertake a similar phenomenology of technological praxis by exploring and analyzing into the correlation between technical artefacts and their modes of givenness in our engagements with them. Almost all introductions to phenomenology begin with visual perception as the paradigm case for doing phenomenology. A phenomenology of technological praxis supplements visual perception with enaction in very interesting ways. Reflecting phenomenologically on the act of engaging with an artefact by performing *epoche* or bracketing and the *phenomenological reduction*, we see that there are two ways in which the artefact may be engaged with: the artefact can either be used as a means to an end or it can be engaged with as an end in itself; we could call these two modes *using* and *tinkering*, respectively.[6] In using, we may either submit ourselves to or subvert the proper function of the artefact. The submissive and the subversive are therefore modes of engagement within the *noesis* of using. To submission and subversion, we may add *incomprehension* as a third mode of engagement, wherein we are not sure what to do or how to use the artefact. Accounting for these different modes of engagement within technological praxis requires a hermeneutics which affords an understanding of variable interpretations of the same artefact. This requires a bottom-up hermeneutics of affordances, as opposed to a top-down, Heideggerian hermeneutics of assignment. As explored in Chapter 1, Heidegger's hermeneutics is a top-down hermeneutics of assignment whereby the meaning of the part/artefact is assigned to it by the meaning of the equipmental whole

4 Here I am appealing to the West Coast or Fregean interpretation of noema according to which it is analogous to Frege's concept of sense, as a mode of presentation of the object. The phenomenological model I am using here is based on Dagfinn Follesdal's exposition of Husserlian phenomenology. See for example, Dagfinn Follesdal, "Husserl and Godel on Mathematical Objects and our Access to Them," in *European Philosophy of Science: Philosophy of Science in Europe and the Viennese Heritage*, ed. Maria Carla Galavotti, Elisabeth Nemeth, and Friedrich Stadler (Cham: Springer, 2014); and Dagfinn Follesdal, "Husserl and Putnam on Twin Earth," in *Themes from Putnam,* ed. Michael Frauchiger (Frankfurt: Ontos Verlag, forthcoming). For an exposition of the various interpretations of the noema, see the appendix to Smith, *Husserl*, 290.

5 Dermot Moran and Joseph Cohen, *The Husserl Dictionary* (New York: Continuum, 2012), 92.

6 Using and tinkering could be thought of as roughly parallel to Heidegger's ready-to-hand and present-at-hand, respectively.

to which it belongs. This restricts the meaning/function of the part to the assigned/proper function within the equipmental nexus. This accounts for the submissive mode of engagement, which is the paradigm in which Heidegger's Dasein is situated.[7] In order to account for the subversive mode of engagement, on the other hand, a bottom-up hermeneutics is required wherein the part is engaged with as a whole in itself. The equipmental nexus does not hold sway in assigning meaning to the part. This points to a hermeneutics of *affordance*. Affordance is a concept developed by the ecological psychologist James J. Gibson to refer to "opportunities for action" which are perceived in the surrounding environment.[8] In the subversive mode of engagement, the artefact is perceived in terms of its affordances, i.e., what opportunities of action it affords or what one can do with it, rather than perceiving it normatively as what it is designed to do. *Incomprehension*, on the other hand, comes with a total unfamiliarity with both the meaning of the artefact kind term (the noema) as well as with the experience of the affordance of the artefact.[9]

Following Follesdal, we may call submission, subversion, and incomprehension the *thetic* components of the act of engagement in that they differentiate the different modes of engaging with artefacts. As noted by Follesdal, "[t]he thetic character is crucial for whether and in what way the hyle constrains the noesis."[10] If hyle has been traditionally interpreted as the sensual matter that are presented in experience, we may translate this in the present context as the *affordances* that are presented to us by the artefact in engagement.[11] The perception of an affordance may be conceived as resulting from the dual nature of artefacts, in that it is constrained by the physical structure as well as the intentional function of the artefact. We do not perceive

7 I have discussed this in Chapter 1; see p. 40.

8 See Stephan Kaufer and Anthony Chemero, *Phenomenology: An Introduction* (Cambridge: Polity Press, 2015), 156.

9 The Bushmen's experience of the Coke bottle in *The Gods Must be Crazy* is an example of incomprehension. Refer to p. 39.

10 Follesdal "Husserl and Putnam on Twin Earth," 6.

11 Interestingly but not surprisingly, the interpretation of hyle as affordances fits well with an enactive interpretation of Husserlian phenomenology, as argued for by Shaun Gallagher, who notes: "To think about qualia or hyletic data purely in terms of phenomenal consciousness is surely an abstraction. To think of such things in terms of brain-body-environment, in the context of an embodied agent, enactively engaged in the world—suggests that we should not dismiss them as nothing at all, but ask what role such aspects of experience play in our perceptual and cognitive life. An enactive phenomenology would take these issues in just this direction; the 'what it's like' to experience X informs not just the know-how of cognitive abilities (memory, imagination, recognition) but also the know-how (or the "I can" or the affordances) of various action engagements with the world." See Shaun Gallagher, "Embodiment and Phenomenal Qualities: An Enactive Interpretation," *Philosophical Topics* 39, no. 1 (2011), 12.

artefacts as merely physical constructions but as intentional and purposeful objects. The ontological claim of the dual-nature thesis may be supplemented with the phenomenological claim that there is a difference in our perception between technical artefacts and natural objects.[12]

In submission, there is a harmonious fit between the proper designed function of the artefact and the affordance perceived and engaged with by the user, i.e., between the hyle and noesis. In submission, the noema assigns the appropriate affordance to the hyle. For example, the saucer is understood and grasped as affording the holding of a tea cup. The hyle from the saucer suggests the exact position where the cup must be placed, and this is exactly how the user engages with it. This fit may be further harmonized by designing constraints and affordances such that there is little scope for a gap between the designed affordance and engaged affordance. This is exactly what the design theorist Donald Norman conceives of as design for affordances or user-experience design.[13] In subversion, on the other hand, the hyle have a less constraining effect on the noesis. The user perceives affordances that are beyond the designed affordance. Following Follesdal, we may say that our experience of artefacts in the subversive mode has the character of 'enriching' in that we perceive many more affordances in the artefact than those that are picked out by the noema or sense referred to by the artefact kind term. For example, we may engage with a coin not just as a currency but also as a screwdriver. The affordance of driving screws may be seen as a further feature of the same object, thereby maintaining Kroes' ontological distinction between 'being a y-er' (a coin) and 'being for y-ing' (driving screws). In using a more fine-grained Husserlian schema, we may draw a parallel between the various affordances of an artefact and the noematic meanings that are grouped around an act's determinable X. The determinable X in Husserl is the bare extension around which the noematic meaning of an act is grouped; the noema may be said to be the mode of presentation which offers a mediated access to the determinable X. Similarly, the artefactual object is the determinable X which is picked out by the artefact kind term which in turn picks out its designed affordance. The further affordances that are discovered in the subversive mode of engagement may be seen as enriching the meaning-component in the noema or proliferating the determinations of the

12 This aspect calls for further analysis.
13 See Donald A. Norman, *The Design of Everyday Things* (New York: Doubleday, 1990).

determinable X.

If using is engaging with the artefact as a means to an end, then tinkering is engaging with the artefact as an end in itself. Tinkering may be seen as the enactive and embodied counterpart to the Husserlian 'method of free variation,' which forms the core of his eidetic reduction. The objective of the method of free variation in imagination is to intuit essences, i.e., the properties which remain invariant in the experience of an object under the scrutiny of variations performed by imaginatively transforming the object of experience and the way it is given to experience. This would afford insight into the essence of the object and the essence of our consciousness of the object.[14] What imagination is to the free variation of perception, tinkering is to the free variation of engagement. Similarly, tinkering could be conceived of as the variation of artefacts, not so much freely and imaginatively, but rather in an embodied and engaged way by taking them apart in order to gain essential insight into and understanding of the structure–function relationships between the various components and their functions. The more the instances/tokens of a particular kind/type of artefact one tinkers with, the closer one gets to the essential and invariant structure–function relationship. For example, tinkering by taking apart and analyzing a number of instances of the kind 'laptop' would afford an understanding of what are the essential, invariant structural and functional features which are common to all the instances of the kind 'laptop.' This would refer to the physical architecture of the various components as well as the functional relationships between the various components in delivering the function of a laptop. The process of tinkering could be seen as reverse engineering an artefact that eventually leads to what Davis Baird, in another context, calls 'thing knowledge', which he conceives of as a "material counterpart to our language-centered understanding of knowledge."[15] Tinkering therefore affords an understanding of how things work from the point of view of design. In addition to affording access to the norm of function, tinkering may also

14 See Smith, *Husserl*, 312.

15 See Davis Baird, *Thing Knowledge: A Philosophy of Scientific Instruments* (Berkeley: University of California Press, 2004), xvii. For an insightful extension of Baird's thing knowledge to everyday technical artefacts such as the humble paper clip, see Manjari Chakrabarti, "Popper's Contribution to the Philosophical Study of Artifacts" (paper presented at the 23rd Biennial Meeting of the Philosophy of Science Association, San Diego, CA, 2012). http://philsci-archive.pitt.edu/9396/. Both Baird and Chakrabarti argue for a shift in epistemology from its traditional focus on knowledge as justified, true, beliefs to a more non-linguistic, non-theoretical, materially embodied form of knowledge.

lead to a finer sensitivity to values such as durability, engagement, transparency, repairability which reflect the design and manufacturing values exercised in the production of the artefact. The understanding attained in tinkering plays a crucial role in the subversive mode of engagement, since it provides a deeper understanding of the relationship between structure, function, and affordance, i.e., it enriches the noematic meaning under which the determinable X of an artefact presents itself in engagement. This enables us to understand how where one may see just a "beer can", another may see it as "the best shim stock in the world."[16] To the latter, the beer can does not present itself merely as a can for holding beer but as a stock of aluminum which has so and so properties that fulfill such and such functions.

Verbeek's mediation theory and Kroes' dual-nature analysis of moral significance and moral values supplements this phenomenology by proliferating the noematic meaning grouped around an artefact with value terms such as sustainable, durable, engaging, gender-sensitive, sustainable, obsolescent, etc. There is a further proliferation of the noematic meaning from the discourse surrounding technologies by commentators whose acquaintance with those technologies affords the discovery of certain invariant experiential features. For example, the anthropologist and designer Amber Case characterizes contemporary digital technologies as being 'intrusive' and calls for the design of 'calm technologies'; the design ethicist Tristan Harris characterizes Internet technologies as 'hijacking our agency.'[17] Kroes' conception of moral extrinsic final value enables us to distinguish between artefacts designed for function/instrumental value and artefacts designed for purpose/final value. This provides the user with a normative framework to choose between reasons for/against adopting a particular mode of engaging with the artefact. Whereas artefacts designed to embody positive moral values such as traffic safety (e.g., speed bump) and passenger safety (e.g., seat belt) might call for submission, artefacts designed to embody negative moral values such as obsolescence might call for subversion. In the case of purely instrumental/functional artefacts (e.g., knives), we may note that it is the user who

16 This example forms the basis for Robert Pirsig's inquiry into values in his bestseller. See Robert Pirsig, *Zen and the Art of Motorcycle Maintenance: An Inquiry into Values* (Pymble: Harper-Collins, 1999), 58.

17 See Amber Case, *Calm Technology: Principles and Patterns for Non-Intrusive Design* (Sebastopol: O'Reilly Media, 2015); Tristan Harris, "How Technology Hijacks People's Minds: From a Magician and Google's Design Ethicist," *tristanharris.com* (blog), May 19, 2016, http://www.tristanharris.com/essays/.

contributes the purpose/final value to the instrumentality of the artefact, and in this the user can put it to a value-sensitive use; for example, using a vegetable knife with sensitivity towards the safety of one's fingers. This sensitivity calls attention to the involvement of skill in any value-sensitive use. Skill may be conceived as a essential to value-sensitive use. A preliminary phenomenological analysis of skill in technological praxis suggests two ways in which a skill may be embodied—*know-how* and *technique*. Recalling the function/purpose distinction, we may observe that whereas know-how refers to being 'functionally' skilled in engaging with an artefact, technique may be seen as referring to being 'purposefully' skilled in an artefactual engagement. For example, in the artefactual engagement of using a knife to cut a vegetable, know-how refers to knowing how to use the knife to merely cut, whereas technique refers to knowing how to use the knife to cut such that the value-sensitivity towards safety is expressed in the way it is cut.[18] The distinction between know-how and technique can be captured by the distinction between 'merely doing x' as opposed to 'doing x well', for example, between 'running' and 'running with form'; between 'riding a motorcycle' and 'riding a motorcycle safely'; 'soldering a component' and 'soldering a component in the right way'.[19]

The proposed Husserlian and foundational phenomenological hermeneutics of technological praxis satisfies two of the three desiderata mentioned quite well. It accounts for artefact kinds, their normativity, and the subversive mode of engagement. It also accounts for the hermeneutics involved in understanding the distinction between the submissive and subversive modes of engagement. However, it necessitates further work in the phenomenology of value in order to account for the direct perception of purposes/final values embodied in artefacts and the actions they call for.

The preliminary phenomenological hermeneutics offered herein enables an interesting

18 Robert Crease offers an interesting distinction between *act* and *text* hermeneutics, in order to capture the distinction between the hermeneutics involved in action and the more traditional hermeneutics of textual interpretation. This offers scope for interesting intersections between tinkering and hermeneutics that is open for future investigation. See Robert P. Crease, "The Sculpture and the Electron: Hermeneutics of the Experimental Object," *Science and Education* 4 (1995), 109–14.

19 The distinction between know-how and technique could offer interesting insights into the distinction between knowing-how and knowing-that. Further study is needed to investigate into the contributions that the current phenomenology of technological praxis could make to Hubert Dreyfus' phenomenology of skill acquisition and ethical expertise.

dialogue between Husserlian phenomenology, dual-nature theory, metaethics, and engineering. It is reflective of the shift in attention from the study of normativity in artefacts to the study of normativity in engaging with artefacts. Such a philosophy of technology offers much to users in the way of reflecting upon and evaluating the ways in which artefacts and their engagements may take on moral and philosophical significance. The conceptual investigation carried out in this study calls for greater dialog between the schools of phenomenology and dual-nature theory, on the one hand, and between the disciplines of philosophy and engineering, on the other. The turn from value-sensitive design to value-sensitive use may be just the first step in bringing about an enactive turn in philosophy of technology.

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