

Modernity or Capitalism?: Technology in Heidegger and Marx

by

Cameron Robert Duncan

B.A., Simon Fraser University, 2011

Thesis Submitted In Partial Fulfillment of the
Requirements for the Degree of
Master of Arts

in the

Department of Humanities
Faculty of Arts and Social Sciences

© Cameron Robert Duncan 2013

SIMON FRASER UNIVERSITY

Fall 2013

All rights reserved.

However, in accordance with the *Copyright Act of Canada*, this work may be reproduced, without authorization, under the conditions for "Fair Dealing." Therefore, limited reproduction of this work for the purposes of private study, research, criticism, review and news reporting is likely to be in accordance with the law, particularly if cited appropriately.

Approval

Name: Cameron Robert Duncan
Degree: Master of Arts (Humanities)
Title of Thesis: *Modernity or Capitalism?:
Technology in Heidegger and Marx*
Examining Committee: Chair: Samir Gandesha
Professor

Ian Angus
Senior Supervisor
Professor

Andrew Feenberg
Supervisor
Professor

Claudia Ruitenberg
External Examiner
Associate Professor
Department of Educational Studies
University of British Columbia

Date Defended/Approved: November 20, 2013

Partial Copyright Licence



The author, whose copyright is declared on the title page of this work, has granted to Simon Fraser University the non-exclusive, royalty-free right to include a digital copy of this thesis, project or extended essay[s] and associated supplemental files (“Work”) (title[s] below) in Summit, the Institutional Research Repository at SFU. SFU may also make copies of the Work for purposes of a scholarly or research nature; for users of the SFU Library; or in response to a request from another library, or educational institution, on SFU’s own behalf or for one of its users. Distribution may be in any form.

The author has further agreed that SFU may keep more than one copy of the Work for purposes of back-up and security; and that SFU may, without changing the content, translate, if technically possible, the Work to any medium or format for the purpose of preserving the Work and facilitating the exercise of SFU’s rights under this licence.

It is understood that copying, publication, or public performance of the Work for commercial purposes shall not be allowed without the author’s written permission.

While granting the above uses to SFU, the author retains copyright ownership and moral rights in the Work, and may deal with the copyright in the Work in any way consistent with the terms of this licence, including the right to change the Work for subsequent purposes, including editing and publishing the Work in whole or in part, and licensing the content to other parties as the author may desire.

The author represents and warrants that he/she has the right to grant the rights contained in this licence and that the Work does not, to the best of the author’s knowledge, infringe upon anyone’s copyright. The author has obtained written copyright permission, where required, for the use of any third-party copyrighted material contained in the Work. The author represents and warrants that the Work is his/her own original work and that he/she has not previously assigned or relinquished the rights conferred in this licence.

Simon Fraser University Library
Burnaby, British Columbia, Canada

revised Fall 2013

Abstract

Modernity or Capitalism? explores a parallelism that can be found in the work of Martin Heidegger and Karl Marx. The two share a similar ontology of labour that forms the basis of their distinct understandings of the technological world. I first outline the respective critiques of technology by Heidegger and Marx, then argue that the global system comprises both modern techno-scientific representation and capitalism. Everything must fall within the system's self-enclosed logic. Abstraction, thus, becomes the structuring force. I argue that the system cannot account for the concrete character of human labour. Through a close reading of Heidegger and Marx I explore the possibility of concrete practical activity as a potential structuring force of the system.

Keywords: Heidegger; Marx; Capitalism; Modernity; Technology; Abstraction

Dedication

For my parents,

Who have only ever asked, "How can we help?"

Acknowledgements

I owe the completion of this project to the unwavering support of so many wonderful people. I would like to, first and foremost, thank my senior supervisor Professor Ian Angus, whose careful guidance has been inspiring. Over the past few years, Professor Angus has given me every opportunity to grow both as a student and person. I will be forever grateful to him for teaching me to persevere when the task at hand seemed too difficult to complete. From him I learned to think through the fog. I would also like to thank Professor Andrew Feenberg for treating my work with the utmost respect. During our short time working together he taught me new ways to search for meaning in the world around me. I owe my sincerest gratitude to Professor Claudia Ruitenberg, who inspired me at a lecture long ago and delighted me once more by agreeing to take the role of external examiner for this project. My only hope is that this thesis can somehow show my teachers what they have done for me.

There are so many other professors who have helped me develop confidence in my ideas. Among them are Shuyu Kong, Paul Crowe, Anne-Marie Feenberg-Dibon, Brooke Pearson, Ellie Stebner and Enda Brophy. Especially in this regard, I would like to thank Christopher Pavsek whose course in “Critical Theory” altered my path completely. I owe him thanks for what eventually led me here. I would like to express my appreciation to Alice and Carolyn in the Department of Humanities for their tireless hours, and for always making me smile. Furthermore, I wish to thank Simon Fraser University, the Department of Humanities and the Social Science and Humanities Research Council of Canada for the generous funding that allowed me to see this work through.

My dear friends Matthew Kruger-Ross, Michael Campbell, Philipp Haueis and Lee Nelson all provided thoughtful criticism and editing. Thank you all for making me a better philosopher. Thank you to my wonderful brother Jamison for all the great talks. Finally, I give my greatest thanks to my partner Jasmine Sacharuk. Jasmine, thank you for being there to calm me down, and for amazing me with your ability to lift me back up. Thank you for extinguishing my negativity every time you walk in the room. And most of all, thank you for loving me.

Table of Contents

Approval.....	ii
Partial Copyright Licence	iii
Abstract.....	iv
Dedication.....	v
Acknowledgements.....	vi
Table of Contents.....	vii
1. Introduction: The Technological World	1
1.1. Abstraction, Labour and Ontology.....	5
1.2. “Free Relation” to Technology as Manifestation of Being	8
1.3. Final Parameters and Dichotomies: How the Story Has Been Told.....	11
2. Encountering World: Heidegger’s Question of Meaning in Technology and Practical Activity.....	14
2.1. World as Structural Basis for Involvement	17
2.1.1. “Nature” and the Ontology of Production	19
2.2. Heidegger’s Interpretation of Technology: Questions of Meaning	21
2.2.1. Ontology to “Revealing”	21
2.2.2. Aristotle’s Four Causes	23
2.2.3. The Enframing.....	25
2.2.4. Modern Technology as the Culmination of Metaphysics	27
2.3. The Saving Power, a Free-Relation to Technology and the Will.....	30
3. Tracing Capitalist Technology: Manufacture to Modern Industry and The Logic of Surplus Value.....	33
3.1. From the Commodity to Surplus-Value	37
3.2. Absolute Surplus-Value: Handicraft to Manufacture - the Refining of the Division of Labour	39
3.3. Relative Surplus-Value: Modern Industry and the Machine	42
3.4. The Human, The Machine.....	44
4. Abstraction, Domination and Reduction: The Connections Between Heidegger and Marx.....	48
4.1. Abstraction: Value and the Nature-technology-labour Relation.	50
4.2. Domination: The Human in the Techno-scientific World, Technology as Ordering Humanity.	56
4.2.1. The Tender of the Machine	58
4.3. Reduction: The “Thing” and the Commodity (use/need/exchange)	60
5. Modernity or Capitalism? The System and the Appropriation of the Concrete.....	65
5.1. The System, or Techno-Scientific Capitalism	68
5.2. Concrete Activity and the Turning in Thought.....	73
5.3. Human Participation as a Mode of Being.....	79

6. Conclusion.....	87
References.....	90

1. Introduction: The Technological World

Humans are surrounded by a world. Depending on the scope of our thought, there can be many or just one. The mathematician lives in a world where numbers and patterns inform understanding. The retail world is the realm in which exchange occurs and can be easily connected to the world of production and trade. What unites all possible worlds is that they are all boundaries within which practical activity occurs. This can be contrasted with the popular usage of the word, in which world describes the physical totality of all things that exist. In section 15 of *Being and Time*, Martin Heidegger describes the basic ontology of human, “*Dasein*,” as being-in-the-world.¹ He explains this through a thoughtful description of the use of a tool, specifically, a hammer. He explains that, “the act of hammering itself discovers the specific ‘handiness’ [*Handlichkeit*] of the hammer”.² By this he means that the usefulness of a hammer is revealed through its readiness for hands-on usage (*Zuhandenheit*) as opposed to a process of objective observation. The latter would only describe the hammer as one of the countless physical things that exists. It simultaneously evokes a Cartesian objective relation that Heidegger is keen to avoid. What is important is that through use various relationships to other things are formed. A tool also contains an inherent relation to material. Materials are what is worked on and define what a tool is used for. While a tool such as a hammer is a basic instrument, for Heidegger this fundamental structure is common to all technology. It is such that “a totality of useful things is always discovered *before* the individual useful thing.”³ The utilization of technology points us to the totality of other things that we are involved in; our relations with nature, work, identity and time. Technology is thus a basis for a world.

¹ The word “*Dasein*” is key to Heidegger’s terminology and overall understanding of being. It can be roughly translated to mean human being. I use the term throughout this thesis at points where I feel particular closeness to Heidegger’s text would benefit the reader.

² Martin Heidegger, *Being and Time*, trans. Joan Stambaugh (Albany: SUNY Press, 2010), 69.

³ *Ibid.*, 68.

Social relations are also structured by activity, as modern society is organized around technology and work. The phenomenon of world, as Heidegger explains it, is a key concept of this thesis and will be elaborated in depth in the first chapter. At this point, however, one need only note some basic connections between world, practical activity and technology. The basis of what it means to be-in-the-world arises from concrete practical activity. The relations can be broadly characterized as follows: through practical activity the world is revealed, the primary way in which these relations occur is by means of human labour which employs technology, meaning is derived from use and nature is utilized in this process through its transformation into materials. Heidegger's ontology is organized around practical action, of which labour will be my primary focus. The ontological relation between humans and world poses a question of meaning. When these relations combine one can construct a cohesive standpoint - an understanding of the world that humans occupy.

But the hammer is not a technology of the modern era. And Heidegger's later work on technology problematizes the relations that emerge. In distinction from his early ontological account of technology and the tool in *Being and Time*, his later critique of technology takes the form of a critique of modernity. He presents a historical ontological crisis of meaning through his concept of revealing and what he identifies as the "forgetting of being". Practical activity falls under a central logic that masks other possibilities of ordering the world.

The modern world is a technological one. As its starting point, this project takes on the hypothesis that the two most prevalent forces that dictate the state of the world are techno-science, a concept derived from Heidegger's post-war work on technology, and capitalism described by Karl Marx. I claim that the two forces have merged into a self-regulating system that presents the world according to a cohesive logic. The unification of these two forces into a system is the basis of my interpretation of Heidegger and Marx and, ultimately, the reason why I have chosen to bring these two into dialogue. The world is represented as an object of scientific knowledge, while the capitalist economy simultaneously abstracts nature and labour into a single exchange equivalent. The former, which is Heidegger's key concern, is an ontological positioning. The abstraction that occurs on the market is for Marx a social fact. This difference underscores the fundamental difference between the approaches of Heidegger and

Marx. I will argue that in both cases things and people are defined on the grounds of their place within this system.

The pairing of technology and science into techno-science is rooted in Martin Heidegger's later work on technology, the most influential of which is his essay "The Question Concerning Technology". The notion has been used subsequently by many scholars to address the dual relationship between science and technology, where technology, which relies on exact science to function, plays the role of providing the proof of scientific discoveries.⁴ The application of science is, therefore, always a technological act because it presupposes the world as manipulable. Science is what the world becomes when it is treated as the object of planning by human beings. I use the term techno-science throughout this thesis following this view that science and technology can no longer be separated.

Modern technology can be roughly characterized as the coupling of powerful techniques and exact physical science in order to control nature. The distinct characteristics of the natural world are considered only to the extent that they are reducible to specific outcomes, such as the generation of electricity. In this era, technology integrates the scientific view of the world as a storehouse of raw material into its functioning. In doing so, all distinct properties are levelled and nature becomes abstracted as raw material. Raw materials inherently possess the ability to conform to plans. They are the world revealed as an object of technological control.

Both Heidegger and Marx critique a technological view of the world. Heidegger frames his critique of technology as a critique of modernity, while Marx frames his as a product of capitalist development. Though Heidegger never mentions capitalism explicitly, his characterization of modernity bears striking resemblance to the worldview pushed forward by the capitalist production process. In order to increase the efficiency of labour the capitalist technological process must integrate everything into a single socio-economic system. This process must include as its goals the maximum yield at minimum

⁴ See Ian Angus, "A Note on Techno-science" in *Love The Questions: University Education and Enlightenment* (Winnipeg, MB.: Arbeiter Ring Pub, 2009), 146-154. and Jean-François Lyotard, "New Technologies" in *Political Writings*, trans. Bill Readings (Mineapolis: University of Minnesota Press, 1993), 14-18.

expense (a functional definition of efficiency), a levelling of nature under a united system of value and the limitless valorization of capital. Valorization is the process by which human labour creates a surplus of value within capitalist production. For this reason an analysis of capitalism, as a force within modernity would greatly benefit his critique.

To accomplish this I will integrate the Marx's foundational critique of capitalism into Heidegger's characterization of the modern world and point out the convergences between the two. Marx presents an immanent critique of capitalism, ultimately exposing the historical processes that have come to define labour and society in its current form. The social and technical determination of society is the function of a particular framework within which things occur. The best example of this is the capitalist production system. This is where Marx's important contribution to the philosophy of technology comes in and ultimately brings him into dialogue with Heidegger in a manner that will prove beneficial. In Volume 1 of *Capital*, Marx presents a theory of the development of capitalist technology. He argues that technology necessarily developed in a specific way due to the structuring force of capitalism. In other words, production technology could have developed in any number of ways according to a different rationale, but did not do so because of a systemic requirement of capitalism. Take for example the "de-skilling" of labour, whereby anyone can perform the very specific automated operations without training. The process of production was sped up and the labour force was simultaneously increased. Skilled labour was eliminated by the introduction of semi-automatic systems and machines that could be operated by women and children in the mid to late 1800s. Marx argued that capitalism is structured to have that effect. What we have here is a framework within which technology develops.⁵ What Heidegger characterizes as the reduction of everything to an object for the use of technology that

⁵ I owe this example and general discussion to Professor Andrew Feenberg who in a class lecture clarified this important contribution from Marx. Feenberg has written extensively on the Marx, Heidegger and the Frankfurt school. For just two examples (there are many others) of his work on these topics see Andrew Feenberg, *Heidegger and Marcuse: The Catastrophe and Redemption of Technology* (New York: Routledge, 2005) and Andrew Feenberg, Lukács, Marx, and the Sources of Critical Theory (Totowa, New Jersey: Rowman and Littlefield, 1981).

takes place in modernity is shown by Marx to the technological development required by capitalism.

As an example which will take on great importance in chapter three, Marx's concept of relative surplus-value, the strategy of creating capital based on the increase of intensity in the process of production, is traced historically as it emerges out of the limits of the length of the working day and the organization of alterations in the manual division of labour during the manufacturing period. Technology is utilized in capitalism to increase the efficiency of labour. But Marx's work is not solely historical. His account of the labour process is a trans-historical one. I will suggest that it could alternately be called ontological. He was the first philosopher to take labour seriously. For him, it is the form of human praxis that regulates the metabolism between humans and nature.⁶ His account is extremely similar to the one Heidegger presents in the previously referenced tool section of *Being and Time*. For Heidegger, activities are defined in relation to a structure of care and involve technology as mediation between humans and nature. In characterizing what it means to be-in-the-world Heidegger describes a referential totality in which meanings are enacted through activity. What Heidegger calls "care," Marx calls "needs." These needs are satisfied through human production, praxis that mediates the relationship between humans and nature. Marx points out how capitalism has both permeated all aspects of production, through its ideology and technology. Reading the two critiques together raises a puzzling option, modernity or capitalism? My question is "do the two reflect the same problem?" Is the problem of technological modernity a necessary requirement of the capitalist system?

1.1. Abstraction, Labour and Ontology

The points of convergence between Heidegger and Marx will be the ultimate focus of this thesis. I choose to begin with Heidegger. It is what is at stake in Heidegger's early ontology of world and his later historical ontology of technology that place him as my starting point. His notion of world continues to be a great contribution to

⁶ Karl Marx, *Capital (A Critique of Political Economy)* Vol. 1, trans. Ben Fowkes (Toronto: Penguin Classics, 1990), 283.

the western philosophical tradition that has spawned a great number of subsequent efforts to explain relations through practical involvement. His idea is totalizing in the sense that it allows one to situate praxis within a larger framework of meaning and a connection to being as it relates to all humans. Marx similarly takes human praxis as central in his critique of industrial capitalism. In his view, the state of being, though this is not his terminology, can be elucidated from relations in the realm of production. Marx's focus on labour as the primary form of human action refines Heidegger's view of technology by providing examples of the form that activity takes in a world dominated by abstraction.

Beginning with an elaboration of Heidegger's notion of world, my first chapter will then provide a Heideggerian critique of technology as a question concerning meaning in the modern world. By ultimately questioning being itself, the totality of Heidegger's thought makes his critique applicable to all dominant forces within modernity. His work can be fruitfully read alongside the analysis of capitalism, presented in the mature work of Marx. I further argue that there is an implicit reference to Marx in Heidegger's ontological account of labour, which suggests that the two are working from a similar foundation. My second chapter, about Marx, traces capitalist technology from handicraft to modern industry to explain why capitalist technology evolved the way it did. These themes will be developed through an analysis of four key connections in Heidegger and Marx's respective critiques of modernity and capitalism. The connections can be roughly outlined as follows: (1) Labour as a means to wage vs. the development of human capacities: Value in the nature-technology-labour relation, (2) The human in the techno-scientific world: Technology as ordering humanity, (3) The "thing" and the commodity: use/need/exchange, and (4) Nature and the standing-reserve: Ecology in modern capitalism. This project will examine the first three of these issues at length. The fourth, concerning ecology, will have to be set aside as it has been discussed in great detail elsewhere.⁷ However, it should be noted that since these categories are in no way isolated from one another and there will be crossover. These interrelations will only

⁷ For just one example of ecology in modern capitalism see John Bellamy Foster, *Marx's Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000).

illustrate modern technology and capitalism as a totality - a singular system that adheres to a consistent rationale.

The convergences will be explicitly addressed in chapter four after chapters two and three provide an introduction to the relevant concepts of each thinker. The connection between the “thing” (Heidegger) and the “commodity” (Marx) is a question of concretization and abstraction. When something is abstracted from, the abstraction becomes measurable. It becomes quantifiable and comparable to other things that are abstracted in the same way. For Heidegger this explains how viewing the world as a storehouse of raw material, where technology is the realization of metaphysics, creates a situation where the concrete characteristics of “things” are destroyed. Marx identifies the commodity, which is the result of the labour process, as something with both a use-value and an exchange-value. Under capitalism only the exchange value is considered, since “as use-values, commodities differ above all in quality, while as exchange-values they can only differ in quantity, and therefore do not contain an atom of use-value.”⁸

Both Heidegger and Marx understand labour as a realm in which self-realization takes place. Marx characterizes capitalism as the system where labour becomes a commodity. The use-value of labour is the creation of value. Abstraction becomes a central problem in human praxis as well. Value becomes a system of measurement completely organized around “human labour in the abstract.”⁹ Following from the result of the labour process will be an examination of labour/human praxis itself. This is also a question of quantifiable abstraction. Heidegger notes that humans have the potential to be integrated into the machinery as mere orders of resources. His insight comes with great ontological implications. The argument will be presented through the understanding of human labour in the techno-scientific world. This final connection poses the problem of the human in relation to the system in which they belong. What is at stake in Heidegger’s view of modernity culminating in a technological dispensation of being for is a question of the impossible situation of the human in capitalism. The technology that both thinkers describe contains within its functioning devastating relations between humans and the world that supports them.

⁸ Marx, *Capital*, 128.

⁹ Ibid.

1.2. “Free Relation” to Technology as Manifestation of Being

Beyond the similarities of the contributions that each make to the philosophy of technology, there is one central issue in Heidegger’s critique that can be illuminated through a Marxist reading. The question is what could rescue humanity from the danger of modern techno-science? Both Heidegger and Marx work towards a remedy. Heidegger frames this as a question of the “saving power,” while Marx, expectedly, advocates social revolution. Heidegger does not frame this predicament as something requiring a solution. Instead, he describes a power that would save humanity from a threatening ontological condition. I argue that the approach to a “saving power” then must be thought actively in the realm of praxis. But since Heidegger’s answer is an ontological dispensation it requires a special understanding of the nature of being. It would be a mistake to think of this as a passive activity. He proposes not a change in technological devices but a “free relation” to technology.¹⁰

Heidegger makes clear that he is after the essence of technology and not the characterization of specific technological devices. But since he is a philosopher of praxis, one must ask the question of use in order to understand the extent to which this relation is possible. In “The Age of the World Picture,” machine technology is defined as an “autonomous transformation of praxis,”¹¹ whereby the machine can only run on the application of exact mathematics and physical science. He clarifies elsewhere that “machines and apparatus are no more cases and kinds of Enframing [the modern technological view of the world as measurable resource] than are the man at the switchboard and the engineer in the drafting room.”¹² Humans are instead executers within the challenging revealing of “Enframing.”¹³ But modern technological devices are reflections of the dangerous position humans find themselves in, they are not the danger

¹⁰ Martin Heidegger, “The Question Concerning Technology” in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Toronto: Harper and Row, 1977), 3.

¹¹ Martin Heidegger, “The Age of the World Picture” in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Toronto: Harper and Row, 1977), 116.

¹² Heidegger, “The Question Concerning Technology,” 29.

¹³ See chapter 2 of this thesis. Roughly, “Enframing” characterizes the modern standpoint from which everything is viewed as an object of technical manipulation.

themselves. Therefore Heidegger is able to propose a “free relation” to technology as a step toward the reconciliation of *Dasein* and being. This stage would be one where humans say both “‘yes’ and at the same time ‘no’”¹⁴ to technology. Such an approach would allow humans to use technological devices while not letting them define Being.

One might ask to what extent is a “free relation” to technology possible if the devastating effects on meaning that modern technology pushes forward are integrated into technologies themselves? Look at any instrument used in modern capitalist production and you see that exploitative relations between humans and nature (or being in general) are assimilated into the machines. Heidegger, who is well aware of this, asserts that the modern framework “does not simply endanger man [sic] in his [sic] relationship to himself [sic] and to everything that is. As a destining, it banishes man into a kind of revealing which is an ordering.”¹⁵ ¹⁶ Ordering is a kind of meaning that comes about through subordination to the system. I argue, however, that Heidegger does not place constraints on the ways in which being can be defined. His historical ontology of revealing determines epochs. Being is not only realizable passively, as the thought of waiting for a saving power may seem to imply. Something like revolution could present itself through ontology.

Marx sees the potentials of technology more positively than Heidegger. However, the industrial age caused technology to advance one-sidedly. To overcome the one-sidedness, he suggests drastic change in the method of production. The labourer who tends the machine illustrates this development. In modern industry, materials are ordered with the efficiency of machines in mind. Marx writes:

The collective working machine, which is now an articulated system composed of various kinds of single machine, and of groups of single machines, becomes all the more perfect the more the process becomes a

¹⁴ Martin Heidegger, *Discourse on Thinking*, trans. John M. Anderson and E. Hans Freund (Toronto: Harper Perennial, 1966) 54.

¹⁵ Heidegger, “The Question Concerning Technology,” 27.

¹⁶ The gender pronouns in the quotations are those used by the original authors and do not reflect my own choice. From here on I leave them untouched. Throughout this thesis I have been careful to choose more inclusive terminology.

continuous one...in other words, the more its passage from one phase to another is effected not by the hand of man, but by machinery itself.¹⁷

Let me paraphrase Marx's thesis as follows: The further removed the worker becomes from his practical interaction with nature, the more efficiently the capitalist production process runs and the more surplus-value is created. In the realm of modern capitalist production, saying "yes" to technological devices is saying "yes" to the exact problem that dominates. The view of the world as a measurable and manipulable entity is a requirement of the machines functioning. It demands that everything fit into the framework from which it is derived. Here, nature must be as exact as the machine itself. Such techniques furthermore reinforce a hierarchical structure of domination of between workers and management. The danger that Marx helps illuminate is that workers become a part of the apparatus. Heidegger's "free relation to technology", I argue, can only avoid this danger if its realization preserves the significance of human praxis. To do this, I will pose the question, what is the significance of human action vis-à-vis being?

In the modern era technology is dangerously biased toward results. This characteristic is also held in common with the concept of "willing" as it arises out of metaphysics. In the modern era both adhere to the same logic of efficiency. The two are evaluated on the grounds of their output, and not what goes into producing that output. I argue that a free relation to technology that involves a shift in perception towards technology involves a focus on human participation as a mode of being. If the input produces a reasonable, time-efficient, output, the activity that produces that output need not be so ontologically devastating.

Though Heidegger would likely respond that Marx's revolutionary solution would be a technological act, precisely what is to be overcome, a new ontological standpoint could emerge from an initial upheaval. Heidegger does not see the future as something alterable as a function of human action, as did Marx. His free relation is a recuperation that occurs in the realm of understanding. This connectedness would not necessarily be an act of willing. It is instead a proposal to transform technology in its very meaning. The changes in meaning that Heidegger calls for could begin from an initial effort to change

¹⁷ Marx, *Capital*, 502.

the technology itself. A different understanding of technology would allow us to identify certain technologies as dangerous while avoiding the technological act of willing change. Technology requires human action. I suggest that these changes would have to be done through significant alterations in the system, its technology and ultimately, the social relations that emerge from both. These changes would first take place in the realm of thought. Human participation in the system that is kept consistent with this understanding could be a manifestation of being.

1.3. Final Parameters and Dichotomies: How the Story Has Been Told

To this day there are relatively few who have attempted to develop something analogous to a “Heideggerian-Marxism”. To my knowledge they are Herbert Marcuse,¹⁸ Karel Kosík,¹⁹ Michel Henry²⁰ and Kostas Axelos.²¹ These projects tended to emerge throughout the 1960 to 1970’s out of a larger project to revamp Marxism. One such approach was the fusing of Marxism with the principles of phenomenology - as proposed by Heidegger. It was grounded in the consensus that Heidegger’s phenomenology addresses the importance of human labour for experience. His work on technology, both the tool and modern industrial technology, puts forth a further phenomenological account of these processes as human activity. At the time they were writing, the thinkers pursuing the “Heideggerian-Marxist” project realized that capitalist relations overwhelmingly determined human activity. While the basic formulation of capitalist

¹⁸ Marcuse’s most explicit attempts at a “Heideggerian-Marxism” can be found in the edited collection. See Herbert Marcuse, *Heideggerian Marxism*, ed. Richard Wolin and John Abromeit (Lincoln: University of Nebraska Press, 2005); Marcuse’s attempt to relate capitalism, technology and science on a fundamental level in chapter 6 of *One-Dimensional Man* is clearly a further attempt at Heideggerian-Marxism. See Herbert Marcuse, “From Negative to Positive Thinking: Technological Rationality and the Logic of Domination,” in *One-Dimensional Man* (Boston: Beacon Press, 1964).

¹⁹ See Karel Kosík, *Dialectics of the Concrete: A Study on Problems of Man and World* (Boston: D. Reidel Publishing Company, 1976).

²⁰ See Michel Henry, “The Concept of Being as Production,” trans. Pierre Adler, *Graduate Faculty Philosophy Journal* 10, no. 2 (1985): 3-28.

²¹ See Kostas Axelos, *Alienation, Praxis, and Technē in the Thought of Karl Marx*, trans. Ronald Brunzina (Austin: University of Texas Press, 1976).

production, put forward by Marx, remains an apt one, it seems that phenomenology deepens our understanding of what is at issue.

The attempts at a synthesis have generally been Heideggerian readings of Marx. I am proposing the opposite, an exploration that begins with Heidegger.²² In chapter 2, “Encountering World: Heidegger’s Question of Meaning in Technology and Practical Activity” I outline the importance of human practical action in creating a world. What Heidegger calls “revealing” arises out of the interaction between humans and technology is a historical-ontology that prefigures historical eras. Chapter 3 traces the historical development of capitalist technology. I show how the development of technology was part of a systemic requirement of capitalism to control all aspects of human action. The parallels between Heidegger and Marx, roughly characterized by the prevalence of abstraction in modern representation and capitalist exchange, are examined in detail in chapter 4. Finally, chapter 5 explains the system as techno-scientific capitalism. I explore the possibility of concrete practical activity as a potential structuring force of the system.

Part of my interpretation has to do with the way in which each tells the story. Heidegger begins with ontology in *Being and Time* only to move on to, what I will call, a historical ontology (what he calls a “revealing”) in his later essays on technology. Marx in *Capital*, Vol. 1, begins with the commodity and its history, and then supplements this history with a trans-historical view of human praxis, specifically labour. My approach is focused specifically on modern technology in which Marxist socio-economic analysis is read into Heidegger’s critique of modernity. While there are important differences between the two on technology, Heidegger with his focus on ontology and Marx whose focus is generally socio-historical, there is a position from which the two share a parallelism. Since my goal is to clearly articulate this point of view, my project focuses

²² It should be noted that many writers have moved to Heidegger, while dropping Marx as a major influence. The most notable of these figures is Jean-François Lyotard, who at a crucial moment in *The Postmodern Condition: A Report on Knowledge* writes, “our incredulity is now such that we no longer expect salvation to rise from [socio-economic] inconsistencies, as did Marx.” He is essentially renouncing the Marxist project and then moves to an elaboration of techno-science influenced by Heidegger. See Jean François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: University of Minnesota Press, 1979).

most heavily on the similarities between the two philosophers. My method is that of teleological interpretation. I use the theories of both in conjunction to get one step closer to a more complete understanding of the world each describe. Ian Angus, who guided me through every part of this project, describes this method as follows:

Critique (whether oriented to oneself, others, or systemic assumptions inherent in a way of life) is...an essential activity whose essentiality orients further attempts at adequate determination. Interpretation of any given articulation is consequently oriented teleologically... Teleological interpretation is the application of philosophical dialogue to the written work of a philosopher.²³

Only by supplementing Heidegger's work on technology with Marx's diagnosis of the concrete experience of the worker under capitalism can we arrive at a completed theory of (what I will later call) techno-scientific capitalism.

²³ Ian Angus, "Athens and Jerusalem? Philosophy and Religion in George Grant's Thought," in *The Undiscovered Country: Essays in Canadian Intellectual Culture* (Athabasca: Athabasca University Press, 2013), 50.

2. Encountering World: Heidegger's Question of Meaning in Technology and Practical Activity

Heidegger's ontological reflections on technology are based in his early work in *Being and Time*. It was, however, not until after the Second World War that he began to systematically engage with the technology. In *Being and Time* (1927) tools appear as the mediation between humans and the world that they occupy. The using of instruments is a fundamental aspect in the ontology of human action. In use, tools refer to the various interconnected relations that make up the world. It should be noted that Heidegger's early work analytic of the world in *Being and Time* and his later work on technology are not to be taken as a singular whole. His post-war work on technology however preserves the important role of instruments in human ontology. His focus shifts from the tool, a basic technology that mediates human interaction with nature, to the very essence of technology. In his most influential essay, "The Question Concerning Technology" (1954) technical production structures the object world of society. Technology becomes a question of meaning. Since technology consistently remains so crucial for human life, inseparably tied to ontology, Heidegger warns of a dangerous ontological condition that could emerge if modern technology continues to develop along the same path. He sees modern technology as the culmination of the Western philosophical tradition. It brings out implicit biases present in Greek philosophy (specifically metaphysics), as well as the Cartesian subject-object orientation. This engagement with philosophy endures throughout his work as technology itself is underscored by ways of viewing the world. The form Heidegger's later argument takes is a philosophical critique of modernity, characterized by the role modern techno-science plays defining all aspects of life. Heidegger saw modern technology as a realization of metaphysics where the world is treated as the object of the will. Since the subject of the will can control reality by creating representations of it modern technology can be applied to actively change it. This leads to a crisis of meaning and a spiritual catastrophe.

The basis of his critique, in *Being and Time*, involves a rejection of the Cartesian subject-object orientation. In Descartes' philosophy, the subject is removed from participatory action in the world in order to treat the world as a source of knowledge. The world becomes the object of knowledge, which is imparted into the mind of the knowing subject. In other words, it is the object from which knowledge is derived. Viewing the human subject as separate allows Descartes to craft a view of the world as a representation. The relation is one where all knowledge rests on the subject knower, who simultaneously imparts it onto and derives it from the world.²⁴ Seeing oneself separate from the world, as in a subject-object relation, contributes to a self-understanding where humans possess the power to control the world conceptually.²⁵ In this way the world can be represented as an objective thing that lends itself to technical manipulation. Human action is not the structural basis for it. In the modern era structure is characterized by the capitalist representation of land and labour (as I will demonstrate with Marx) combined with the scientific representation of world as an object of knowledge (Heidegger). This allows for the imposition of systems that both include and exclude relations to meet determined ends. The modern era is the one with the worldview, something that can be placed into an existing framework to be controlled accordingly. Such a viewpoint is precisely what Heidegger is reacting against. His goal is the overcoming of modern philosophy.

The originality of Heidegger's early work is centered on his idea of world. He proposes that the world is not an object separated from the mind, but that it is something humans belong to. The world is "revealed" to human *Dasein*, when it uses the things that occupy it. It connects them to the totality of all other being and defines their own being. Therefore it is revealed to humankind rather than existing statically in front of every single individual. This active relation is an evolving one that establishes whole historical eras. This basis is the bridge from his early ontology to his later historical ontology. Heidegger argues that an understanding of technical production prefigures the basic ontology of each age. Taking handicraft production as an example, Heidegger explains, "what is decisive in *technē* does not lie at all in making and manipulating nor in the using

²⁴ Ian Angus, *A Border Within: National Identity, Cultural Plurality, and Wilderness* (Montreal: McGill-Queen's University Press, 1997), 187.

²⁵ *Ibid.*

as means, but rather in...revealing. It is in revealing, and not as manufacturing, that *technē* is a bringing-forth.”²⁶ The modern period is characterized by the use of technological devices that “challenge-forth” the powers of nature, which can be directly contrasted with the craftsmen of the ancient world who “brought forth” nature through their own technologies. The two ways imply a specific stance toward the object of work. A bringing forth puts forward a notion of an assisted transformation whereby the material is aided by the craftsperson in realizing form and function. A challenging reflects a one-sided action where materials must meet the demands imposed by the actor. Each reflects a totally different way of defining the world. In the modern technological era, for Heidegger, all human action reflects a mode of being that treats everything as the object for technical application. By describing the question of technology as an active engagement with the world he opens up an original position where the world is defined through the relations that construct it. By encountering being a world of meaning is enacted.

By starting with being, Heidegger has a notion of totality that is useful in diagnosing the transformations that have taken place under capitalism and technoscience. The two forces carry with them specific requirements on activity, and in doing so define a historical epoch. Recall that, for Heidegger, activity is central in uncovering the world. An examination of activity also uncovers the logic that establishes the mode of human life. It is this structure that makes Heidegger's framework invaluable for examining humans within dominant systems. I will show that his critique, when supplemented by Marx's account of capitalist society, is just as appropriate for technoscience as it is for capitalism. Beginning with an elaboration of his notion of world, this chapter will then explain technology as a question of meaning and as a realization of metaphysics. I will then outline Heidegger's proposed “free relation to technology” which is Heidegger's hope of rescuing humanity from an ontological dispensation as a working appendage of technology. Finally, I propose some reasons why a synthesis of Heidegger and Marx proves fruitful in developing a substantial critique of modernity and the thought and technology that define it.

²⁶ Heidegger, “The Question Concerning Technology,” 13.

2.1. World as Structural Basis for Involvement

Heidegger is always after the disclosure of relations. The notion of world is implicated in this understanding of being unique to human beings. The most basic structural characteristic of human beings is that they exist *in* the world. In the introduction to *Being and Time* Heidegger notes, “the understanding of being that belongs to *Dasein* just as originally implies something like ‘world’ and the understanding of the being of beings accessible within the world.”²⁷ From this statement it is clear that early in *Being and Time* he wants to explain the phenomenon of world, developed later in the text, as an explication of the human being. By *being-there* (*Dasein* can be directly translated from German as “there being”) “*Dasein*, has always already referred itself to an encounter with a ‘world’” due to its unique ability to involve itself with being. Involvement with being must situate these relations *in* something because a “there” always belongs to, or is constitutive of, a context.²⁸ In the case of humankind (*Dasein*) the context is world. The practical involvement upon which the structure of this state of being rests is specific to humans. Our general set of coping skills can potentially open us to everything and allows us to mesh with those things. It enables us to encounter things as significant, and in doing so, reveals a world. The underlying force of the world is what Heidegger call a structure of “care.” It involves the concern of the human being for its own existence. By engaging our world we strive to preserve our existence within it.

By emphasizing the importance of “things at hand,” Heidegger gives a clue as to how exactly this underlying structure may open itself. He explains:

Things at hand are encountered within the world... World is always already ‘there’ in all things at hand. World is already discovered beforehand together with everything encountered, although not thematically. However, it can also appear in certain ways of dealing with the surrounding world. World is that in terms of which things at hand are at hand for us.²⁹

²⁷ Heidegger, *Being and Time*, 12.

²⁸ *Ibid.*, 86.

²⁹ *Ibid.*, 81-82.

If world is “always already there” in things at hand, there must be something unique about that which defines something as being “at hand.” When something is at hand it is ready for use.

The key to unlocking this issue goes back to the most basic way in which human beings experience the world. Our situation within it is one of involvement. By involving ourselves with the entities that occupy the world, specific things and other beings, we referred to other things and structures. Taken on its own a given tool is useless. It is only when it is brought into relation with materials and the workshop that its use and significance becomes apparent. When taken together connections to other tools and purposes form a whole upon which each part has a place and meaning. Heidegger explains this relation by using work as his example of practical involvement:

What everyday dealings are initially busy with is not tools themselves, but the work. What is to be produced in each case is what is primarily taken care of and thus also what is at hand. The work bears the totality of references in which useful things are encountered.³⁰

Our involvement points us both to something like the foreground and background of our world. The task of making a bench would cause one to select a hammer, which would refer one to nails, the mining operations that went into the production of those nails, a workshop, the transportation of those materials, one’s activity as a carpenter and so forth. These phenomena take one back to the world, which is behind everything as a structural basis. This is what Heidegger means when he notes that the “totality of useful things is always already discovered before the individual useful thing.”³¹ The underlying structure of world is what allows the thing at hand to be appropriate for our involvement. To return to our carpenter, his or her intention to make a bench is only possibly defined in relation to the background of tools. World is something encompassing that we are practically involved in having meanings that stich one to other things and practical activities. World is thus defined in relation to the technology that is utilized in practical activity. Labour will be my primary example.

³⁰ Ibid., 69.

³¹ Ibid., 86.

2.1.1. “Nature” and the Ontology of Production ³²

As we have seen, for Heidegger things can only be explained through their relations with other things and through such relations the world is revealed. In trying to uncover the world, Heidegger puts forward an interesting formulation to explain the concept through the process of labour. I argue that his account contains an implicit reference to Marx, which will be taken up in a later chapter. For Heidegger, work is essentially “a using of something for something”³³ whereby the worker is pointed towards materials that are necessary for accomplishing a task. Tools work on materials that refer one back to other forms of production: making a shoe requires materials that are the result of the job of tanning leather.

In trying to get at the notion of world through his reference to labour in *Being and Time*, Heidegger places the terms ‘materials’ and ‘nature’ in quotation marks. His use of quotation is not a matter worth overriding. It may be evidence of a formulation of labour that is very similar to the one that dominates the Marxist tradition. Contrary to Marx, it is uncharacteristic of Heidegger to use Latin terminology. Latin being the interpretation of Greek, which Heidegger always views as primordial. Etymology, in general, is of utmost importance to Heidegger because it allows him to carefully avoid certain metaphysical overlays that are indicated by language. It is evident that he needs this piece in his framework, but a term to which he can commit is absent. I quote the relevant passage in full:

‘Nature’ is also discovered in the use of useful things, ‘nature’ in the light of products of nature. But nature must not be understood as what is merely objectively present, nor as the power of nature. The forest is a forest of timber, the mountain a quarry of rock, the river is water power, the wind is wind ‘in the sails’.³⁴

The use of quotation marks allows Heidegger to step back from the term ‘nature’ seemingly implying that it was taken from somewhere else. The sentences that follow

³² Professor Ian Angus alerted me to this issue, and made the following section possible. Without his insight, I would not have been able to understand the importance of this part of *Being and Time* or its relation to Marx.

³³ Heidegger, *Being and Time*, 70.

³⁴ Ibid.

clarify that he uses the term to mean the “use of useful things”. He is describing things from the point of view of pure usability. That is, nature as the starting point of every transformation.

Though the human piece of the puzzle is not explicitly there in his passage, it does occupy the background. At this point in the text Heidegger is trying to articulate the phenomenon of world as an explication of humanity’s (*Dasein*’s) relationship to being. In *Being and Time*, labour is formulated roughly as follows: tools work on materials, which refer one back to other materials found in nature. These are all situated within the context of world that is an explication of the relationship between humans (*Dasein*) and being.

Nature is something that humans have always involved themselves in through transformation to fit some determined end. Since nature is always already transformed nature, Heidegger through his example of work, to get at world, may be trying to explicate something like an ontology of human production. Is ‘nature’ the same as world? Surely not. His detachment through quotation marks, however, may imply that the concept is missing from his own language. Nature could be something like world viewed only for its usability, as that which has already been transformed by human activity. Actively involving oneself *in* it results in an a priori “[presupposition] of world in our interpretation of [usable] innerworldly beings,”³⁵ which could very well be an understanding of the world as something usable. To view the forest as “a forest of timber, the mountain a quarry of rock,”³⁶ is a world from the viewpoint of the processes of *labour in general*. By exploring the surrounding world we encounter nature, but it is not equivalent to world because it is just one example of the totality of involvements that make up our being-in-the-world. Heidegger does not mention capitalism overtly. It is, however, evident that within his interpretation the surrounding world is placed into a framework of usability. Though “nature” as a concept is left out of the remainder of *Being and Time* it does occupy a place in Heidegger’s subsequent essays on technology, which will be the focus of the next section.

³⁵ Ibid., 71.

³⁶ Ibid., 70.

2.2. Heidegger's Interpretation of Technology: Questions of Meaning

2.2.1. *Ontology to "Revealing"*

Heidegger's question of technology in his post-war work is posed at the level of meaning and essence. Specifically, he asks how meaning arises from the use of technology. And how does that meaning affect the structure of care, elucidated from his discussion of tools in *Being and Time*, which defines humanity's (*Dasein*'s) being-in-the-world? *Dasein* as the foundational aspect of world is an ontological characteristic that remains common throughout Heidegger's work. There are, however, some key differences between the ontological relationship to the tool described above and the historical ontology of "revealing" in Heidegger's post-war focus on modern technology. This change is suggested in variants of the human-technology-nature relation. Heidegger holds that technology has a singular essence. Whether the human controls a machine, performing hundreds of minute operations per second, or simply hammers two pieces of wood together the ontological relation is always one of practical engagement. The focus in *Being and Time* is that engagement and the world that results from it. In doing, humans create a world that is significant for them. Activity reflects this ability to cope with the world and occurs through the interaction between humans and nature mediated by technology. The basic definition of being is this existential enactment of meanings that formulate a world. As we will see it is the source of "revealing."

A reader of *Being and Time* is simultaneously confronted with two questions, both having to do with ontological investigation. The first is: How can one understand the structural importance of being from an analysis of being itself? And second, how can particular things with distinct characteristics arise from ontology? The answer to these problems has to do with the situation of human *Dasein*. As Heidegger notes, "when we inquire ontologically about the 'world,' we by no means abandon the thematic field of analytic *Dasein*. 'World' is ontologically not a determination of *those* beings which *Dasein* essentially is *not*, but rather a characteristic of *Dasein* itself."³⁷ The question of ontology for *Dasein* becomes a question of relations. It is these relations that create the

³⁷ Ibid., 64.

world as a meaningful structure of experience. Things too are given meaning, retaining particular characteristics, because they are defined in relation to a meaningful whole. This whole is one that *Dasein* constructs through its involvements. They play a constitutive role in it:

The *within* which *Dasein* understands itself beforehand in the mode of self-reference is that *for which* it lets beings be encountered beforehand. *As that for which one lets beings be encountered in a kind of relevance, the wherein of self-referential understanding is the phenomenon of world.*³⁸

Through being selected as relevant, *Dasein* categorizes the meaning of various things. Recall, the hammer is discovered as a hammer in the act of hammering. World is ontologically defined by the myriad of possible relations. It is these fundamental relations that explain Heidegger's goal in *Being and Time*. The concern is with ontology as it exists on a base level of being.

It is not until his later work that Heidegger switches his attention to specific ontological conditions as they arise out of the use of technology and define history. Specific technologies are not of concern. A view of the modern technological instruments themselves ignores the complete structure that emerges out of activity. Instead the focus is the resulting ontological condition. Practical engagement prefigures history. History reveals itself through dominant forms of technology as they are utilized in praxis. To explain this, Heidegger puts forth the notion of a "revealing". This can be thought of as the emergence of a meaningful world through practical engagement with what exists. Revealing manifests itself differently at different times. The ancient Greek craftsman's form of production is notably different from that of the industrial worker on an assembly line. Historical eras are defined by their ideas about technical making - a markedly concrete activity from which one can derive an ontology.

³⁸ Ibid., 85.

2.2.2. Aristotle's Four Causes

Heidegger questions to what extent technology can be considered a means. To show that technology is not purely an instrument of human control, he discusses different notions of causality as they emerge in various historical eras. He holds that "instrumentality," as pure means and ends, disregards the structure of experience that emerges out of technology. Technology is a revealing itself. The Aristotelian theory of four causes has become a cornerstone of the Western philosophical tradition. In "The Question Concerning Technology," Heidegger presents a theory on the model of production as it was practiced in Greece (handicraft). Brought together in the final product by a skilled craftsman, the four causes reflect all aspects of the cultural from which they emerge. Take the example of a silver vessel used in religious offerings. There are four reasons for its existence. Firstly, the *causa materialis* is the silver, or the material, out of which the vessel is created. Without the matter there could be no creation. Secondly, the *causa formalis* - the exterior form that the silver vessel enters into, defines it as a vessel and not something else. Thirdly, *causa finalis* is a *telos* or purpose, which, "is responsible for what as matter and for what as aspect are together co-responsible for the sacrificial vessel,"³⁹ i.e. the religious ceremony for which the piece has been created. Lastly, *causa efficiens* is the one whose action brings together all the causes. Heidegger first identifies the fourth cause in Aristotle as the silversmith, but modifies this assertion later when he writes that "not at all because he, in working, brings about the finished chalice as if it were an effect of a making."⁴⁰ It is instead the *ability* of the craftsman, through concrete activity and situation within a particular world (specific multiplicity of relations) to unite the three other causes into something that fits into the culture.

Heidegger summarizes the structure of causality in Aristotle's time as a "bringing-forth." It is evident that Aristotle's theory of production is based solely on craft. The result is always an artefact that is a "bringing forth" or *poesis*. Though it is aided by concrete activity, the *telos* is independent from the human will:

³⁹ Heidegger, "The Question Concerning Technology," 8.

⁴⁰ Ibid., 8.

The four ways of being responsible bring something into appearance. They let it come forth into a presencing... They set it free to that place and so start it on its way into arrival. It is in the sense of such a starting something on its way into arrival that being responsible is an occasioning or an inducing to go forward.⁴¹

In contrast to nature (*physis*), which has an integrated *causa efficiens*, the artefact is guided by a human hand. Both are modes of revealing that are “bringing-forth.” What separates nature from the silver chalice is production itself. The silversmith’s making of the vessel, in line with the four causes, relies on his or her ability to manipulate the surrounding world in a way that makes sense in a particular time and place. Production is, therefore, responsible for bringing the world into appearance. The silver vessel comes into existence as a result of the unification of the four causes, but it is brought-forth into a structure of meaning by the craftsman. The craftsman brings the chalice from “concealment” into “unconcealment” and in doing so, creates a world that has a particular relevance for those who occupy it.⁴² It must be noted that one cannot simply make meaning. It is not defined by the craftsman but instead involves a referential totality independent of any one producer. The producer inherits this chain of meaning. It informs the choices the craftsman makes. That the religious chalice must take a particular form, be made from silver and used in a certain way is determined by a multiplicity of relations. Again, a world is revealed.

Greek handicraft is reflective of a revealing characterized by bringing-forth. Bringing-forth as a mode of revealing, “gathers within itself the four modes of occasioning - causality - and rules them throughout.”⁴³ Revealing brings Heidegger back to technology thought as both means and ends. “Instrumentality” is contained within this framework but cannot be the essence of technology as such. Technology is viewed as a means with the goal of productive activity. The essence of technology, however, is nothing technological. The way that Heidegger brings us to the framework of revealing shows that it is much more: “Technology is no mere means...Technology is a mode of revealing. [It] comes to presence in the realm where revealing and unconcealment take

⁴¹ Ibid., 9.

⁴² Ibid., 11.

⁴³ Ibid., 12.

place, where...truth happens.”⁴⁴ The essence of technology is the basis for the unconcealing truth. Revealing is the construction of a meaningful world through an unspecifiable activity between humans and what exists. The modern world is not defined by a technological making like that of the Greeks. In modernity *causa efficiens* is the *only cause*. The Greek model of responsibility systematically degenerates into the predicament of modernity. In spite of this degeneration, the essence of technology still resides in unconcealment.

2.2.3. The Enframing

Technical making is a process of unconcealment. It is through this notion that Heidegger is able to link technology and production. Both are forms of unconcealment that rely on each other to define them as such. It is in the relation of technology and production that the “truth” of the world is revealed. Does this relation hold in modern machine technology? Heidegger tells us that modern technology is also a revealing. It is wholly unlike the bringing-forth of craft where the coming to presence of nature unfolds in a similar way as the silver vessel. Rather, the “revealing that rules in modern technology is a challenging (*Herausfordern*), which puts to nature the unreasonable demand to supply energy to be extracted and stored as such.”⁴⁵ In doing so the meaning of nature is fundamentally changed. A technological view of nature, common to handicraft practices, is one where the craftsperson must work with the specific characteristics of the material to arrive at the finished product. In the modern form of revealing all specific characteristics of nature are levelled. It becomes raw material, alterable in order to be given over to human planning. The human decides what the things are meant to be. It is precisely this process that Heidegger identifies as the standing-reserve: “The name ‘standing-reserve’ ... designates nothing less than the way in which everything presences that is wrought up by the challenging revealing. Whatever stands by in the sense of standing-reserve no longer stands over against us as object.”⁴⁶ Objects have specific characteristics, usages and meanings. Like the hammer, they

⁴⁴ Ibid 12-13.

⁴⁵ Ibid., 14.

⁴⁶ Ibid., 17.

have specific purposes within a chain of relations that allow humans to select them as relevant. Where entities stand in waiting to be used in accordance with a complete plan we have the standing-reserve.

With modernity comes the potential to render everything as a standing-reserve. There are two ways by which things can fit the mould. Things can appear as either resource to be called upon and manipulated by technology, or as system component. Both options are brought into line with a cohesive system, which is consistent with the techno-scientific understanding of the world as an object of human thought and control. Heidegger designates that system as the “Enframing” (*Gestell*). It is the ordering of everything into a precise role determined by the larger system so to be readily available for exploitation. Availability becomes the only characteristic, permeating the meaning of all things:

When man, investigating, observing, ensnares nature as an area of his own conceiving, he has already been claimed by a way of revealing that challenges him to approach nature as an object of research, until even that object disappears into the objectlessness of standing-reserve.”⁴⁷

By giving the world over to objectlessness it is vulnerable to technological control. It is, however, not the physical change of the world that is of concern to Heidegger. His concern is with the shift in meaning and essence. His example of the hydroelectric plant on the Rhine illustrates this. The Rhine river, that was a source of life for those who lived around it and praised by poets as a symbol for Germany itself, is fundamentally changed in its meaning when it becomes a hydroelectric dam.

As a revealing, technology is not purely a human action but an ontological condition. Humans too are incorporated into the system that they believe they dominate. Their perceived control is a necessary requirement of the system’s functioning. The Enframing requires humans to challenge nature by treating it as an object of techno-science. The illusion of control can be thought as a part of the system’s structure. Therefore, humans are rendered a system component as well. They play the role of the system’s command function.

⁴⁷ Ibid., 19.

2.2.4. Modern Technology as the Culmination of Metaphysics

There is one final aspect of Greek philosophy that has permeated modern technology. It is the evolution of metaphysics, culminating in modern technology. The essence of modern technology lies most evidently in the realm of production, where practical involvement with materials has become akin to the ordering of the standing-reserve. For Heidegger, ordering and the order-ability of what human beings encounter is significant for Heidegger as it is the realization of metaphysical philosophy. Nietzsche stands in that tradition because he overlooks that “the essence of man is determined from the essence of Being.”⁴⁸ Because of this misstep, Nietzsche views the will to power as a self-conscious will. It is a willing of the will. Heidegger notes that, “man hitherto would like to remain man hitherto; and yet he is at the same time already the one who...is willing - whose Being is beginning to appear as the will to power.”⁴⁹ For Heidegger, the question of being is unrealized in Nietzsche.

Metaphysics itself is inextricably tied to the worldview of modern technology. Heidegger problematizes metaphysics on the whole, claiming it does not ask the question of being. Alarming the tradition’s “not-thinking of being clothes itself in the illusion that it does think Being in the most exalted manner, in that it esteems Being as a value,”⁵⁰ essentially pushing the question of being aside. By not inquiring into the question of Being there is a denial of the most essential characteristic of the human - their being-in-the-world.

Humans, viewed as the ones who will, are fundamentally closed off from being. This self-understanding has given rise to a delusion that has permeated the modern technological era: “it seems as if man everywhere and always encounters only himself,” but in truth, “*precisely nowhere does man today any longer encounter himself.*”⁵¹ If humankind attentively stands in front of all that is in a position of willing, they run the

⁴⁸ Martin Heidegger, “The Word of Nietzsche” in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Toronto: Harper and Row, 1977), 97.

⁴⁹ Ibid.

⁵⁰ Ibid., 104-105.

⁵¹ Heidegger, “The Question Concerning Technology,” 27.

danger of missing that they themselves are ordered by the same power. And thus, banish other possibilities of ordering into obscurity.⁵²

The ordering that modern technology demands is the controlling of that which makes up the world. It is not merely a human willing. Heidegger identifies the “will to power” as a mode of being that materializes *through* the human. As he notes, “man finds himself, from out of the Being of what is, set before the task of taking over domination of the earth.”⁵³ Through this willing the earth becomes the ultimate object for manipulation. To understand how this occurs through the human rather than merely by the human it is fruitful to look at machine technology.

Machine technology, as Heidegger understands it, is an “autonomous transformation of praxis” whereby the machine can only run on the application of exact mathematics and physics.⁵⁴ The world viewed as full of measurable and manipulable entities is integrated into the very functioning of the machine itself. It demands that everything fit into the framework from which it is derived. Nature must be as exact as the machine itself. Because it so unmistakably asserts its worldview, machine technology is the quintessential example of the essence of modern technology. Heidegger can make the claim that the essence of modern technology “is identical with the essence of modern metaphysics.”⁵⁵ Both characterize the world as something hanging before humankind rather than something that underscores being itself. To express this stance, Heidegger differentiates the epoch as one where the world has become a picture. The “world picture” describes a world that is put into a framework to be understood and manipulated.

It is clear by now that this is not world in the Heideggerian sense, but world taken as it has been in the metaphysical tradition from Descartes culminating in Nietzsche. A shift in Heidegger’s thought must be called to attention. In “The Question Concerning Technology” Heidegger’s thinking moves past the view of the human will as what exerts

⁵² Ibid., 27.

⁵³ Heidegger, “The Word of Nietzsche,” 96-97.

⁵⁴ Heidegger, “The Age of the World Picture,” 116.

⁵⁵ Ibid.

itself on nature (Nietzsche) to humanity being “called forth” by technology. Though modern technology is a “challenging revealing” of nature it remains “a kind of unconcealment.”⁵⁶ Unconcealment is an uncovering of meaning, which is not an effect of the human willing. Heidegger explains that from within their receptive position, humans “merely [respond] to the call of unconcealment.”⁵⁷ In the modern technological era however it seems as though their actions contradict this receptive role. The revealing that rules in modern technology appears as result of humanity exerting its will onto nature. This self-understanding is an illusion that is merely an effect of the revealing of modern technology. Technology, thus, can be said to fit within the history of metaphysics.⁵⁸ World as Heidegger understands it does not position the human being as *subiectum*. They are beings among other beings - whose interaction is reciprocal and points to the underlying structure of how things hang together. A world picture is consistent with a self-understanding of humankind as orderer. Thereby, “man becomes the being upon which all that is, is grounded as regards to the manner of its Being and its truth. Man becomes the relational center of that which is as such” which is a forgetting of both being and world.⁵⁹

A problem must be raised. Since world, in the Heideggerian sense, underlies the referential whole uncovered through practical engagement with what is, is the human not destined to see the world this way? Heidegger’s answer is that it is not our “fate” because technology itself is not a fate. He is more optimistic, reminding the reader that, “‘fate’ means the inevitableness of an unalterable course.”⁶⁰ If such were the case there would be nothing to be done about it. It would have to be accepted as inevitable. It is for Heidegger something that must be lived through and opens the question of the thinking that will characterize the next epoch. In the modern era the question of the technology can be posited as: Why is the world revealed as resource? If understood in terms of the culmination of metaphysics, whose essence is held in common with that of modern

⁵⁶ Heidegger, “The Question Concerning Technology,” 18-19.

⁵⁷ Ibid., 19.

⁵⁸ For further clarification see, Ian Angus, “Athens and Jerusalem? Philosophy and Religion in George Grant’s Thought,” 75-76.

⁵⁹ Heidegger, “The Age of the World Picture,” 128.

⁶⁰ Heidegger, “The Question Concerning Technology,” 25.

technology, we could follow Heidegger and rephrase the position as: why does the world only appear as “that which is positioned within [humankind’s] will?”⁶¹

2.3. The Saving Power, a Free-Relation to Technology and the Will

“But where danger is, grows

The saving power also.”⁶²

What emerges in the modern era is met with unease for Heidegger. However, the problem is not completely fraught with disaster. Heidegger tells us that the solution is one of positioning in relation to technology. Since humankind is responsible for the advancements that yield new technology we do play a key role in the rendering of world as standing-reserve. Heidegger notes that, “the unconcealment itself, within which ordering unfolds, is never a human handiwork, any more than the realm through which man is already passing every time he as a subject relates to an object.”⁶³ The Enframing that dominates in modern technology occurs when humanity differentiates itself from what lies before it. In doing so, being is taken as an exploitative uncovering of world. Since technology is a manifestation of being, what is at issue is the openness to technology as a correspondence to being.

Repositioning oneself in relation to technology must take place in the realm of thought. Heidegger identifies thinking as a “primal corresponding” to being. In other words, humans are practically oriented toward being before engaging with it. Activity reflects the thinking of being. In the modern era the problem is that the technical framework through which being is viewed reveals being as something to be destined by humankind. Modernity produces the illusion of the priority of thought. Heidegger situates the reconciliation of humankind to being as something that must arise out of practical

⁶¹ Heidegger, “The Word of Nietzsche,” 98.

⁶² From “Patmos” by Hölderlin quoted in, Martin Heidegger, “The Turning” in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Toronto: Harper and Row, 1977), 42.

⁶³ Heidegger, “The Question Concerning Technology,” 18.

activity reflected in thought: “through thinking, we first learn to dwell in the realm in which there comes to pass a restorative surmounting of the destining of Being,” namely a surmounting of the view of world as measurable resource.⁶⁴ Practical engagement would be the basis for a “turning” in thought.

Heidegger’s essay, “The Turning” (based on a lecture given in 1955), offers some suggestion as to how the question concerning modern technology can be overcome, but nowhere does he more clearly articulate the ideal stance that must be taken toward technology than in his short book *Discourse on Thinking*. In it he describes a position of free-relation to technology which develops a necessary step toward the reconciliation of the relationship between humankind and being.⁶⁵ A free-relation involves a dual connection with technology “which expresses ‘yes’ and at the same time ‘no’”⁶⁶ to it. This lack of firm association enables us to allow technology in, but free us from its worldview. To use Heideggerian terminology, it is a surmounting of the forgetting of humans foundational interconnection to being. To be open to technology, rather than seeing it as the only lens through which to view the world, enables humanity to see world, in the same way that Heidegger sees it, as a myriad of open relations. By allowing technology to come and pass, a free-relation differentiates itself from the challenging forth of nature that is the essence of modern technology and willing in metaphysics. It is for that reason that “so far as we can wean ourselves from willing, we contribute to the awakening of [a free-relation],”⁶⁷ since the goal of every will is, “to actualize, and to have actuality as its element.”⁶⁸ The will, therefore, must always have a determined mode of transformation in mind prior to the process of transformation whereas a free-relation does not. It is through this open stance that the “primal corresponding” or thinking that

⁶⁴ Heidegger, “The Turning,” 41.

⁶⁵ For an extremely clear and concise description of Heidegger’s notion of a “free relation to technology” see Hubert Dreyfus, “Heidegger on Gaining a Free Relation to Technology,” in *Technology and the Politics of Knowledge*, ed. Andrew Feenberg and Alastair Hannay (Bloomington: Indiana University Press, 1995) 97-107.

⁶⁶ Heidegger, *Discourse on Thinking*, 54.

⁶⁷ *Ibid.*, 60.

⁶⁸ *Ibid.*, 80.

so importantly characterizes humankind is allowed to re-emerge: “[A free-relation] awakens when our nature is let-in so as to have dealing with that which is not willing.”⁶⁹

At this juncture I will pose two questions. First, how can human action be the basis for a relation to technology that is not a mode of willing? And second, what type of world could arise from this transformed relation? Before I can suggest an answer these questions I must look to Marx’s analysis of capitalist technology for something that is missing in Heidegger’s analysis. In *Being and Time* Heidegger provides an account of human activity through the use of a tool. His example of how a world can be elucidated through human engagement with instruments in the workshop is notably different from his later understanding of modern technology. The example of the hydroelectric dam, which is exemplary of modern technology, is an analysis in terms of metaphysics and not purely human action. Marx’s analysis of modern industry can be used to fill this absence by exposing the real life situation of the worker. In the next chapter, I will show how Marx provides a clarification of the ways in which technology under capitalism is imprinted with social relations that over-determine the form that human action takes. Under capitalism all practical activity (labour being the most crucial in my interpretation) is organized around a form of logic that is internal to capitalism. Which is to say, focused on the creation of value. I will lay the groundwork to show how capitalism obscures the possibility of human action taking a form that has not been predetermined by the force it serves.

⁶⁹ Ibid., 61.

3. Tracing Capitalist Technology: Manufacture to Modern Industry and The Logic of Surplus Value

By the late-nineteenth century, transformations in the relations between labour and capital, that took place first in England, had spread throughout the world. Marx's reflections on the nature of English industry would soon be the concern of the rest of the world. A world system of production was emerging. In the early phases, the globalized economy was not based solely on trade but on a shared logic in the realm of production. As the global economy developed, industry adapted new technologies that drastically changed the social organization of the countries that received them. Resources from around the world were extracted and subsequently transformed in new labour processes. As a result of the changes in the logic of production, economic wealth was concentrated in the hands of a capitalist class. They subsequently marked the expansion of another class of people forced to sell their labour to those in control of the means of production - the proletarians.

According to Marx, the mode of production is the specific social form that production takes in society. The economy is the historical organization of the mode of production. In the capitalist system, controlling the mode of production amounts to controlling the material life of the labourer. In the *German Ideology*, Marx writes:

[The] mode of production must not be considered simply as being the reproduction of the physical existence of the individual. Rather it is a definite form of expressing their life...What they are, therefore, coincides with their production, both what they produce and how they produce.⁷⁰

⁷⁰ Karl Marx and Friedrich Engels, "The German Ideology," in *The Marx-Engels Reader*, 2nd Revised & enlarged. (New York: W. W. Norton & Company, 1978), 150.

As early as 1843, Marx had already explained the foundations of history as the result of human labour. The material conditions of human life are described through the production of the means to fulfill human needs. Of course the human who produces must also sustain his or her own existence. But, this individual sustainment leads to a social process where the satisfaction of needs results in the creation of new needs. This historical progression is also a natural one. In labour humans dialectically engage nature in the satisfaction of needs. Relations to nature are organized as social bonds. Marx philosophical stance remains consistent in his later work. His focus encompasses the content of labour - noting the importance of technology in these processes. In, *Capital*, Vol. 1, he contests that "it is not what is made but how, and by what instruments of labour, that distinguish different economic epochs."⁷¹ Marx's thesis can be rephrased as follows: the social mode of production and technological instruments used in production take on a specific form defined by the economy. The economy, as the organization of the mode of production, defines the social form that a society takes and thus characterizes specific epochs. Marx's ontology is derived from the relation to nature (technology) and society (mode of production) organized as a historical process.

An ontological account of labour in Heidegger's *Being and Time* was provided in the last chapter. It bears notable resemblance to Marx's late ontology of labour presented in *Capital*, Vol. 1. Both are based on three features; human activity, nature and (technological) instruments.⁷² Behind the historical and socio-economic relations that are the key point of analysis for Marx, there remains a consistent understanding of human labour in a trans-historical form. From the most basic standpoint:

Labour is... a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature. He confronts the materials of nature as a force of nature. He sets in motion the natural forces which belong to his own body...in order to appropriate the materials of nature in a form adapted to his own needs. Through this movement he acts upon external

⁷¹ Marx, *Capital*, 286.

⁷² *Ibid.*, 284.

nature and changes it, and in this way he simultaneously changes his own nature.⁷³

The dialectical process between humankind and nature is mediated through technology. By engaging in work one is put into a threefold relation to nature: First, humans are alerted to their position within nature. Needs are fulfilled through practical activity with nature. Second, humans transform nature through technological manipulation. The potential for transformation that nature provides is recognized in this engagement. The final relation comes about through labour, which is the form of self-realization for the human acting upon it. Marx notes that when humans work they cultivate “the potentialities slumbering within nature, and [subject] the play of its forces to his own sovereign power.” By doing so humans “simultaneously [change their] own nature.”⁷⁴ It is a process of realization because the result is one that existed in the mind of the worker before he/she began the labour process.⁷⁵ The purpose precedes the action, but is the result of a lifetime of meaningful engagement and understanding of one’s own place within nature. Put differently, labour in this form is a process where free mental play crystallizes through praxis and results in meaningful self-realization. Technology mediates the dialectical relation between thought and praxis in two ways. First, technology acts to mediate nature to fit with a given human need. Second, it mediates human labour so that it is able to incorporate nature into a process that fulfils needs. Through the two-fold mediation of technology both humans and nature are historically situated: “the use and construction of instruments of labour, although present in germ among certain species of animals, is characteristic of the specifically human labour process...”⁷⁶ The historical forms that humanity and nature take are transformed through this mediatory aspect of technology.

The most basic ontology of labour, as Marx describes it, is far removed from its historical manifestation in manufacture and modern industry. Marx remains consistent in his view of labour as a practical engagement with nature that concurrently transforms the

⁷³ Ibid., 283.

⁷⁴ Ibid.

⁷⁵ Ibid., 284.

⁷⁶ Ibid., 286.

physical world and the experience of the beings that occupy it. His trans-historical understanding of the labour process is essential in *Capital* as a whole because it works as a basis for the critique of labour under the capitalist system. One must have a trans-historical starting point for differentiating historical forms. That is to say, one must think “a labour process independently of any specific social formation.”⁷⁷ The trans-historical starting point aids Marx’ diagnosis of the perversions that have taken place under capitalism. The most fundamental of these changes in capitalism is that labour appears on the market *as a commodity*. By adding a socio-historical account of the form labour takes, Marx derives the concept of capital from the commodity. The ontology of labour is a necessary component in this logic. His ontology, however, bypasses the peculiar feature of labour that causes the process of capital accumulation. The feature left out is the ability of human labour to produce a surplus. Under the constraints of capitalism the surplus is directed towards the creation of value. It is not until Marx explains the valorization process that he is able to explain this specific form. It is, therefore, left out of his ontology of labour because of its exploitation to create exchange value, a historical manifestation specific to capitalism. The surplus that labour can produce allows Marx to move beyond the immediate subsistence of the labourer to the production of tools and other means. This feature of labour is considered in his discussion of technology, which characterizes historical epochs.

Instruments of labour play a mediating role in history: “An instrument of labour is a thing, or a complex of things, which the worker interposes between himself and the object of his labour, and which serves as a conductor, directing the activity onto that object.”⁷⁸ For Marx, it is the use of this technology that defines labour as specifically human. It is the general way in which economic epochs are differentiated. To get at the notion of surplus-value, Marx set his sights on an era of technological change - namely the transition from manufacture to modern industry. By first looking at the changing division of labour followed by the technological changes in the mode of production he is able to explicate the inner workings of the capitalist system itself. The aim of this chapter is to explain Marx’s periodization of technology through the concept of surplus-value. I

⁷⁷ Ibid., 283.

⁷⁸ Ibid., 285.

show that capitalist production technology developed in a specific way because of a systemic requirement of capitalism. The technological implications of Marx's account of the labour process are central to my later analysis of the modernity and capitalism.

3.1. From the Commodity to Surplus-Value

In capitalism the commodity is a specific social form that represents the totality of social forms. It is the form of appearance that wealth takes in the capitalist society and is therefore a measure of capitalist society. As Marx observes, "the wealth of societies in which the capitalist mode of production prevails appears as an 'immense collection of commodities.'"⁷⁹ Under capitalism commodities are exchanged solely on a market. Needs are satisfied through the purchase of commodities with money. Money, in various quantities, acts as the universal exchange equivalent for all commodities on the market. The value of a commodity in the money form is registered through price. Money thus becomes *the* measure of wealth for every individual because the quantity each possesses determines their ability to buy commodities and, in turn, satisfy needs. The provision of human needs under capitalism sets up a hierarchical differentiation between those within the system. The market creates two figures, the owners of commodities and those forced to sell their labour as a commodity.

The commodity can be traced logically to reveal the capitalist labour process and, ultimately, its structuring around the notion of value. Why capitalism functions as it does is the result of its expansion to all social realms. It works as a system because it regulates all production and extends this logic to its completion in exchange. Its logic is historically entrenched in technology, the social division of labour, the control over the worker's time and the market. All are based on one crucial need: to produce value. The commodity is always simultaneously concrete and abstract under capitalism. It is concrete in that all commodities have a specific use-value, important only to the purchaser of the commodity. Capitalism is organized around the realization of capital. The result of this is an intrinsic focus on result. Labour creates value through the realization of capital as self-expanding value. The constraints placed on it exploit one

⁷⁹ Ibid., 126.

crucial feature that is left out of Marx's ontology presented in *Capital* (chapter VII): the ability of labour to produce more value than what is needed to sustain the worker. The surplus is realized in exchange where productivity is the output of products. The logic of capital, the explication of capital from the commodity, is structured around this characteristic of labour. Capitalism as a system is focused around the creation of wealth. The abstract form of the commodity is its socially determined exchange value. Value is established by socially necessary labour time or the amount of labour taken in general that it takes to produce the product (abstract labour) and the price of the raw materials used for its production.⁸⁰ Labour too appears as a commodity, like all others, for sale on the market. The exchange value of labour is determined by all the commodities required to sustain the worker at a basic level of existence for a determinate amount of time. Its value is equivalent to the "value of the means of sustenance necessary for the maintenance of its owner."⁸¹ What makes labour particularly important in capitalism is that its "use-value possesses the peculiar property of being a source of value, whose actual consumption is therefore itself an objectification of labour, hence the creation of value."⁸²

Concreteness is dominated by abstraction in the capitalist labour process and thus within capitalist society. The concrete characteristics of the commodity, like labour, take a subordinate role to their function as equivalents in exchange relations. Human praxis itself is measured only by its abstract value as activity that produces value. The labour embodied in commodities is never likened by content, i.e. qualitatively, but only as a quantitative measurement. Therefore the actual makeup of labour itself is lost in the commodity. The concrete character of labour is subjugated to its abstract exchange value.

But this analysis of labour as the commodity that produces value is not complete in its relation to capital just yet. The demand is put on its value-creating character to produce more than its own exchange value in the realm of production. It must create a *surplus* of value. Marx describes two strategies for doing so: absolute surplus-value,

⁸⁰ Ibid., 141-142.

⁸¹ Ibid., 274.

⁸² Ibid., 270.

which is produced by alterations in the division of labour that have to do with the worker's time and productivity i.e. the length of the working day. Relative surplus-value is generated by alterations in the technical organization of production. It has to do with the intensity of work. Both coincide with changes in the economic history of capitalist development. The refining of the generation of absolute surplus-value developed through alterations in the division of labour during (and throughout) the economic transition from handicraft to manufacture. Relative surplus-value has as its essential element a constant revolutionizing of the act of labour in order to sustain itself.

3.2. Absolute Surplus-Value: Handicraft to Manufacture - the Refining of the Division of Labour

The production of surplus-value is realized through control over time. Since the use-value of labour is that it creates new value, the capitalist takes great interest in the amount of time the worker works. The faster the worker is able to reproduce the value of their own labour power in new commodities, the more time they have to create value for the capitalist. In *Capital*, Marx historically traces, in great detail, the struggle over the lengthening the working day. While it is of great importance for the project of *Capital* as a whole, a thorough analysis is not necessary at this point. My focus remains a periodization of technology. An analysis of its manifestations in different economic periods of production is key.

In essence, manufacture is not different from pre-capitalist modes of production. The mode of production used in handicraft involves workers with varying degrees of skill employed under a master craftsman. As the skill of the apprentices increased so too did their responsibilities, and labour was subsequently divided amongst them. What separates the two forms is that manufacture contains a "greater number of workers simultaneously employed by the same individual capital,"⁸³ and an increase in the scale of production. The shift is founded on a social basis that utilizes human co-operative ability to increased productivity. This social organization, however, is built solely around the goal of realizing surplus-value. Consequently, Marx is able to characterize co-

⁸³ Ibid., 439.

operation as the “starting point of capitalist production,” that “coincides with the birth of capital itself.”⁸⁴ Capitalism and absolute surplus-value are, therefore, formed first on a *social* basis.

The economic period of manufacture originates in two ways both based on alterations in the division of labour. The first is the assemblage “in one workshop, under the control of a single capitalist, of workers belonging to various independent handicrafts, through whose hands a given article must pass in order to be complete.”⁸⁵ The second shares the same large assemblage of workers, although this time “one capitalist simultaneously employs in one workshop a number of craftsmen who all do the same work.”⁸⁶ The production of goods in manufacture is, again, a socially embedded process. Whether various craftspeople combine the products of their labour or a group of craftspeople all produce a multitude of the same products the result is always a “social product”.

Because work is organized in this way, reliance on the single capitalist becomes standard practice in manufacture. By combining workers together a single capitalist is able to increase the productivity of labour. The commodity product is created with greater speed and goes from “being the individual product of an independent craftsman,” to the “social product of a union of craftsmen, each of whom performs one, and only one, of the constituent partial operations.”⁸⁷ Each operation becomes less demanding both physically and temporally when held in common. Beyond the organization of workers alone there are further ways in which productivity can be increased. The division of labour can be continually refined with productivity as its goal. Relegating each individual worker to as specialized task as possible allows the capitalist to remove all unnecessary time-consuming movements. This amounts to an early phase of the control over human praxis in the capitalist system. Labour becomes less of a process and more of a specific action repeated unceasingly. When combined socially these actions are transformed into a complete process. A side effect of the worker’s proficiency in only one area is that it

⁸⁴ Ibid., 453.

⁸⁵ Ibid., 455.

⁸⁶ Ibid., 456.

⁸⁷ Ibid., 467.

strengthens his/her dependence on their employer - what they can do coincides with what they have been assigned, making the worker less skilled and resourceful outside of the system itself. By dividing labour into a chain of specialized tasks “one worker ... directly sets the other to work”⁸⁸ because alone, “the specialized worker produces no new commodities.”⁸⁹ The exploitation of the social division of labour is, therefore, the basis of the transformations aimed at the increased productivity. Under capitalism the limit to the social working machine is the refining of cooperative labour, i.e. the control over time.

To supplement the limits of alterations in the social organization of labour, the capitalist must develop specialized instruments to increase the productivity of labour. The realization of surplus-value based on the technical organization of work becomes possible. I quote the passage at length where Marx identifies the shift taking place:

The productivity of labour depends not only on the proficiency of the worker, but also on the quality of his tools...As soon as the different operations of a labour process are disconnected from each other, and each partial operation acquires in the hands of the worker a suitable form peculiar to it, alterations become necessary in the tools which served more than one purpose.⁹⁰

Manufacture is characterized by a rise in productivity that is the result of increasingly advanced alterations within the social division of labour. Other than its fragmentation there is no significant change in the technical side of labour. What is at issue in the industrial age of economic development is control over labour itself. In describing the division of labour in manufacture Marx is working towards technology's role in speeding up the creation of value. Emerging first on a social basis, the capitalist system must then refine and develop its technology. As we will see, this technological change is fraught with new social implications. Labour itself becomes organized around the technology it utilizes in production. The result is a social organization *around* technology, but not a neutral technology. The technology that is employed is imprinted with the social relations of capitalism and a view of the worker oriented to producing absolute surplus-value.

⁸⁸ Ibid., 464.

⁸⁹ Ibid., 475.

⁹⁰ Ibid., 460.

3.3. Relative Surplus-Value: Modern Industry and the Machine

The limits imposed by the length of working day, along with the organization of the workers into the most productive mechanism possible within that time period, is manufacture's solution to the question of maximizing surplus-value. It is coordinated internally. As a result "absolute" surplus-value is valorized without going beyond the place where production occurs for special instruments to increase the productivity of labour. Its generation is secured *within* the limits imposed by it, i.e. lengthening the day or by organizing the division of labour. A form of organization that takes place internally can only be revolutionized to a certain point before it must reach outside the existing labour power for tools that could intensify the labour process. It is this integration of new technologies into the process of production which secures the need for constant growth beyond the limits inherent in absolute surplus-value. The need for constant growth along with technological advances that made it possible, are the foundation of the transformation from manufacture to modern industry. It also paved the way for what Marx termed "relative surplus-value" which is the way in which capital can be valorized by changes in the instruments of production. Modern industry never definitively takes the organization of its mode of production as a given. Marx asserts that its "technical basis is therefore revolutionary, whereas all earlier modes were essentially conservative."⁹¹ The revolutionizing character of technology in modern industry is based on the integration of exact physical science, nature in the form of raw material, and the constant re-organization of the worker around these instruments. Technology is based on a method of inclusion by which the specialized training, necessary in some forms of manufacture, is levelled in order to integrate the largest possible work force.

By the time of his writing, modern industry was well established as the form of production in England. Knowing that modern industry relied so heavily on technology, Marx asserts "a critical history of technology" used in capitalist production "does not exist."⁹² It seems that in many ways this was Marx's goal in explaining the periodization

⁹¹ Ibid., 617.

⁹² Ibid., 493 n 4.

of capitalist technology in *Capital*. He thus provides numerous historical examples of struggles between the workers and their instruments of labour. By using machinery, “the instrument of labour assumes a material mode of existence which necessitates the replacement of human force by natural forces, and the replacement of the rule of thumb by the conscious application of physical science.”⁹³ Such was the case when Henry Maudslay invented an automated machine capable of cutting geometrically exact shapes in any material. The function of the machine would formerly be done with a manual lathe that required the skilled hand of a worker to guide it. No human hand could replace the accuracy of Maudslay’s machine, which was then utilized from the late 19th century onward to cut the shapes necessary in hard metals to build further machines.⁹⁴ Large-scale industry at this point needed a machine from which it could create other machines “and it was not until it did this that it could create for itself an adequate technical foundation” to grow on.⁹⁵ The development of technology in this instance worked as the starting point of further technological growth and the replacement of the worker by machine. It follows a specific form of development that transforms the worker.

The replacement of the social division of labour by technical means in large-scale industry created a form of competition between worker and machine. In manufacture, the worker devoted his/her whole working life to a singular specialized operation within the production process. In large-scale industry those operations are assigned to the machine, which the worker tended. Where these changes occurred, the factory proper was faced with the problem of supplying the machine with enough labour power to keep the process moving. In 1866, the labour power of women and children was used to meet the demands of the new machines. An important dialectic is at play here, in which scale is a crucial parameter. What was first instituted to replace labour power now demands more and more of it to keep the process running: “At first the steam engine replaces [the] worker, afterwards he must replace the steam engine.”⁹⁶ The tension exists in the

For Further discussion see Fredric Jameson, *Representing Capital: A Reading of Volume One*. (London: Verso, 2011), 55.

⁹³ Ibid., 508.

⁹⁴ Ibid., 507.

⁹⁵ Ibid., 506.

⁹⁶ Ibid., 614 n 24.

machine - worker relation and is bound up in the notion that only human labour creates value, where the machine can only transfer it. To describe this, Marx cites the fifth report of the *Children's Employment Commission* of 1866 which, in describing the type of labour used to keep up with the machine, asserts that child workers become " 'a mere substitute for steam power.'"⁹⁷ By explicating specific examples, Marx is taking a complicated history and showing that it has a consistent logic. It subsequently follows a particular path of development organized around the creation of a large work force and quick realization of surplus value. As we have seen, labour is systematically deskilled. Capitalist technology is revealed as a historical process.

In modern industry, materials are ordered with the efficiency of machines in mind:

The collective working machine, which is now an articulated system composed of various kinds of single machine, and of groups of single machines, becomes all the more perfect the more the process becomes a continuous one...in other words, the more its passage from one phase to another is effected not by the hand of man, but by machinery itself.⁹⁸

One must note, the further removed the worker becomes from his or her practical interaction with nature, the more efficiently the capitalist production process runs and more surplus-value is created.

3.4. The Human, The Machine.

"Real wealth manifests itself...in monstrous disproportion between labour time applied, and its product, as well as in the qualitative imbalance between labour, reduced to pure abstraction, and the power of the production process it superintends. Labour no longer appears so much to be inclined with the production process; rather the human being comes to relate more as a watchman and regulator of the production process itself."⁹⁹

- Marx, *Grundrisse*

⁹⁷ Ibid.

⁹⁸ Ibid., 502.

⁹⁹ Karl Marx, *Grundrisse*, Trans. Martin Nicolaus (London: Penguin Classics, 1993), 705.

The logic of modern technology excludes other forms of development. Technology is instilled with a rationale that can develop as long as the labour that uses it continues to produce value. Taking the instrument as the starting point of labour in modern industry points to another radical transformation of the social relations. Capitalism's system of technology emerges from the productive limits of co-operation. How the machine integrates labour into its functioning is telling of a transformation of human praxis in general. The machine and human labour become mutually dependent - each mirroring the other's form of domination of the surrounding world. For Marx, technology in general "reveals the active relation of man to nature, the direct process of the production of his life, and thereby it also lays bare the process of social relations of his life, and of the mental conceptions that flow from [social] relations."¹⁰⁰ Together with the account of labour in its trans-historical form it is evident that machine technology undermines the process of realization through its control over the worker.¹⁰¹ The characteristic that "distinguishes the worst architect from the best of bees is that the architect builds the cell in his mind before he constructs it in wax" thereby through construction what exists "ideally" materializes in a moment of self-realization.¹⁰² Such cannot be the case when workers tend to machines. In modern industry, the driver of the machine only sets in motion the process that was once adapted to his or her labour. He or she becomes its command function.

All relation centers on the issue of value. In Marxist theory machinery "creates no new value, but yields up its own value to the product it serves to beget."¹⁰³ The labourer is therefore presupposed as a system component. In Marx's own words, the labourer is confronted "as a pre-existing material condition of production."¹⁰⁴ The division of labour too becomes a system component as its organization is derived from this automated production. It becomes as technical as the machine itself - as it is derived from its logic.

¹⁰⁰ Ibid., 493 n 4.

¹⁰¹ For more on the Marx's trans-historical form of labour see chapter 3 pp. 30-33 of this thesis.

¹⁰² Ibid., 284.

¹⁰³ Ibid., 509.

¹⁰⁴ Ibid., 508.

A reversal has taken place. In earlier forms of organized labour the tools of production were seen as an external appendage to the worker. By utilizing them one was mediating the relationship between themselves and nature. This is not to say these forms were ideal. But, through the historical development of technology in the capitalist system that overcomes the limits of the working day, the human becomes the appendage of the machine. One could schematize the history as such: In manufacture the worker appears as a part of co-operation - as collective worker."¹⁰⁵ Their assemblage results in a "productive mechanism whose organs are human beings."¹⁰⁶ Through the shift of focus onto technology the worker is "appropriated by the process"¹⁰⁷ as their labour is organized around their function as machine drivers. By describing the development of technology through the concept of relative surplus-value, Marx highlights that the actual development of technology incorporates within itself the exploitation of the worker.

Marx focuses on the historical development of capitalist technology as it is imprinted with social relations. He points out that technology in modern industry emerges first from a social basis by outlining the struggles over the working day. To Heidegger's analysis of technology, Marx's thought can be used to better explain the real life situation of the worker in modern industry. Furthermore, his socio-historical analysis aids in articulating what has brought us to the epoch that Heidegger describes. Since Heidegger sets his sights only on the essence of technology he misses the concrete relations of the worker in modern industry. It is this absence that requires us to go through Marx's socio-historical analysis of the worker under capitalism.

In modern industry all forms of human action reflect both the techno-scientific character of modernity and the logic of capitalism. Within techno-science (Heidegger) human action reflects the world taken as an object of technical manipulation. Heidegger raises the question of meaning that can be aided by Marx's explanation of the actual material life of worker. Under capitalism (Marx) human action reflects the world organized around the single goal of realizing value. In both techno-science and

¹⁰⁵ Ibid., 468.

¹⁰⁶ Ibid., 457.

¹⁰⁷ Ibid., 501.

capitalism praxis reflects a loss of concreteness. This comes from a structural necessity of each force to quantify all that exists. Everything must fit inside a self-enclosed logic. In the next chapter, I will outline the exact points at which these forces are parallel. I must be clear here that I am not arguing that Heidegger and Marx are same on these issues. The argument of my thesis is for a parallelism that is present in their respective, yet distinct, critiques.

4. Abstraction, Domination and Reduction: The Connections Between Heidegger and Marx

In the preceding chapters, I outlined the respective critiques of modernity and capitalism as they relate to technology in Heidegger and Marx. Now that the reader is familiar with the relevant concepts of both thinkers, this chapter points out the explicit connections that can be drawn between them. I must emphasize that my argument is not that the two thinkers provide the exact same criticism. What I am claiming is that there is a point of view where Heidegger and Marx converge. It is the goal of my thesis to elaborate this point of view.

Both look to examine these forces through their effect on practical activity. Practical activity connects the human to the world. Neither explain human action as a multitude of separate actions but, instead, examine a whole of activities that reciprocally point to each other. The individual is defined through a relation to that whole. Labour is the most prominent example of practical world making activity. I claim that Heidegger and Marx converge on the understanding of the world as an abstraction. Heidegger's key concern is the world quantified as resource. Everything that is, including humanity, is viewed for its usability or productive potential. Marx's thesis is centered on labour taken in the abstract as the origin of value. The representation of actions, the commodity, is taken as the action itself. The two critiques can be more precisely defined as a loss of concreteness in the processes that allow humans to meaningfully engage with the world. The problem of abstracted being is that it runs counter to praxis as the way in which humans define their being. After pointing out the similarities in the thought of Heidegger and Marx, my final chapter will argue my own contribution to this issue. I will show that Heidegger's critique of representation in modernity and Marx's critique of capitalist economy merge in that they characterize techno-science and capitalism as a united system

Capitalism shares the techno-scientific viewpoint that characterizes modernity. It does so by a structural requirement to quantify the processes that take place within it as well as the materials that keep it functioning. Occurring most prominently in the labour process, the system of value that emerges in commodity relations requires that human action be quantified like any other commodity.¹⁰⁸ Heidegger does not articulate the process of capitalist labour specifically, but the two can be fruitfully brought together in their discussion of the specific way that humans use technology in the current epoch. Within this problematic, techno-science and capitalism do not determine each other but become related through the mechanization of the processes of production.

Capitalism and techno-science are forces grounded in socio-economic organization (Marx) and human-nature interaction (Heidegger) that together constitute the global system in which we live. Heidegger gives us a picture of the totality that is ontological. He is reluctant to use specifics in his diagnosis. His thought, therefore, cannot be used to explain specific phenomena. By bringing in Marx, Heidegger's critique of representations that characterize modernity can be integrated into a larger critique of the actual labour processes of capitalism. In other words, Marx's thought can be used to explain what Heidegger may mean by making his thought practical. It completes a historico-ontological story. The forces that constitute the particular dispensation of being Heidegger describes are locatable in capitalism. At the other end, Heidegger's characterization of *Dasein* as being-in-the-world along with his later work on technology situates Marx's study of the implications of capitalism, its need to generate surplus-value in the world (in the sense that Heidegger explains it) that ultimately determines being itself. It does so by dissecting the logic behind the systems that have emerged. The historical ontology of industrial capitalism is one of abstraction, domination and reduction.

¹⁰⁸ Marx, *Capital*, 128.

4.1. Abstraction: Value and the Nature-technology-labour Relation.

Marx, in *Capital Vol. 1*, describes two capitalist strategies for increasing the rate of surplus-value. Absolute surplus-value is characterized manufacture by changes in the social organization of production. Relative surplus-value is realized through alterations in the technical organization of production. The former is temporal and must adhere to the limits of the worker's body. These limits are taken into account through the careful honing of the movements associated with work. Productivity, which has to do with the speed at which the worker is able to reproduce their own value, is increased when workers work together. It is a way of exploiting the worker's natural ability to produce value through refining the social aspect of labour itself. It is related to the *quantity* of the worker's time. To put it more precisely, it involves the amount of value that can be produced in the working day through the organization of workers themselves. How a worker spends his or her time is determined by a social organization constructed around the quickest reproduction of value. Relative surplus-value, has as its essential element a constant revolutionizing of the act of labour in order to valorize. In modern industry valorization is accomplished through the advancement of technology. In the last chapter I showed that technology developed along a path laid down by capitalist requirements of labour. Its constant transformation works to control the *quality* of the workers' time.

Marx presents an ontological account of labour as concrete activity resulting in development of human capacities. The concrete character of labour, the fact that it is purposeful human action aimed at specific outcomes, cannot in itself be measured quantitatively. In order to be quantified it must be abstracted. Marx defines the basic elements of labour as follows: "(1) purposeful activity, that is work itself, (2) the object on which that work is performed, and (3) the instruments of that work."¹⁰⁹ Capitalism is defined as the system under which labour-power is a commodity. Like all commodities, it has a use-value, a concrete use, and an exchange-value, a measurable value that mediates exchange relations. The calculable exchange-value is determined by the

¹⁰⁹ Ibid., 284.

amount of human labour taken in general to produce a given commodity.¹¹⁰ A useful thing, “therefore, has value only because abstract human labour is objectified [*vergegenständlicht*] or materialized in it.”¹¹¹ Labour’s exchange value is paid in the form of wage. Wage is determined by the amount of commodities required to keep a given worker alive and producing. The form labour takes under capitalism has great ontological implications. The concrete activity that defines its purpose is not taken into account. It not a way of realizing oneself; instead it is purely a way of instilling value and a means to wage. All human labour is taken as labour in the abstract. Since the abstracted labour objectified in the commodity is the measure of value, commodity relations extend to all realms of nature and society.

Marx’s ontology of labour presented in chapter VII of *Capital, Vol. 1*, does not mention the ability of labour to produce more than what is needed to sustain the worker. It is, however, this feature that is exactly what is exploited in the capitalist labour process. It is the ability to produce a surplus that accounts for difference between labour’s use and exchange value. This difference is what makes possible the whole process of valorization.¹¹² Marx’s description of value illuminates the extent to which its production underscores the relations between nature, technology and labour. Heidegger’s concept of world enables a broader understanding of the permeation of (abstract) value relations in the modern world. Though he does not talk about capitalism explicitly, the world as Heidegger describes it in his later critiques of modernity is a capitalist one. The notion allows us to fundamentally tie capitalism and modernity together on their reliance on abstraction. Concrete activity is central in the construction of history and ontology for both Heidegger and Marx.

Heidegger develops the early notion of world in *Being and Time*, then explains historical manifestations of ontology as “modes of revealing,” in his later work. Recall that for Heidegger, the way in which things meaningfully hang together makes a world. He notes, “Things at hand are encountered within the world. The being of these beings,

¹¹⁰ Ibid., 129.

¹¹¹ Ibid.

¹¹² Professor Ian Angus was kind enough to share with me an unpublished paper. For more on the surplus productivity see, Ian Angus, “Marx’s Ontology of Labour: The Natural Fecundity of Surplus Productivity,” Unpublished Paper (Simon Fraser University., 2013), 7.

handiness, is thus ontologically related to the world.”¹¹³ Since “things at hand” are always concrete, that is to say an appropriation of nature to meet some human need, an equally concrete relation of using, points us to meaning in the world. He believes that things in the world can only be explained through their relation to other things. It is through these concrete relations that we are pointed to world. All being is connected to the totality of being through the concrete relations between things. This is why being, for Heidegger, invokes a world that “is always already ‘there’.”¹¹⁴ Heidegger is quick to note that world “can also appear in certain ways of dealing with the surrounding world,”¹¹⁵ primarily our practical activity with other beings. This is evident in his conviction that “the closest kind of dealing is not mere perceptual cognition [*Erkennen*], but, rather, a handling, using, and taking care [of being in the world].”¹¹⁶ We are also in this way practically involved in the world. All interactions with being relate us back to it. For Heidegger the ontology of labour serves as just one of many examples of the relational aspect of worldliness. Marx’s trans-historical version of labour is fundamental to his understanding of human beings as they define themselves within history. Though Heidegger shifts his attention from worldliness, in *Being and Time*, to the historical ontology of revealing, in his later essays on modernity, his focus on the relationships between humans, technology and nature remains intact. I argue that this relation established itself in his thinking as the key form of worldiness. It is, at least, as the most significant form of worldliness for human, *Dasein* in the age of industrial capitalism. It is this interpretation that allows the two to be most closely related. It further works as the background for a most sophisticated formulation of their similarities on the loss of concreteness that has come to define labour in the modern era. The development of capitalist technology positions the workers in such a way that their activity loses its concreteness and, given centrality of labour for human ontology, existence becomes abstract rather than concrete. Value emerges out of human labour within the capitalist system and is measured by this abstraction.

¹¹³ Heidegger, *Being and Time*, 81

¹¹⁴ Ibid.

¹¹⁵ Ibid.

¹¹⁶ Ibid., 67.

Whereas the passage from earlier forms of handicraft labour to manufacturing was based on a development of the division of labour (i.e. the move from the individual labourer to the collective labourer), the transition from manufacturing to large-scale industry increased productivity through the development of machinery and other technology. As soon as the creation of value, based on the social organization of labour reaches the threshold created by the limits of the worker's body, capitalism compensates by creating technology to make labour more productive. Marx writes:

As soon as a prolongation of the hours of labour is once and for all forbidden, [capital's tendency] is to compensate for this by systematically raising the intensification of labour... converting every improvement in machinery into a more perfect means for soaking up labour-power.¹¹⁷

The production of value is the driving force of capitalism. Valorization is sped up through advancements in technology. It is crucial to note that the shift from control over the quantity of labour time to the quality of labour time was not accomplished by changing the mode of production, but instead through changes within the capitalist mode of production itself, i.e. the coupling of labour with technology that is reliant on this abstraction as a means of realizing value. The issue that Marx presents in section four of *Capital*, Vol. 1 is how humans relate to technology and how it positions them within capitalism.

Marx sees something similar to Heidegger's notion of world in the process of labour. Once again recall, Marx's version of labour in its trans-historical form is:

[A] process between man and nature... by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature... Through his movement he acts upon external nature and changes it and in this way he simultaneously changes his own nature.¹¹⁸

There is no loss of concreteness in the ontology of labour. Though generalized labour remains concrete as "purposeful activity aimed at the production of use-values,"¹¹⁹ or

¹¹⁷ Marx, *Capital*, 542.

¹¹⁸ *Ibid.*, 283.

¹¹⁹ *Ibid.*, 290.

useful things that mediate human experience with nature, in this form it is without any relation whatsoever to the production of exchange value. Marx's view is that humans and nature are dialectically intertwined; as they change nature they simultaneously change themselves. Their participation in nature is a similarly active one.

The form labour takes under capitalism is not one of self-realization but of abstraction aimed at the valorization of capital. It is supplemented by wage that is the reduction of human labour to an abstract exchange value. Its form coincides with the development of technology, which puts less and less emphasis on human labour power and focuses on the utilization of machinery for the greatest possible output. As Marx notes, "the machine is a mechanism that, after being set in motion, performs with its tools the same operations as the worker formerly did with similar tools"¹²⁰ but the efficiency of labour increases greatly. The explained alteration in the production is one in which "the worker has been appropriated by the process;" it was formerly a process that was adapted to the needs of the worker.¹²¹ What was once developed in the phase of manufacturing to organize humans is now a process of organizing machines. The worker now produces exorbitant amounts and must stand against his or her own labour as a challenging of nature, rendering the process of production as "a productive mechanism whose organs are human beings."¹²² Most alarming is that this productive mechanism stands as the whole organization of production, and it is relatively independent from human labour or any individual labourer.

The repositioning of the labourer in production causes a great divergence from the account of production by Marx and the relations that define being-in-the-world for Heidegger. The worker acts as the machine's tender and is removed from his or her practical activity in harmony with being; now standing in opposition to it. The process of production appropriates nature. It registers only as a material that can be transformed into a value by a worker. Though Heidegger does not discuss value, he argues that modern techno-science positions humankind against the nature, which has become the supply house for materials. Heidegger is then able to proclaim that "now for the first time

¹²⁰ Ibid., 495.

¹²¹ Ibid., 501.

¹²² Ibid., 457.

is there any such thing as a 'position' of man',¹²³ in the world. It follows from the previous critique of Cartesianism, laid out in *Being and Time*, that the subjective removal of the human from their being within a world is at fault. Both the system of value in capitalism and the techno-scientific understanding of nature are quantifiable understandings of what exists. A subjective standpoint is created when the dialectical relationship between humanity and nature, through labour for Marx and practical being to being interaction for Heidegger, becomes a relationship of abstraction and alienation. The workers stand in opposition to nature as opposed to seeing themselves as constitutive of it. The process of production masks active participation in the world as the machine to the point of complete abstraction mediates the worker's practical activity. This removed relation to being does not hold sway only in the factory but becomes an occurrence in the world. Heidegger calls this position a "world view" within which "whatever is, is considered to be in being only to the degree and to the extent that it is taken into and referred back to this life,"¹²⁴ in other words to be put into a framework to be understood and then manipulated.

The production of surplus-value takes place in production and relies on energy in raw material and human labour that lie outside of the production process. In order to run most efficiently, technology needs energy to be ready at all times. Following Heidegger's logic, the implications of this fundamental need of the production process can be expanded into a way of being in the world. Heidegger describes a challenging of nature that rules in modern technology:

The challenging happens in that the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is, in turn, distributed, and what is distributed is switched about ever anew. Unlocking, storing, distributing, and switching about are ways of revealing. But the revealing never simply comes to an end.¹²⁵

If a revealing never comes to an end, then labour becomes tangled inextricably to a specific historical manifestation. That makes workers reliant on the system that controls their labour. The goal of self-realization takes second stance to the needs of the system.

¹²³ Heidegger, "Age of the World Picture," 132.

¹²⁴ *Ibid.*, 134.

¹²⁵ Heidegger, "The Question Concerning Technology," 16

Labour serves the priorities and prevailing needs of the system itself rather than those who participate in it. Marx does not thoroughly detail the relationship to nature that makes it possible for the capitalist production process to run. He does note “labour uses up its material elements, its objects and its instruments. It consumes them, and is therefore a process of consumption.”¹²⁶ He further writes that the “transmitting mechanism from an automatic centre is the most developed form of production by machinery.”¹²⁷ The associated view requires the continuous abstraction of what exists. The need for energy, an abstract force of production, rules in modern machine technology. Heidegger’s understanding of the challenging of nature to supply the unlimited amounts of energy situates the capitalist production process as the form the world takes. Other possibilities for revealing are excluded because it encloses everything that is within the chain of production. For Heidegger, it is not the current state of labour or the machine that renders the world as a standing-reserve, or resource always on call to be utilized. It is instead the current state of being-in-the-world, previously referred to as the Enframing. We forget the true nature of being. Enframing is not social or technological, but “the way in which the real reveals itself as standing reserve,”¹²⁸ as a world that appears as part of the apparatus of the systems that determine its state.

4.2. Domination: The Human in the Techno-scientific World, Technology as Ordering Humanity.

The worker enslaved to the machine in order to produce surplus-value is alarmingly similar to the danger of human being taken as standing-reserve. The mutual fear is that humans will become the mere orders, or command functions of the system. This development takes place only in capitalist production. It is not so simple as to say that the worker becomes a machine. Instead the machine “makes use of [the worker]” just as in handicraft the worker “ makes use of a tool.”¹²⁹ Under this form of production, the worker becomes part of the machine by serving it. The labour that runs the machine

¹²⁶ Marx, *Capital*, 290.

¹²⁷ *Ibid.*, 503.

¹²⁸ Heidegger, “The Question Concerning Technology,” 23.

¹²⁹ Marx, *Capital*, 548.

is not a realization of concrete human praxis but an abstraction that is taken for the whole of being. Abstract labour is taken as a representation of all labour due to its status as a commodity in a system where everything is a commodity and all relations are taken as commodity relations. The fetishization of commodities takes place under capitalism, whereby:

Objects of utility become commodities only because they are products of the labour of private individuals who work independently of each other...the labour of private individuals manifests itself as an element of the total labour of society only through the relations which the act of exchange establishes between the products, and, through their mediation, between the producers.¹³⁰

In this sense, the abstraction of labour is analogous to the abstraction of all social relations to material relations as well as the abstraction of nature to raw material for technological use.

Enframing in modern technology requires someone to order this process forward. Heidegger sees this dispensation of being as a problem. Enframing, he asserts, “does not simply endanger man in his relationship to himself and to everything that is. As a destining, it banishes man into a kind of revealing which is an ordering.”¹³¹ Ordering is a removal from the practical activity in the world, and a fundamental character of humanity itself. The simplest example of this is the worker who tends to the machine. Labour is consumed in modern industry because machines do more of the ordering. Marx notes:

The collective working machine, which is now an articulated system composed of various kinds of single machine, and of groups of single machines, becomes all the more perfect the more the process becomes a continuous one...in other words, the more its passage from one phase to another is effected not by the hand of man, but by machinery itself.¹³²

The further removed the worker becomes from his or her practical interaction with nature, the more efficiently the capitalist production process runs as more value is created. Since Marx shows that machines create no new value but only *transfers* it, the creation of new value is always done in the process of labour, no matter how removed

¹³⁰ Ibid., 165.

¹³¹ Heidegger, “The Question Concerning Technology,” 27.

¹³² Marx, *Capital*, 502.

from the practical activity it becomes. The distinction between the worker and the natural world is levelled. Both become materials for the machine. Interaction between the worker and nature does not give rise to a relational world (a totality of being), instead it reproduces the capitalist structure. In machine work, each consumes the other. The less labour the machine “contains, the less value it gives up, the more productive it is, and the more its services approach those rendered by natural forces.”¹³³ The machine only transfers value created through the interplay of what was once concrete human activity and nature, which is now in its manipulated form (electricity, raw materials etc.).

4.2.1. *The Tender of the Machine*

As tender of the machine, the worker compiles vast amounts of past labour. The values of the raw materials and technologies used to create new commodities are instilled with value from previous labour. The worker then amasses these values while adding his or her own to a new commodity. Past labour created the raw materials used in production. It is stored in the raw materials as a value and becomes something like a standing-reserve. Capitalist machine technology requires it to be ready to be called on. The value created through previous production must always be available and in this way comprises the system’s chain of production. Speaking of the chain of production, Marx writes that, “[c]apital is dead labour which vampire-like sucks up living labour, and lives the more, the more labour it sucks.”¹³⁴ He goes further saying that the mechanical instruments of labour “confront the worker during the labour process in the shape of capital, dead labour, which dominates and soaks up living labour-power,”¹³⁵ ready to be unlocked and transferred at any time. At less-developed points in the capitalist labour process, labour (in the present) stood in a ratio to past labour (embodied in materials) that was conceivable. The same can be said about the type of past labour being transferred into the commodity. As an example, before the shift to machine industry, a comparable number of miners would extract the ore as the workers who would convert it into a final product. The introduction of machine technology into the labour process,

¹³³ Ibid., 512.

¹³⁴ Ibid., 342.

¹³⁵ Ibid., 548.

however, changes the relationship between past labour and present labour. The chain of relations and labourers that produced a commodity becomes untraceable. Machine and worker as machine is a deprivation of “work itself from all content.”¹³⁶ Past workers and future workers are mechanisms of the same production.

The materials fed into the machine are already lacking any character of past labour embodied in them because it is abstracted in machine production. Marx observes:

[T]he special skill of each individual machine-operator, who has now been deprived of all significance, vanishes as an infinitesimal quantity in the face of science, the gigantic natural forces, and the mass of social labour embodied in the system of machinery.¹³⁷

Here, the production of surplus-value is done only by harnessing the energies of human labour once again contingent on its abstraction. The quantity and source of past labour embodied in the materials confront the machine operator in a relation that is essentially inconceivable. The human energy stored in a machine acts as standing-reserve ready to create capital. Heidegger warns precisely that:

As soon as what is unconcealed no longer concerns man even as object, but does so, rather, exclusively as standing-reserve, and man in the midst of objectlessness is nothing but the orderer of the standing reserve... then he comes to the point where he himself will be taken as a standing reserve.¹³⁸

The past labour embodied in machine production is transferred to the final value of a commodity in exchange. An oblique connection between workers alienates the machine operator from any reminiscence of concrete purpose. When the labourer is connected to the machine in this manner and is put into this relationship with the standing-reserve of dead labour, being itself is rendered as a standing-reserve. Labourer as standing-reserve is forgetting the true nature of being, or a forgetting of the possibilities of his or her position in a world of meaningful relations. For Heidegger, this process characterizes our current epoch; “only when the coming to presence of technology lights up as Enframing, do we discern how, in the ordering of standing-reserve, the truth of being remains denied to the

¹³⁶ Ibid.

¹³⁷ Ibid., 549.

¹³⁸ Heidegger, “The Question Concerning Technology,” 27.

world.”¹³⁹ The ordering of the standing reserve is not merely something that comes to presence in the use of technology. For Heidegger, it is in its very essence. Where “the truth of Being remains denied to the world”, it is not merely in the process of production, but it is characteristic of our current epoch and becomes integrated into the way in which we live in that epoch.

Modern industrial production integrates this denial of being into the process of production. The operator of the machine has no choice but to order the past labour embodied in means of production as a resource to be manipulated. What is produced, in turn, is a commodity whose representation as an exchange value reflects this forgetting of being. The abstract and alienated relation with being found in production is masked even further by the product itself.

4.3. Reduction: The “Thing” and the Commodity (use/need/exchange)

Abstract labour falls in line with a need for abstracted materials. More broadly thought, the two become resources. Their quantifiable quality allows them fit the planning of the dominant system. What makes them so is that they lose what Heidegger calls a thing’s “objectness,” or concrete quality. It is in this notion that a further connection between Marx’s commodity and Heidegger’s loss of “the thing” can be found. This connection is central to the application of Marx’s capitalist production system to the notion of world, because it reflects the attempts at control over it. The system of meanings that arise from physical things and practical interactions is reduced to specific predetermined outcomes. Such as the creation of value in an interlinked system of exchange or the extraction of energy to be widely distributed.

Heidegger believes that things always point us to other things in the world. Things are used and discovered in that usage and then connected to other things that one can use. He believes that a totality of useful things can be explicated from an

¹³⁹ Heidegger, “The Turning,” 48.

individual useful thing.¹⁴⁰ Work itself bears this “totality of references in which useful things are encountered”¹⁴¹ because practical interaction with things reveals their use and realizes their meaning. Marx has a similar account of use. He notes, “labour, as the creator of use values, as useful labour... is an eternal natural necessity which mediates the metabolism between man and nature, and therefore human life itself,”¹⁴² where the thing being used does not only point the human to other things but rather to his or her very existence.

Through its mechanization, the production of surplus-value is only concerned with the production of exchange value. Exchange-value is measured quantitatively through its relation to other exchange-values. Thus, the usefulness of the commodity, the result of labour that determines the metabolism between the human and nature, or the thing produced that points us to the totality of being, are disregarded in the process of production. That is not to say that the commodity loses its use-value, but only that in production, the use of the commodity is not regarded as having any importance, it is viewed as an abstracted means to realizing exchange.

The loss of the concreteness character of use is precisely the loss of the thing. Heidegger notes, “the ordering belonging to Enframing sets itself above the thing, leaves it, as thing, unsafeguarded, truthless. In this way Enframing disguises the nearness of the world that nears the thing.”¹⁴³ The ordering of the labour process around the production of surplus-value disguises the way in which things appear to us in the world. Our relationship with the being of things is one that is only quantitative and not based on their use or the act of using. With this in mind, the totality of reference contained in all things points us back to the production process in which labour is a commodity and the human is a component in the system. The extent to which this abstract ontological condition prevails is evident in the first sentence of *Capital*, where Marx asserts that, “The wealth of societies in which the capitalist mode of production prevails appears as

¹⁴⁰ Heidegger, *Being and Time*, 68.

¹⁴¹ *Ibid.*, 69.

¹⁴² Marx, *Capital*, 133.

¹⁴³ Heidegger, “The Turning,” 46.

an 'immense collection of commodities',"¹⁴⁴ as this appearance puts the commodity in a central position in the capitalist order that refers back to the process of production and not to meanings that are enacted in the world. A commodity, which in Heidegger's world could be viewed as an external thing that must be related to, can only be explained through the capitalist mode of production because it contains no concrete relationship to the labour that produced it.

In modern industry, the commodity has gone "from being the individual product of an independent craftsman [to the] social product of a union of craftsmen, each of whom performs one, and only one, of the constituent partial operations,"¹⁴⁵ a mode of production in which the creation of a commodity is almost entirely done by machine:

As soon as a machine executes, without man's help, all the movements required to elaborate the raw material, and needs only supplementary assistance from the worker, we have an automatic system of machinery, capable of constant improvement in its details.¹⁴⁶

Practical interaction in the means of production creates a relation to being, and things in the world, that is only reflective of the system that mediates it. Heidegger understands that under the rule of Enframing, "the constellation of Being is the denial of world, in the form of injurious neglect of the thing."¹⁴⁷ It is not a far stretch to see the mass production of commodities that results from the increased productivity of labour, something that Marx believes produces a notion of neglect *built into* the commodity through the abstraction of labour. In this situation, the commodity loses any distinct character because the labour that produced it is so abstracted. Capitalist production, with its driving force of surplus-value, produces things that only point us back to the world as a resource. The very structure of the commodity embodies this abstract view of the things in the world and our practical relation to them. Where the thing is neglected, the world is disguised.

¹⁴⁴ Marx, *Capital*, 125.

¹⁴⁵ *Ibid.*, 457.

¹⁴⁶ *Ibid.*, 503.

¹⁴⁷ Heidegger, "The Turning," 49.

The reduction of all things to commodity value-relations requires an absolute rule over labour forms themselves. The very structure of capitalism is conducive to a type of ordering and can be expanded outward into a total ordering of the world. For Marx, as we well know, capitalist production begets alienation which is followed by class struggle. This is consistent with Heidegger's concept of the modernity as being ruled by a looking *at* the world, which makes it impossible to see our concrete identity within it. This concreteness is defined by inter-being relations, which are "interlocked among themselves as a primordial totality."¹⁴⁸ This is specific to *Dasein*, as it "always means that a context of things at hand is already essentially discovered with its being. In that it *is*, *Dasein* has always already referred itself to an encounter with a *world*."¹⁴⁹ But since Enframing rules this specific historical epoch, there is an integration of this abstraction into the very conception of ontology itself. It becomes a historical dispensation of being that blinds all involved to possibilities that lie outside of it. This is particularly evident in the way in which beings interact with other beings in the capitalist mode of production. When the worker cooperates in a planned way with other workers, "he develops the capabilities of his species"¹⁵⁰ but since this plan only coincides with the valorization of capital, there is a masking of these true relations and thus his or her self-realization. This can easily be paralleled with the state of being in which humankind's relation to being is forgotten. These conceptions share a loss of what ontologically defines human action. That is, its concrete character.

Most crucial to note is that this separation from being is integrated into the very notion of value as it manifests itself in capitalism. The development of technology for the purpose of the valorization of capital incorporates this into the machinery and technology of production itself. As Marx argues,

[Modern industry] revolutionizes the division of labour within society, and incessantly throws masses of capital and workers from one branch of industry to another. Thus large-scale industry, by its very nature, necessitates variations of labour, fluidity of functions, and mobility of the worker in all directions.¹⁵¹

¹⁴⁸ Heidegger, *Being and Time*, 85.

¹⁴⁹ *Ibid.*, 86.

¹⁵⁰ Marx, *Capital*, 447.

¹⁵¹ *Ibid.*, 617.

Where the worker is forced to put his or her energies into the machine, with the only goal being mass-production, the interaction between humankind and nature becomes irrelevant. An antagonistic view is inherent in every machine. The more abstracted the labour process, the greater the productive potential of the worker. The production of external things once grounded humans in the world. Now, the demands that machine production puts on the production process integrate the view that all is a resource, meant to coincide with human planning, between the worker and the product. Practical activity becomes purely alienable. The production process, with its need to produce exorbitant amounts, keeps this quantifiable mode of being in mind, as an absolute necessity to produce the surplus that capital demands.

The reduction of all things and action to abstract quantities is a form of representation in techno-scientific modernity. In capitalism quantification is the result of a structuring need to measure value. Commodity relations underscore the very essence of capitalism because they are extended to all relations in society. I have shown how modern representation in Heidegger's critique of technology can be brought into direct comparison with the logic of capital that Marx describes. Human praxis, central to both thinkers, must take a form derived from this very logic. The result of both critiques is a devastating worldview. In what follows I will take these explicit connections between modern representation (Heidegger) and capitalism (Marx) and show how they are both parts of a singular system. We could classify this system as techno-scientific capitalism. All meaning, derived from participation within this system derives from a self-enclosed understanding of what exists. It is a totally self-referencing world. In any system there is an excess - something that sits outside of its rationale. I argue that the system, which comprises both techno-science and capitalism, cannot account for the concrete character of human action or things. However, the productive relation that results from reading Heidegger and Marx together is precisely the possibility of the appropriation of the concrete as a structural factor of the system. Let us now look at how this could be so.

5. Modernity or Capitalism? The System and the Appropriation of the Concrete

As we have seen, Heidegger and Marx present similar yet distinct analyses of modern technology. Both express how technology comes to define the world within which it functions, encompassing history and the ontology of human labour. In Heidegger's view the development of technology cannot be reduced to a linear progression of history. Each technology brings forth a different stage that is conceptually distinct from its predecessors. With each stage comes a separate method of measuring what determines it as new. Historical eras are defined by the myriad of relations that arise from technological production. The technology that characterizes modernity depends on the scientific abstraction of the world into a mathematical, calculable entity. The representation that defines it is twofold: it is both integrated into machine technology, which uses it to function, and humans enact it when they use technology. The revealing that rules in this era is wholly different from the world of Aristotle. His model of making is based on the craftsman uniting the "four causes" into a completed object. The final produced object stands as a realization of the inherent potentialities realized in the process of production. The history of technological development is the history of different representations. It is unreasonable to judge one representation of the world from criteria set by another. A return to the world of Aristotle is impossible; his time was a wholly different world that cannot be recreated. An attempt to adapt the craft-based model is similarly unfeasible when considering the needs of the modern era. While Heidegger sees a danger in modern technology, it cannot be assumed that technology is a progressive force, nor a demonic one:

It would be foolish to attack technology blindly. It would be shortsighted to condemn it as the work of the devil. We depend on technical devices; they even challenge us to greater advances.¹⁵²

Technologies are meaning-giving interactions that define specific historically situated ontologies of human labour. What will rescue humanity from the ontological condition that has arisen from techno-science must be the emergence of something new. It must be a revealing of being that is appropriate for the current time.

Marx sees technology as being present in all historical stages as *the* system of measurement for each. In *The Poverty of Philosophy*, he makes this argument simply by stating, “the hand-mill gives you society with the feudal lord; the steam mill, society with the industrial capitalist.”¹⁵³ Though more thoroughly tied to the process of labour, in *Capital*, Marx again writes:

It is not what is made but how, and by what instruments of labour, that distinguishes different economic epochs. Instruments of labour not only supply the standard degree of development which human labour has attained, but they also indicate social relations within which men work.¹⁵⁴

Marx’s version of the development of technology is centered on the needs of the capitalist system.¹⁵⁵ Relative surplus-value is the form of value creation that emerges from the revolutionizing of the mode of production by alterations in the content of labour. These alterations fit within the context of systematically opposed interests that emerge within the capitalist power structure. All development under capitalism advantages one group, those who control the means of production, while subjugating another, those who must sell their labour-power. Marx reduces all social relations under capitalism to this basic class relation. Anything that exists in the capitalist system does so as either a commodity or an owner of a commodity. Marx is able to make this observation because capitalism is the system where labour is a commodity. The ontology of human labour is

¹⁵² Heidegger, *Discourse on Thinking*, 53.

¹⁵³ Karl Marx, *The Poverty of Philosophy*, (New York: International Publishers, 1963), 109.

¹⁵⁴ Marx, *Capital*, 286.

¹⁵⁵ For more on the historical development of technology in capitalism, see chapter 3 of this thesis.

therefore the basis from which capitalism can be understood. The form labour takes under capitalism sits in contrast to the trans-historical version of labour, where the human is formed historically through engaging with nature mediated by technology, to show how technology comes to define labour in specific historical form.

While technology pushes economic history forward for Marx and a specific way of being-in-the-world for Heidegger, the differences in the two positions reflect the nature of each philosopher's inquiry. Marx's key focus is the economic system and the social relations that emerge from that system. Heidegger, in his critique of modernity, examines technology as a representation of being itself. The two see something encompassing in the nature of technology; however, Marx's aim is much more specifically focused on the mode of production. Namely, the way labour is organized to meet specific outcomes. Technology is the measurement of development. Heidegger discusses the practical activity through which we have a world. Each historical period is defined by a representation of the world. The system of measurement that emerges in Heidegger's conception is on a much larger scale. As it relates to ontology, technology could bring forth new systems of measurement and thus any number of historical stages. Marx's analysis of technology is already situated within a specific stage of capitalism. Technological advancements in the mode of production, therefore, must be examined in relation to the larger system that is derived from their use. Technology is an instrument that mediates the relation between humans and nature for Marx and a "world view" that defines a historical era for Heidegger. Marx's subject is that of opposed social groups, i.e. class. Heidegger does not create such a division and focuses on human *Dasein* as a whole. His purpose is the elucidate humanity's "needed belonging to revealing,"¹⁵⁶ a process that interaction with being defines. What the human is, for Heidegger, coincides with the way in which the world is revealed. Marx aims at the liberation of the oppressed from the constraints that capitalism imposes. Once again we can see that Heidegger's project is an ontology, while Marx's work is most heavily concerned with the social phenomena.

¹⁵⁶ Heidegger, "The Question Concerning Technology," 26.

The techno-scientific world is a unity. Everything that exists is represented along the same mathematical measure. Within this framework, to calculate is to control. Capitalism, as well, represents the world as a form that aids the prevailing process of production. Things are taken as meaningful only along the lines of their contribution to the system's functioning. That is to say, the extent to which they create or express exchange value. Both modernity and capitalism are universalizing forces that are not in opposition. They dually constitute the global system. They do not determine each other but function as the two forces aimed at the goal of a totally self-referencing world, where everything refers back to its specific position within the system. In the interplay, the challenge is how one can characterize the system that encompasses all that is. In this chapter, I propose that only by using Heidegger and Marx in a certain kind of way can we understand techno-scientific capitalism. I will articulate a point of view that demonstrates how their similarities can be used to characterize the global system. The differences between these thinkers are not my concern. I ask in what way must we attempt to understand the relation between modernity and capitalism. The answer lies in the unification of techno-science and capitalism as expressing the same problem. The two forces join together into a united system based on the prevalence of abstraction. To conclude, I suggest the ways in which Heidegger's free relation to technology could manifest itself as a re-appropriation of the concrete.

5.1. The System, or Techno-Scientific Capitalism

The project of *Capital*, Vol. 1 is an attempt to ground all aspects of capitalism as originating in the labour process. Part one entitled, "Commodities and Money" contains the famous section on commodity fetishism. Put briefly, this section explains how under capitalism social relations between producers are taken as material relations between commodities. Labour is the origin of wealth in capitalist society. It produces commodities, which are the form that wealth takes. The fetishism of commodities creates a systemic feature of capitalism where the form that wealth takes (the commodity) mystifies the process that creates it (labour). To those living within it, capitalism appears as an exchange of commodities, Part 1 of *Capital*, and not a system of production, explained in Part 3 of *Capital*. Part 2 of *Capital* presupposes the exchange of labour on the market and provides the key linkage between the fetishism of the commodity form as the

appearance exchange takes (Part 1) and the mode of production (Part 3). The fact that the labourer must sell his or her labour on the market also explains the emergence of class in capitalism.¹⁵⁷

[L]abour-power can appear in the market as a commodity only if, and in so far as, its possessor, the individual whose labour-power it is, offers it for sale and sells it as a commodity... [H]e must be the free proprietor of his own labour-capacity, hence of his person.¹⁵⁸

The relation between labour's form as the origin of wealth in capitalist society to the appearance that wealth takes in capitalism is the first hint at the systemic character of capitalism. The origin that produces wealth is integrated into the system as an internal component. Labour is the means that allows for the capitalist system to be articulated as such.

Modern capitalism can be described as both a system and a form of representation. It is a system because it aims to be self-regulating and self-enclosed. This aspect is more adequately characterized by the reduction of commodities, of which land and labour are most critical, to general equivalents. Equivalency in capitalism is expressed as value, mediated by exchange on the market. A value of any given commodity has a value only insofar as it refers to all other commodities that appear on the market. In the system where labour instils the commodity with this value there is always a reference to the past and future elements that went into production. The past dimensions are all the previous commodities whose value was previously determined at the point of exchange. The future aspect comes into play when the market-ready commodity's value is measured against all other commodities that exist at a given time. The self-enclosed system that regulates value therefore, extends beyond the labour that rendered it an exchange value and into a centrally organized system with a united goal. That goal is, of course, the creation of wealth.

¹⁵⁷ The basic understanding of the format relation between the various parts of *Capital*, Vol. 1 was explained to me by Professor Ian Angus. He was also kind enough to share an unpublished work on the teleology of Marx's thought. For more on this see, Ian Angus, "Ideology as Praxis: The Teleology of Marx's Thought," Unpublished Paper (Amherst, MA., 1992), 13.

¹⁵⁸ Marx, *Capital*, 271.

Wealth appears as “an immense collection of commodities”¹⁵⁹ which can be defined as such because of its relation to all other commodities and therefore all that is regulated by the system. Wealth appears then as an inherent quality of the system that regulates it. The origin of wealth, labour that instils all value, is arranged as if it is a quality of the system of exchange that mediates it. It is this occlusion of the origin of value that creates a self-enclosed system.¹⁶⁰

There is a parallel between the self-enclosed character of the economic system and the Cartesian logic of modernity as a representation of the world. In Heidegger’s own words, to represent in modernity “means to bring what is present at hand [*das Vorhandene*] before oneself as something standing over against, to relate it to oneself, to the one representing it, and to force it back into this relationship to oneself as the normative realm.”¹⁶¹ Modernity is a representation of the world as an object of scientific knowledge. Science is a representation of experiences. It is a mode of explaining something prior. In modernity all knowledge about the world is derived from a subjective standpoint separate from it. The position allows for the human subject to fashion any number of representations. Science itself is a systematic attempt to understand through the representation of experience. Heidegger most adamantly blames Descartes for dawning this age of thinking, but it is present in the whole history of metaphysics culminating in Nietzsche. In “The Age of the World Picture,” the problem as Heidegger sees it is defined as follows:

Man becomes the being upon which all that is, is grounded as regards the manner of its Being and its truth. Man becomes the relational center of that which is as such. But this is possible only when the comprehension of what is as a whole changes.¹⁶²

The exertion of concept amounts to the understanding of what is along one dominant line of inquiry. In modernity this is the techno-scientific one. Nature, abstracted along mathematical and analytic lines, can be integrated into the system only when it conforms

¹⁵⁹ Ibid., 125.

¹⁶⁰ Angus, *A Border Within*, 186.

¹⁶¹ Heidegger, “Age of the World Picture,” 131.

¹⁶² Ibid., 128.

to human planning. Human planning can account for a form of measurement that is its own creation. Any concrete character must be levelled and nature becomes a calculable entity that fulfils a specific need of the system. It becomes a standing-reserve.

Calculation forms the basis for control. The modern age is one with a “world view,” which runs directly counter to the care structure of practical activity forming a world as presented in *Being and Time*. In this era, the knowing subject looks at the world and it is from this position that all knowledge about the world originates. Heidegger emphasizes that the very existence of “the phrase ‘world view’ asserts itself as the name of the position of man in the midst of all that is, is proof of how decisively the world became picture as soon as man brought his life as *subjectum* into precedence over other centers of relationship.”¹⁶³ This subjective position is inclusive of origin because it implies that “whatever is, is considered to be in being only to the degree and extent that it is taken into and referred back to life.”¹⁶⁴ In other words, what exists is understood only to the extent that it can be put back into the dominant conceptual framework as a representation that affirms that framework. Thus, the world can be arranged as if it were an objective order since knowledge of the world is removed from participation in it. This practice is both self-enclosed and self-regulating. To see the world as its modern representation “does not mean only that what is, is set before us, is represented to us, in general, but that what is stands before us - in all that belongs to it and all that stands together in it- as a system.”¹⁶⁵

The representation of the world in modernity and in capitalism is a unity. These representations are crucial elements in the continuation of the systemic character of each. Representations allow the system to close itself off because they orient everything that exists towards their specific usage for the system. The meaning of something only has meaning insofar as it has a function in the system. Capitalism and modernity meet at the notion of a system. Industrial capitalism monopolizes all notions of value into one form while the technology, used in production, abstracts nature so that it is always ready to be usable by the system. Within their functioning as a system both include an origin.

¹⁶³ Ibid., 134.

¹⁶⁴ Ibid.

¹⁶⁵ Ibid., 129.

The origin of value is measured by the same principle as the value that results. All factors of production, knowledge and their respective representations are derived from their specific manifestations within the system. Again, the unity can be said to be the reduction to equivalents.¹⁶⁶ Fusion under a united system is characteristic of modernity itself. Though there is an undeniable parallel between these systemic critiques, Heidegger and Marx cannot fully be seen as the same on this issue. Though the system is intertwined they rather reflect two stages of the critique of industrialized society. The origin that has been integrated into the system for Marx is the process of labour from which all commodities and exchange value originates. Labour is taken only as abstracted where the reduction of concrete human defining processes of labour cannot be acknowledged as having a qualitative difference. All labour is taken quantitatively, reduced to production value. In each commodity “the useful labour contained in them is qualitatively different in each case,”¹⁶⁷ but is extinguished when the commodity is exchanged. In *Capital*, Marx sets up this problematic as such:

If we make abstraction from its use-value, we abstract also from the material constituents and forms which make it a use-value. It is no longer a table, a house, a piece of yarn, or any other useful thing. All the sensuous characteristics are extinguished.¹⁶⁸

Recall that capitalism is the economic system where labour is a commodity. We cannot, therefore, account for the specific usefulness of a given thing but only its quantity as abstracted labour power. The tendency to squash the concrete differences of labour, which defines a human being historically, is a requirement of the system. To this extent the system is unable to integrate the concrete into its functioning. In other words, the system, in order to remain a system, must always abstract from the concrete.¹⁶⁹ As a self-enclosed system there must always be something excluded. Angus characterizes this as the excess. He writes that in any system,

[t]here is always an excess. This excess is the productive origin that enables any system to be articulated. *The very idea of a system consists*

¹⁶⁶ Angus, *A Border Within*, 187.

¹⁶⁷ Marx, *Capital*, 133.

¹⁶⁸ *Ibid.*, 128.

¹⁶⁹ Angus, *A Border Within*, 189-190.

*in turning this productive origin inside and representing it as simply another factor within the system.*¹⁷⁰

In the case of the system of techno-scientific capitalism the excess is the integration of labour in its concrete form and the view of nature beyond its productive potential.

Heidegger is concerned with the experience of the human subject as existing and deriving meaning from without. The system, as a unity, excludes all ways of being-in-the-world that aren't aimed towards its legitimation as a system. This is the danger of Enframing that is a specific historical manifestation of the ontology of the human being. The question becomes to what extent could this system integrate alternate modes of being for Heidegger, and the concrete character of labour and things for Marx. The answer could lie in technology for three reasons. First, technology is the mediation between human practical activity and nature. Second, it is not summed up by the physical transformations of the world, but is also deeply involved in the representation of the world. Third, technological operations themselves integrate an understanding of the world into their functioning. They implore their own logic, first in use and second in that they are ways of revealing. The relation to nature that arises from use are essential elements for the system's functioning. In order to be a participant in the system the human being must align their actions to coincide with the principles of general equivalency. This perpetuates the singular form of organization. In what follows I will now look to Heidegger's essay, "The Turning," and finally to a rethinking of the free relation to technology to show how the concrete could play a role in the shaping of the system. Here, I am pursuing the question of the excess.

5.2. Concrete Activity and the Turning in Thought

The proposed approaches of Heidegger and Marx to the freeing of the constraints imposed by the system are quite different. Stated briefly, the motive for change for Marx is the emancipation of the proletarian class. This class of people is born from the basic relation that emerges when labour is sold as a commodity on the

¹⁷⁰ Ibid., 188.

market.¹⁷¹ For Heidegger it is the escape from a specific ontological condition. While these motives are quite different, both share the contrasting of a foundational ontology of labour with the specific forms that it takes under the prevailing system. These ontologies of labour privilege concrete practical activity as the mode of engaging with the world. Their careful analyses of modernity and capitalism lead both to see the emancipation of those within the system in concrete praxis. For the sake of clarity, I understand thought to be one form of concrete activity. Thinking is just as intimately tied to production as hammering a hammer. As early as 1845 Marx had already understood the self-realization to be intimately tied to production. In *The German Ideology*, he explained that on a most primary level “men can be distinguished from animals by consciousness.”¹⁷² When one begins “to produce their means of substance,” they also produce “their actual material life.”¹⁷³ In its trans-historical form labour is something the individual controls. Quoting the essential passage from *Capital*, Vol. 1 once again, labour is “a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature.”¹⁷⁴ The exchange bonds humans and nature. Consequently, what humans are coincides with what we do. As Marx explains, “at the end of every labour process, a result emerges which had already been conceived by the worker at the beginning, hence already existed ideally.”¹⁷⁵ In the trans-historical form of the labour process the individual’s unique mode of engaging with the world creates his or her material existence. Marx is describing self-conscious realization created through conscious activity. The material existence that emerges is, ultimately, the way the human is constructed historically. In *The German Ideology*, the division of labour is based on notion that the satisfaction of needs is also the creation of new needs. The division of labour is then altered throughout history as part of the socio-economic system. The development of capitalist technology is first built

¹⁷¹ The implications of the commodity structure of labour for history and philosophy has been explored by Georg Luckács. See Georg Luckács *History and Class Consciousness: Studies in Marxist Dialectics*, trans. Rodney Livingstone (Cambridge: The MIT Press, 1971).

¹⁷² Marx and Engels, “The German Ideology,” 150.

¹⁷³ Ibid.

¹⁷⁴ Marx, *Capital*, 283.

¹⁷⁵ Ibid., 284.

off of this social basis.¹⁷⁶ It follows that the emancipation of humanity from capitalist pressures would, presumably, involve a transformed relationship to technology.

Heidegger picks up on a notion of self-realization through creation, when he notes that, “even the power plant with its turbines and generators is a man-made means to an end established by man.”¹⁷⁷ However, the human being is not truly realized in the modern era. After all, in any historical era “man does not have control over unconcealment itself, in which at any given time the real shows itself or withdrawals.”¹⁷⁸ For Heidegger, an ontological dispensation is derived from direct participation with nature. It is only when other possibilities are opened up “that man might be admitted more and sooner and ever more primally to the essence of that which is unconcealed and to its unconcealment, in order that he might experience his essence,” which derives itself from, “his needed belonging to revealing.”¹⁷⁹ An ontological condition is a derivative relation to that which can be unconcealed. In other words, one’s own being comes from a relationship to other being and the treatment thereof.

The concept of a repressive system is readily apparent in both Marx and Heidegger’s works. For Marx, the constraints of capitalism are evident in his critique of the political economy and the division of labour. He establishes a framework revolving around the concept that what humans are “coincides with their production, both with *what* they produce and *how* they produce.”¹⁸⁰ This claim links the individual to the prevailing mode of production. As he explains, “the nature of the individual ... depends on the material conditions determining their production.”¹⁸¹ The individual is left to attempt to realize him or herself through the division of labour, something that is not in their control. Marx is quick to note that under a system that one does not control, labour must conform to the system itself. In order to sell his or her labour as a commodity, the worker must acknowledge that his or her labour is abstract. Marx warns that “as soon as the distribution of labour comes into being,” “man’s own deed becomes an alien

¹⁷⁶ See Chapter 3 of this thesis.

¹⁷⁷ Heidegger, “The Question Concerning Technology,” 5.

¹⁷⁸ *Ibid.*, 18.

¹⁷⁹ *Ibid.*, 26.

¹⁸⁰ Marx and Engels, “The German Ideology,” 150.

¹⁸¹ *Ibid.*

power opposed to him, which enslaves him instead of being controlled by him.”¹⁸² This is of grave consequence for Marx as the human is alienated from his or her concrete activity by a process that is under his or her control.

For Heidegger, the danger of this specific ontological condition lies in the process of Enframing. Enframing is the modern manifestation of being in which the world is ordered in a way that masks other possible ways of revealing. The essence of modern technological revealing strives to bring everything into line as a resource that can be readily used to create other resources. The problem is this system constantly repeats itself until modern technology has rendered the whole world and everything in it a resource ready to be depleted. This notion “holds complete sway over man,” as it blinds him/her to other possibilities of living in the world. He illustrates this point by stating that, “*nowhere does man today any longer encounter himself, i.e., his essence.*”¹⁸³ This suggests an inverted vision of self-realization. People can only realize themselves when they let the world reveal itself as it actually is, not as they challenge it to be.

Concrete practical activity is intimately entwined with the different structures upon which life is determined. Marx’s human is defined historically in a dialectical manner. For Heidegger, being is present in the interaction with other being. In “developing their material production and their material intercourse” humans alter “their thinking and the products of their thinking.”¹⁸⁴ This notion holds true to both, as they call for emancipation of human action from the specific historical and ontological form that it has taken. Where Marx is more concerned with a call to action, Heidegger is concerned with an opening to the possibilities of being. Marx’s solution to the problem begins with the understanding that “life is not determined by consciousness but consciousness by life.”¹⁸⁵

Marx writes that “the transformation, through the division of labour, or personal powers (relationships) into material powers... can only be abolished by the individuals again subjecting these material powers to themselves and abolishing the division of

¹⁸² Ibid., 160.

¹⁸³ Heidegger, “The Question Concerning Technology,” 27.

¹⁸⁴ Marx and Engels, “The German Ideology,” 155.

¹⁸⁵ Ibid.

labour.”¹⁸⁶ While Heidegger does not suggest the same type of response that Marx does, he does recognize that “where the danger is a danger, the saving power is thriving also.”¹⁸⁷ Thinking about the essence of technology allows us to maybe escape it: “through thinking, we first learn to dwell in the realm in which there comes to pass the restorative surmounting of destining of Being, the surmounting of Enframing.”¹⁸⁸ Heidegger’s “Turning,” occurs in the realm of thought.

A turning coincides with philosophy’s goal of understanding not only what is, but how what is comes into being. It is an exploration of specific parameters of life that can be drawn into universals. To accomplish this feat philosophy must look to what is new. The motive force of history is the changing of humanity’s relations with being. These manifest themselves differently at different times. What defines an era is thus not the events that occur within that era, but the world that emerges in various relations. Heidegger clarifies, “we locate history in the realm of happening, instead of thinking history in accordance with its essential origin from out of destining,” where, “Being itself takes place so as to adapt itself... and, accordingly changes in the manner of a destining.”¹⁸⁹ It is for this reason that humanity cannot simply will itself out of the danger of Enframing. The essence of technology for Heidegger is Being itself. The form that that Being takes in the modern era is that of the Enframing. Any attempt to overcome technology through technological means would reinforce the same problem. The turning is a change in form:

The surmounting of destining of Being - here and now, the surmounting of Enframing - each time comes to pass out of the arrival of another destining, a destining that does not allow itself either to be logically and historically predicted or to be metaphysically construed as a sequence belonging to a process of history.¹⁹⁰

Any attempt to drastically change the future falls into the trap of Enframing. This is not to say that change cannot happen, but Heidegger’s diagnosis is clearly that things are too

¹⁸⁶ Ibid., 197.

¹⁸⁷ Heidegger, “The Turning,” 42.

¹⁸⁸ Ibid., 41.

¹⁸⁹ Ibid., 38.

¹⁹⁰ Ibid., 39.

tied up in the Enframing that attempts at change will only lead to the prolongation of this ontological condition.

Change must be located in the realm of thought. It is in thought that “we first learn to dwell in the realm in which there comes to pass the restorative surmounting of the destining of Being, the surmounting of Enframing.”¹⁹¹ The restorative aspect of this surmounting is the return to the ontological condition of humankind as the ones who understand Being. To accomplish this, technology must be rethought. Thinking what technology actually is presents the possibility of surmounting the modern condition it represents. This calls for a new relationship to technology because its significance is again posed at the level of meaning. The logic inherent in modern industrial technology makes it so that the danger of Enframing is in use. The surmounting of the Enframing is a recuperation not through willing, but instead by a type of healing. Any attempt at healing this relation is grounded in an understanding of technology. Since, for Heidegger, Being is the essence of technology¹⁹² the new relationship has to take place on an ontological level between humans and nature, where technology is the mediation between the two. This is the key to a new historical era. The “coming to presence of technology will be surmounted [*vermunden*] in a way that restores it to its yet concealed truth.”¹⁹³ Heidegger uses the word “truth” to express the way in which Being manifests itself separate from the representations that have been imposed on it. It is in the interplay between revealing and concealing. In the era of Enframing, truth is concealed by technological practices as they transform meaning. Heidegger’s insight always grows out of reconciliation of humans being to the being-of-the-world.

How could this transformed relation to technology manifest itself? It is here that the revolutionary aspect of Marx’s thought can be brought into question. Must revolution utilize the specific form of technology that defines industrial capitalism? It seems unlikely that the form revolution could take would be so strictly defined. Marx, like Heidegger, explains that the future will remain unpredictable. His notion of history is tied to technological development and the social relations that emerge from it. He does not,

¹⁹¹ Ibid., 41.

¹⁹² Ibid., 38.

¹⁹³ Ibid.

however, hold technology as simply a positive or negative force. Technology holds potential. The real problem of capitalism is that it reduces all that exists to a quantifiable form. This quantifiable form is derived from its own internal logic. The tangibility of Marx's thought can be used to make Heidegger's systemic critique more concrete. It is characteristic of industrial production to make a world of goods that are quantifiably the same. Things can be substituted for other things. For Marx, this is the entire world of commodities and for Heidegger this is the neglect of the thing. Heidegger's turning calls for the concrete, specific thing [*das Ding*]. To see the distinct character of what exists provides an opening to integrate what is beyond the form it derives from within the system. The opening integrates both the commodity, most essential of which is labour, and the immense diversity that allows for the human to interact with what lies before them. Technology and praxis become united. Humanity's role in the modern representation of Enframing is the notion of needs being defined from within their role in the system. The production of needs would no longer take the form of abstraction that it does in modernity and capitalism where everything is reduced to a general equivalent and toward a realm of possibility that acknowledges the concrete character of practical activity. Within this framework, the system could derive meaning from activity within it, instead of defining those needs from an internal logic. Revolution must first take place in the realm of thought. Thinking allows humans to dwell in the world in a way that will start to surmount the constraints that define it. I pose two questions, "could Being take the form of Revolution?" and "to what extent would that be the coming of the new historical era?"

5.3. Human Participation as a Mode of Being.

What follows is the point of convergence to which my teleological interpretation of Heidegger and Marx has been working towards. Both articulate compelling critiques of similar phenomena, but when taken alone their respective works are inadequate to fully describe the system at hand. My focus is on the idea of a completed theory. Heidegger and Marx can be read in dialogue to understand the techno-scientific capitalist system even though their theories diverge in many respects. Taken together, I have shown that capitalism and modernity are part of the same system that aims at creating a totally self-referencing world. I have introduced the notion of the excess, which I have identified as

concrete practical activity that cannot be integrated into the logic of the system. My interpretation of the two has led me to the idea of human participation as a mode of being. This notion is meant to overcome the alleged opposition between a “free relation to technology” (Heidegger) and the revolutionary spirit (Marx). By adding Marx to Heidegger, I understand Being as activity. Participation as a form of doing is not technical. We can understand *technical* to mean oriented to a specific goal (i.e. the satisfaction of the system’s needs). In contrast, *participation* comes to mean something like oriented to the world (in Heidegger’s sense of the term) and not to the system. Revolution might well have the meaning of participation positioned towards world.

The system has no room to account for the distinct differences between actions or things. Heidegger’s Enframing characterizes a world where everything is an object of technical manipulation. The form of measurement used to represent the world is derived from an internal logic generated from within the system. The view of nature as resource, is nature considered only to the degree that it can be brought under a self-enclosed system and serve a function within it. It becomes a component of the system, which assigns it meaning. The one-sidedness of the modern position can be contrasted with Heidegger’s foundational ontology of worldliness where meaning arises from the multitude of possible relations between forms of being. One such relation is the use of technology. Further explicated, the use of technology can be thought as a practical relation that reveals a world. This becomes a problem in modernity and capitalism since only one type of technical use can be registered by the system. It is also a problem of representation because technological efficiency becomes *the form* of representation in modernity. In Heidegger’s view, things are considered abstractly, only to the extent that affirms this techno-scientific understanding of what is.

Marx’s version of the same thing is the commodity form where its relation to the world of commodities and, thus, a form of logic internal to the system itself measures value. Value is measured by the same calculus as the abstracted world as all things become commodities understood as the aggregate of what exists. This logic includes both origin and future aspects. Within capitalism everything functions as a process. The system is always in motion. When processes such as labour stop value, the form of measurement, also ceases to exist. All wage labour under capitalism preserves and instils value, which is mediated by the market. Labour is considered only to the extent

that it serves this one function. It is abstracted as pure labour-power and measured as such. I have argued above that the problem of abstraction in capitalism centers around the notion of value. The capitalist system does not integrate the concrete because there is no sufficient method of measurement for it. Value in capitalist society is *only* registered through exchange. The general form of equivalency cannot account for an alternative version of value, such as a measurement based on the qualitative aspect of things, because it derives this equivalency from all commodities as the aggregate of all value. More succinctly stated, capitalism cannot integrate a notion of value that is not exchange value because things could not be measured in direct relation to one another. The reason that a book can be sold at \$25 is the result of a comparable form of measurement that reduces the concrete difference between things to a quantitative difference. It is precisely this concrete difference that accounts for the diversity of human needs. In Heideggerian terms, concrete difference is what opens up worlds through the myriad of relations that arise from the interaction with being. This structuring around value in capitalism is an output of the system. It occurs at the point of exchange. Concrete difference as input into the system is a problem of measurement.

Modernity and capitalism are dually structured around outcome. As Heidegger tells us, “[E]xpediting is always itself directed from the beginning...towards driving on to the maximum yield at minimum expense.”¹⁹⁴ This is exactly the same rationale that organizes labour in capitalist society. Modern technology’s goal, the reason it takes all nature as resource, is efficiency. That is the maximum optimization of what is fed into the system at the minimum expense to the system. The meaning of what exists is also structured around this larger project. In Heidegger’s most prolific example the Rhine River, once a source of life for those living around it, is transformed into a hydroelectric plant. This represents a change in the meaning of the river, which now supplies energy to wherever it is required by the system.¹⁹⁵ The transformation at the level of meaning is a shift towards output. As a being, the Rhine is no longer open to the multitude of relations through which humans can form a world through their interaction. It is defined as one thing: a power station. Heidegger claims that the transformation at the level of

¹⁹⁴ Heidegger, “The Question Concerning Technology,” 15.

¹⁹⁵ *Ibid.*, 16.

meaning is not simply human doing. The world revealed as resource is part of a larger ontological dispensation of being that claims both subject and object:

The subject-object relation... reaches, for the first time, its pure 'relational,' i.e., ordering, character in which both the subject and the object are sucked up as standing-reserves.¹⁹⁶

Both subject and object are malleable because they conform to meet the demands of the system. They are demolished at the level of meaning. All are mechanisms of the same process.

The bias toward outcome in modern technology complements the same phenomenon in industrial capitalism. The capitalist who wants to valorize his or her capital shares the goal of efficiency. Beyond the honing of the division of labour in absolute surplus-value the capitalist production process creates relative surplus-value by creating technology that speeds up the value producing character of labour. The faster the worker can reproduce his or her own value the more value can be created for the capitalist. Capitalist production integrates technology only to increase the productivity of labour. More productivity equals more commodities. The outcome is always centered on the creation of value. Which, as we well know, is the system's form of quantification. Similarly, the output reproduces the system's internal logic because it includes origin as well. Modernity and capitalism are dangerously biased toward output. An output that is contingent on quantifiable abstraction. An output is a self-enclosed product of the system. In other words, it is a completed thing that represents the system from which it is derived because it fulfils a need of that system. Like the commodity, the use of an output does not register because it fits in with the general form of equivalency (for Marx) or representation that the system produces (for Heidegger). The specific character of a tree is irrelevant because it fulfils the requirement of the system a specific material, i.e. lumber, then converted into a finished commodity that has a value. Labour too is organized by the system only on the grounds of its relationship to input, the value that it takes to sustain the worker, and the output, the amount of surplus-value that the worker is able to create. The labourer who works to produce his or her material existence can

¹⁹⁶ Martin Heidegger, "Science and Reflection" in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Toronto: Harper and Row, 1977), 173.

only do so with products that are meant for exchange on the market. It is this over-determination of the forms that things take within the system that regulates the extent to which they are able to be integrated into the system.

Since the problem lies in the quantification of what is, an overcoming has to occur on a qualitative level. The outcome of the reduction of all qualitative things to quantitative values is a structuring generated by the system itself. Participation is structured by the system rather than the structure of the system rising out of participation. The system creates its own needs and satisfies them with little regard for those who must constantly adapt to fill the roles. Capitalism, which only has as its one goal the limitless valorization of capital, and techno-science, which uses nature without limit, are at the forefront of this demand. The need to measure is imposed by the dominant viewpoints of the two forces of capitalism and techno-science, on the human subject, which contains too many variables (needs) to be measured in such a way. The satisfaction of such needs would only increase the expenses of the system as a whole, which runs exactly counter to the principles of efficiency that define it. Along the same lines, the introduction of less efficient but less exploitative technology in the capitalist production process would restrain the rate of surplus value, directly counter to its goal.

At this juncture, Heidegger's "free relation" to technology could be the saving power that he calls for in his essay "The Turning." Being could take the form of revolution where revolution is the integration of concrete practises into the system. To open the system in this way the output, or a specific need of the system to be fulfilled, would cease to be the organizational factor. The concrete form of actions and things within the system would have to be considered. In other words, the needs that labour, coupled with technology, would fulfil would be in service to the participants of the system and not of the system itself. I am arguing here that Heidegger's free relation to technology is realizable only when it preserves the significance of human praxis. That is to say, preserves the significance of human action vis-à-vis being.

The system's bias toward results is held in common with the modes of willing as they arise out of metaphysics. Both adhere to the same efficiency. Willing demands that the world coincide with human planning. Humans exert themselves onto the world to create a pre-planned result. The two are evaluated on the grounds of their output, and

not what goes in to producing that output. Labour is in that it creates value but ultimately it is not until labour has created that value that it becomes a commodity. A free relation to technology, which involves a shift in perception towards technology, involves a focus on human participation as an orientation toward world and, therefore, a mode of being. If the input produces a reasonable, time-efficient output the activity that produces that output need not be so ontologically devastating. Heidegger's argument for a free relation to technology is far from a specific plan of action. He argues that seeing the modern situation as posing a specific challenge to be met is only an effect of techno-scientific thinking. He claims,

The instrumental conception of technology conditions every attempt to bring man into the right relation to technology... The will to mastery becomes the all the more urgent the more technology threatens to slip from human control.¹⁹⁷

As noted earlier, the Enframing is not a problem that can simply be solved; to do so would only propagate the problem. It is a specific historical ontology from which we must be saved. The danger being that the Enframing would render technological thought as the only form of thought. This amounts to the reduction of our understanding of Being.

A purely active revolution that would attempt to aggressively change all relations would be a technological act. This example of willing change is precisely what Heidegger wants to overcome. However, it seems entirely possible that a new ontological standpoint could respond to an altered understanding of how to use technology. The initial upheaval could be receptive to the call of being. Taking place in the realm of thought, humanity may respond to its current condition without adopting the means that produced the problem to change it. As even a cursory understanding of the ontology of labour would suggest, the form the future takes is not something changed by human planning. Ontology separates analysis from specific historical forms. It is meant to understand being on its own terms. A free relation would have to be a recuperation occurring in the realm of meaning. The knowledge that emerged would have to be accepting of the ontological condition that results from the use of technological devices.

¹⁹⁷ Heidegger, "The Question Concerning Technology," 5.

Openness to the implications of our relations to technology, and being, is not an act of willing. It is through thinking that technology could be transformed in its very meaning. The changes in meaning that Heidegger calls for could begin from an initial effort to change the technology itself by integrating the concrete difference of human actions as they arise from the use of technology. That is to say to leave behind the quantifiable measurement that is imposed on action in the modern era.

A different understanding of technology would allow us to identify certain technologies as dangerous while avoiding the technological act of willing change, all the while acknowledging the foundational aspect of worldliness. Technology requires human action. First taking place in thought, I suggest that changes to the system would have to be done through significant alterations of technology and ultimately, the social relations that emerge. Thought, as Heidegger holds, “listens,” it remains open to the possibilities of being. The foundational ontology of *Dasein* is that we are the ones who perceive Being. Human participation in the system that is kept consistent with this understanding could be a manifestation of Being. Thinking revolution as a form that Being could take would not necessarily result in the wilful effort to change the system. The openness that it calls for would instead be a freeing of constraints imposed by the system. As we have seen these constraints are based around a single form of organization. That is to say, the form that is inherent to the system itself: the reduction of all things to a general equivalent (value), labour to an abstract and technology as orderer of all. Heidegger suggests that,

We can affirm the unavoidable use of technological devices, and also deny them the right to dominate us, and so to warp, confuse, and lay waste to our nature.¹⁹⁸

We can see that technology is important, but not allow it to dominate our notion of Being. Unconstrained action within the system, grounded in a transformed relation with technology does not mean a complete abandonment of all efficiency. All this means is that efficiency would not arise from criteria set out by the system. It would instead be understood in relation to the whole world implicated in practical activity.

¹⁹⁸ Heidegger, *Discourse on Thinking*, 54.

Perceiving the system in terms of the needs of those participating in it would affectively be a “Turning” away from an internally organized structure that only considers what is internal to the system itself. Abstraction derived from a logic aimed at the satisfaction of the system’s own needs would cease to have relevance because the form of measure would exist from without. What would be measured would be the receptiveness of the system to practical interaction in all its diversity. Though there is no immediate set of steps to realizing this possibility (such would be a technological act), it is evident that this revolution would first be conceptual. The acknowledgement of the needs of participants does not run counter to the principles of efficiency that are so thoroughly integrated into capitalism and modernity. Similar criteria could still be used to judge but the focus would be on process and not result. It is the first step toward reconciliation, centered on ontology and not outcome. For humanity as being, technological use is essential. Room for spontaneity, which is definitively left out of the modernity and capitalism, may be cleared.

6. Conclusion

The previous chapters have focused on the connections between Heidegger's critique of modern representation and Marx's analysis of capitalism centered on their accounts of technology. I have competed a teleological interpretation that focuses on human participation as a mode of being. I have argued that Heidegger and Marx share a foundational ontology of labour that informs both of their critiques. The relation between humans and nature is mediated by technology. Technological interaction thus informs the dominant mode of being through which human self-understanding is constructed ontologically and historically. Techno-science becomes a form of knowledge that implies its own social formation. Emerging from the use of technology are relations of labour and the general mode of production for Marx, and an ontological dispensation that defines historical eras for Heidegger. It has been my hypothesis that the two understandings of the world create a system that encompasses all actions and things. This system can be thought of as techno-scientific capitalism, which aims towards a completely self-referencing world. Participants have no choice but to conform to a mode of being that has been predetermined by the system. Failure to do so exhibits the risk of rejection. I have proposed that participation, as an organizational factor of the system, could form the basis of potential moving beyond. A free relation to technology would spark the integration of the concrete, whereby the needs of the system's participants act as the organizational factor. In order for this to be accomplished, this relation must preserve the importance of human action. Active participation is the basis from which we have a world.

The concrete character of human action is precisely what the system does not register. Abstraction comes from the necessity to derive meaning from an internal logic - to register all that is quantitatively and therefore comparable. As an organizational factor this logic extends to all that exists rendering everything as means to producing an output

that meets the systems goals. My thesis has been that modern representation and capitalist production merge at the point of abstraction from all that exists. The abstraction that rules in modernity is the world taken as an object of techno-scientific manipulation. Techno-science attempts to represent lived experience through a calculus that requires the world to be abstracted. Being exists to the extent that its diversity can fit within this form of measurement. Within this understanding all being conforms to human planning and, as such, is reduced to resource much like nature. The Enframing that defines the modern era also puts forth a danger that humans be rendered either a resource or the system's command function. Ontologically this reduction has profound implications. All meaning is levelled to the perpetuation of the system that determines it. I argue that the escape from this condition can be located in the realm of thought. Revolutionary thinking could stand as the beginning of a new relation to technology that opens up the possibility of a new world. We have to think through technology in order to not be determined by it. In order for a new historical era that appropriates concrete action and not a reinforcement of technological modernity or capitalist abstraction a new relation to technology is essential. Our call is to go through technology into another era. The system I call for would be legitimated by participation. It must integrate an acknowledgement of the concrete diversity of human praxis, instead of participation being legitimated by the needs of the system. A structure arising from participation would be the first step toward revolution as a manifestation of being.

Placing thought as central allows for humans who construct the world in which they live to open themselves to a dispensation of being centered on their actual needs. The abstraction that rules modernity and capitalism are pervasive today. Disappointing examples of calls for change have become all too common. We long for change, but cannot articulate an alternative. I am reminded of Marx's critique of the method of understanding history from *The German Ideology*:

[T]his relation of man to nature is excluded from history and hence the antithesis of nature and history is created. The exponents of this conception of history have consequently only been able to see in history the political actions of princes and States, religions and all sorts of

theoretical struggles, and in particular in each historical epoch have had to *share the illusion of that epoch*.¹⁹⁹

We seem to continue to share an illusion. Ours is the barrier to realizing the possible. Our illusion is the idea that connection to the world can only take the form of dependence. For Marx, capitalism places labour as the center of the system of constraint. Heidegger proposes to escape modernity by shifting the relation to technology. Though their critiques are not identical, they are parallel in that in order to overcome what is, human participation is placed at the center. In the unity of representation of modernity and the system of capitalism the relation to the world can only be one of challenging. Work is arranged as a technical system and measured through value and changeability as such. What is being pushed forward needs to be considered. The free relation to technology opens the possibility of welcoming a new epoch. As Heidegger reminds us, putting ourselves in a new relationship to technology puts us in a new world. The consideration of concrete action is the understanding of practical activity through its own internal meaning. By including the excess the external constraints of the system melt away and the form our actions take are not only those of dependence.

¹⁹⁹ Marx and Engels, *The German Ideology*, 165.

References

- Angus, Ian, "Athens and Jerusalem? Philosophy and Religion in George Grant's Thought." In *The Undiscovered Country: Essays in Canadian Intellectual Culture*, 46-79. Athabasca: Athabasca University Press, 2013.
- . *A Border Within: National Identity, Cultural Plurality, and Wilderness*. Montreal: McGill-Queen's University Press, 1997.
- . "Ideology as Praxis: The Teleology of Marx's Thought." Unpublished Paper. Amherst, MA., 1992.
- . *Love The Questions: University Education and Enlightenment*. Semaphore Series. Winnipeg: Arbeiter Ring Pub, 2009.
- . "Marx's Ontology of Labour: The Natural Fecundity of Surplus Productivity." Unpublished Paper. Simon Fraser University, 2013.
- Axelos, Kōstas. *Alienation, Praxis, and Technē in the Thought of Karl Marx*. Translated by Ronald Bruzina. Austin: University of Texas Press, 1976.
- Dreyfus, Hubert. "Heidegger on Gaining a Free Relation to Technology," in *Technology and the Politics of Knowledge*. Edited by Andrew Feenberg and Alastair Hannay. Bloomington: Indiana University Press, 1995. 97-107.
- Feenberg, Andrew, *Heidegger and Marcuse: The Catastrophe and Redemption of History*. New York: Routledge, 2005.
- Feenberg, Andrew, *Lukács, Marx, and the Sources of Critical Theory*. New Jersey: Rowman and Littlefield, 1981.
- Foster, John Bellamy, *Marx's Ecology: Materialism and Nature*. New York: Monthly Review Press, 2000.
- Heidegger, Martin, *Being and Time*. Translated by Joan Stambaugh. Albany: SUNY Press, 2010.
- . *Discourse on Thinking*. Translated by John M. Anderson and E. Hans Freund. Toronto: Harper Perennial, 1966.
- . "Science and Reflection." In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt. Toronto: Harper and Row, 1977.

- . "The Age of The World Picture." In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt. Toronto: Harper and Row, 1977.
- . "The Question Concerning Technology." In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt. Toronto: Harper and Row, 1977.
- . "The Turning." In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt. Toronto: Harper and Row, 1977.
- . "The Word of Nietzsche." In *The Question Concerning Technology and Other Essays*. Translated by William Lovitt. Toronto: Harper and Row, 1977.
- Henry, Michel. "The Concept of Being as Production," Translated by Pierre Adler, *Graduate Faculty Philosophy Journal* 10, no. 2 (1985): 3-28.
- Jameson, Fredric. *Representing Capital: A Reading of Volume One*. London: Verso 2011.
- Kosík, Karel. *Dialectics of the Concrete: A Study on Problems of Man and World*. Boston: D. Reidel Publishing Company, 1976.
- Lukács, Georg. *History and Class Consciousness: Studies in Marxist Dialectics*. Translated by Rodney Livingstone. Cambridge: The MIT Press, 1971.
- Liotard, Jean-François. *Political Writings*. Translated by Bill Readings. Minneapolis: University of Minnesota Press, 1993.
- Liotard, Jean-François. *The Postmodern Condition: A Report on Knowledge*. Translated by Geoff Bennington and Brian Massumi. Minneapolis: University of Minnesota Press, 1984.
- Marcuse, Herbert. *Heideggerian Marxism*. Edited by Richard Wolin and John Abromeit. Lincoln: University of Nebraska Press, 2005.
- Marcuse, Herbert. *One-Dimensional Man*. Boston: Beacon Press, 1964.
- Marx, Karl, *Capital (A Critique of Political Economy)*. Vol. 1. Translated by Ben Fowkes. Toronto: Penguin Classics, 1990.
- . *Grundrisse*. Translated by Martin Nicolaus. London: Penguin Classics, 1993.
- . *The Poverty of Philosophy*. New York: International Publishers, 1963.
- Marx, Karl, and Friedrich Engels. "The German Ideology." In *The Marx-Engels Reader*. 2nd Revised & enlarged. New York: W. W. Norton & Company, 1978.